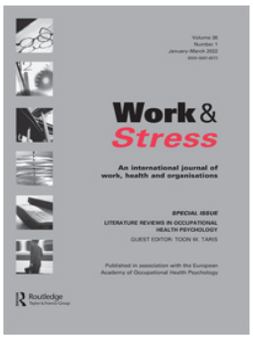

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Organisational- and group-level workplace interventions and their effect on multiple domains of worker well-being: A systematic review

Kimberly E. Fox [a,b], Sydney T. Johnson[a], Lisa F. Berkman[a,c], Marjaana Sianoja[d,e], Yenee Soh[c], Laura D. Kubzansky[c] and Erin L. Kelly[d]

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ABSTRACT

As a social determinant of health, work influences the health and well-being of workers. Interventions to change the conditions of work are an important complement to individually-focused wellness initiatives. This systematic literature review identified organisational- and group-level workplace intervention studies using experimental or quasi-experimental designs. It considered 83 studies with well-being outcomes that span the mental health continuum from ill-being to positive mental health, including context-free well-being (e.g. psychological distress), work-specific well-being (e.g. job satisfaction), and work-family well-being (e.g. work-family conflict). Interventions were categorised into four types: *flexible work and scheduling changes*; *job and task modifications*; *relational and team dynamic initiatives*; and *participatory process interventions*. There is significant heterogeneity in conceptualisation and measurement of well-being with job satisfaction being most commonly measured. Our review finds that strategies aiming to change work conditions have the potential to improve working well-being with demonstrable effects in all three well-being domains. Regardless of type, interventions involving increased control and opportunities for workers' voice and participation more reliably improve worker well-being, suggesting these components are critical drivers of well-being. We recommend further research incorporate process evaluation to clarify how interventions create positive changes and examine the conditions in which specific interventions may be most effective.

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Work profoundly influences individual health and well-being and should be understood as a key social determinant of health. Such a perspective facilitates the integration of occupational health research with other public health conversations that "look upstream" to understand key modifiable factors that influence health, well-being, and equity in these

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outcomes (Goh et al., 2015). Employers, concerned about productivity, turnover, and employee healthcare costs, have increasingly adopted wellness benefits and initiatives as ways to improve employee performance and health, and reduce stress (Abelson, 2019; Johnston, 2019). However, these programmes are driven by a somewhat narrow view of health (i.e. reducing depression, managing chronic diseases), and generally seek to create change using individual-level interventions that incentivise healthier behaviour (e.g. increasing physical activity) or reduce stress (e.g. meditation). Recent research has found surprisingly little benefit of these programmes for health and well-being (Song & Baicker, 2019). Regardless, employers in the U.S. have devoted far more attention and funds to wellness initiatives than interventions that change work conditions or environments to be less stressful or unhealthy (Pfeffer, 2018).

Workplace intervention studies that target conditions of work can help assess the preventive potential of creating healthier workplaces and may point to alternatives to wellness programmes and guide management practice (Day & Nielsen, 2017). To assess the current state of knowledge regarding whether and which specific workplace interventions influence worker well-being, we conducted a systematic review of studies of organisational- and group-level workplace interventions designed to improve worker well-being. We examine intervention impacts on a variety of psychological, work-specific, and work-family well-being outcomes, and identify future directions for research in occupational health and related fields.

In the next sections, we provide a rationale for focusing on organisational- and group-level interventions, for conceptualising well-being in three domains (context-free, work-specific, and work-family well-being), and for the selection of studies for this review. We identify three key research questions that guide our work before reporting on and discussing findings.

Identifying relevant interventions

Workplace interventions are "planned, behavioural, theory-based actions that aim to improve employee health and well-being through changing the way work is designed, organised, and managed" (Nielsen & Abildgaard, 2013, p. 278). They can be categorised by the level at which changes are targeted, ranging from the individual, group, leader, or organisation (Nielsen et al., 2013, 2018). Given recent reviews including individual-level interventions (e.g. Tetrick & Winslow, 2015), we focus specifically on interventions that target changing the workplace rather than the worker by examining organisational- and group-level interventions that emphasise changing the conditions of work (e.g. increasing job control or fostering co-worker support to mitigate underlying problems that contribute to psychological stress and ill-being). Such interventions signal a proactive intervention approach to address the underlying workplace stressors that has the potential to have broad impact, protecting workers from emerging exposures and addressing the sources of stress and ill-being even among those who do not seek support or pursue wellness programmes. In contrast, leader- or individual-level interventions most often focus on changing skills and practices among employees and managers. While these interventions may also aim to change conditions of work, through training managers to share control or encouraging individuals to "craft" their jobs to increase opportunities for skill development, leader- or individual-level interventions are often reactive

responses to stressful workplaces, emphasising support for managing existing stresses and strains, rather than proactive changes to the underlying conditions of work.

Research on organisational interventions have increased in the past decade, yet few reviews have summarised the emerging evidence and those reviews have noted that organisational- and group-level interventions "…are the least studied to date" (Tetrick & Winslow, 2015, p. 587) and argue that:

> there is a need to gain a more nuanced understanding of (a) which outcomes are affected by which types of interventions and/or activities, (b) for whom an intervention type or specific intervention activity is most beneficial, and (c) the specific causal mechanisms underlying the effectiveness of interventions (2015, p. 594)

In line with Tetrick and Winslow's call, this review adds to our understanding of which well-being outcomes are affected by different organisational- and group-level interventions. This review also considers variation in impacts across a wide variety of workforces and industries, beginning to address the second point of this call. Additionally, we concur that more attention is needed to causal mechanisms, and underscore that rich process evaluations could support that goal. Other reviews looked at the relationship between employment practices, job redesign and well-being (Daniels et al., 2017) and find promise in interventions that train employees to adapt their own employment practices but recommend stronger research designs. Nielsen and colleagues (2017) examine which level of psychosocial resources and workers' general well-being and found that resources at each level are associated with well-being and performance but the strength of relationships was stronger in cross-sectional over longitudinal designs. Our review extends these in multiple ways. First, we provide a broader overview of interventions that aim to change work conditions, whereas Daniels and colleages (2017) focus only on interventions that *combine* job design and changes in employment practices (e.g. training, human resources policy changes) and the review by Nielsen and colleagues (2017) includes non-intervention studies. Second, we examine subjective well-being outcomes in three specific domains, as described below, whereas the other reviews examine well-being as a broad category and do not compare effects of interventions on multiple well-being domains (Daniels et al., 2017; Nielsen & Miraglia, 2017).

For the present review, we sought studies of workplace interventions that emphasise changes in the structural conditions and organisation of work. We include studies of interventions aimed at changing how work is done in an entire organisation, such as implementing a work-from-home policy or redesigning a work process to incorporate more worker input. We also include studies of interventions that emphasise how groups or teams work together and those that promote supportive interactions within those units. This focus on the conditions of work and the need for more assessment of these interventions leads to our first research question:

> Research Question 1: What organisational- and group-level interventions have been implemented to affect the well-being of workers?

Defining well-being domains

Another goal of this review is to assess how occupational health studies capture well-being outcomes that reflect functioning beyond disease or its absence. Schulte and

colleagues (2015) offer a cogent discussion of why workplaces should focus on a broad definition of well-being and the quality of their work lives rather than simply focusing on how workplaces can mitigate deficits, injuries, and health problems. Similarly, examining both positive and negative dimensions of well-being is increasingly recognised as important for understanding effects of workplace change more comprehensively (Mäkikangas et al., 2016; Page & Vella-Brodrick, 2009). This review examines the continnum of well-being from psychological ill-being, such as burnout and stress, to facets of positive well-being, such as happiness, vitality, or sense of purpose.

As noted in Schulte et al. (2015), there are diverse definitions of well-being with some aspects of well-being that are likely to be particularly relevant when studying effects of the workplace on well-being (see also, Warr, 2013). To maintain reasonable scope for this review, we focused on psychological well-being and included studies evaluating whether workplace changes not only mitigated poor psychological well-being, as characterised by burnout and perceived stress, but also fostered positive well-being outcomes. We include three domains of well-being that may be influenced by workplace conditions: context-free, work-specific, and work-family well-being.

Context-free psychological well-being refers to hedonic (i.e. subjective well-being, positive feelings and evaluations) and/or eudaimonic (i.e. sense of fulfillment, meaning) components of well-being that address an individual's life in general (see Page & Vella-Brodrick, 2009 for more details). Work-specific well-being refers to measures specific to one's work experience such as job satisfaction, how depleted individuals feel (e.g. burnout), and how interested individuals are in their work (e.g. engagement). Given the prevalence of employed parents and caregivers in contemporary workforces (Adema et al., 2016), we also include work-family well-being as a specific domain and consider studies that evaluate how well work fits or conflicts with family and personal roles and responsibilities (e.g. work-family balance, work-family conflict). Work-specific well-being and work-family well-being may affect context-free psychological well-being, acting as mediators between changing work conditions and broader evaluations of life satisfaction, happiness, or distress (see Moen et al., 2016 for an example of an intervention study that examines work-family well-being as a mediator). Additionally, these types of well-being are of interest in their own right. Furthermore, workplace interventions are often designed with work-specific well-being (e.g. burnout, engagement) or work-family well-being as the target, given the salience of these outcomes for both management and workers. In response to these calls to consider multiple facets of well-being and ill-being with an emphasis on three specific well-being domains related to work: context-free, work-specific, and work-family well-being, our second research question asks:

> Research Question 2: What aspects of well-being have been considered in the workplace intervention studies identified in RQ1?

Evaluating intervention effectiveness

Finally, the goal of this review is to identify promising organisational- and group-level interventions, in order to promote the well-being of workers and encourage decision-makers to adopt effective changes at these levels, in addition to the popular wellness

initiatives targeting individual behaviour change. To rigorously assess effects of these workplace interventions, we emphasise randomised controlled trials, the gold standard for evaluating causation. However, implementing these designs within a workplace can be complicated (or infeasible) and require sophisticated evaluations (Nielsen & Miraglia, 2017). Thus, we also include quasi-experimental studies, field experiments, and pre–post-test studies as this work can also provide compelling evidence regarding the effectivness of strategies for improving worker well-being.

Other criteria, such as a strong theoretical grounding and process evaluations, can help understand the context and mechanisms of organisational intervention activities and therefore guide expectations about how interventions may succeed or fail (Havermans et al., 2016; Tetrick & Winslow, 2015). However, this review is focused on what interventions are attempted and whether they create positive, negative, or null changes in well-being, with less focus on the context and mechanisms. These motivations inform the methodological scope identified for our final question:

> Research Question 3: How effective are the interventions identified in RQ1 at improving well-being identified in RQ2?

Methods

This review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Liberati, 2009). The study protocol is registered on PROSPERO: International Prospective Register of Systematic Reviews and can be accessed at [information omitted for double-blind reviewing].

Search strategy and study selection

We searched four databases to ensure we captured studies from public health, psychology, sociology, and other social sciences: PubMed, PsycINFO, Sociological Abstracts, and Business Source Complete. Because work environments have changed significantly in recent years, we limited our search to articles written between January 1, 2000 and February 8, 2018, when the search was concluded to capture the interventions most likely to be relevant for today's workforce. We did not limit the specific industries, occupations, countries, or disciplines included. We used database terminology (Medical Subject Headings [MeSH] in PubMed and Comprehensive Subject Index in PsycINFO and Business Source Complete) in addition to keywords to capture potentially relevant articles that were not indexed in the database. The search algorithm was comprised of search terms that fell into three categories: 1) work terms, such as occupation, profession, industry, workplace, and work organisation; 2) study design or intervention terms, such as field experiment, randomised controlled trial, quasi-experiment, and controlled before-and-after study; and 3)well-being outcomes, such as eudaimonic well-being, psychological distress, worker engagement, and work-family conflict (detailed search strings available upon request). To check the search strategy, we confirmed that 10 pre-identified articles that clearly met our criteria were returned by the search string. We also searched the bibliographies of all included articles for relevant studies not captured by the database searches.

Our review includes English-language studies with workers aged 18 years and older employed in any formal or informal place of employment, including full-time, part-time, temporary, at-will, and seasonal employees. We used a Study design, Participants, Interventions, and Outcomes (SPIO) framework for determining inclusion and exclusion of studies (see Table 1; Hempel et al., 2016). Included articles describe experimental or quasi-experimental evidence; we exclude observational studies and studies without an intervention or systematic efforts to change the work environment. We included articles that assessed the impact of organisational- or group-level interventions that change work conditions for employees and excluded articles reporting only individual- or leader-level interventions aimed at encouraging individual employees or managers to make a change in their actions, reactions, or activities.

Two reviewers [author initials omitted for double-blind reviewing] independently screened titles and abstracts of all identified publications and sorted articles based on the inclusion and exclusion criteria. To confirm consistent application of the inclusion and exclusion criteria, the two initial reviewers sorted the same 200 articles. Agreement between the two reviewers was 98%. Any disagreements regarding these articles were reviewed and discussed to clarify the inclusion and exclusion criteria. Articles that fit the inclusion criteria based on the title and abstract review were retained for full text review. Three reviewers [author initials omitted for double-blind reviewing] then reviewed full text articles based on our pre-defined criteria and reasons for excluding articles after full text review were recorded.

Data extraction and quality assessment

Two reviewers [authors' initials omitted for double-blind reviewing] extracted the following data from the included studies: bibliographic details, study characteristics (study design, follow-up duration with studies measuring long-term effects rated higher, measurement time points, control group, blinding, and baseline and follow-up response rates), population characteristics (worker demographics, job role, and type of workplace), description of the intervention, theoretical grounding, incorporation of process evaluation, outcomes (including well-being and other measures), type of analysis (including whether family-wise corrections were used to adjust for a greater possibility of Type I errors when multiple comparisons are used), main findings (i.e. effect of workplace changes on well-being outcomes including null, positive, and negative effects), and any potential confounders or limitations.

Quality assessment was performed by two reviewers [author initials omitted for double-blind reviewing], based on seven pre-defined criteria adapted from prior work

Table 1. Study design, participants, interventions, and outcomes (SPIO) inclusion criteria.

Study design:	Randomised control trials, controlled before-and-after studies, field experiments, and quasi-experimental studies
Participants:	Workers aged 18 years or older, including full-time, part-time, temporary, at-will, and seasonal workers
Interventions:	Group- or organisational-level interventions that change work conditions. These include addressing organisational changes (e.g. job redesign, flexwork) and group changes (e.g. teamwork) that attempt to change work conditions or processes
Outcomes:	Worker psychological and occupational well-being, including mental health, subjective well-being, resilience, psychological stress, positive and negative affect, job engagement, job satisfaction, psychological distress, life satisfaction, optimism, happiness, emotion, meaning, purpose, burnout, work-family conflict, work-life balance, work-family enrichment, and work-family facilitation

(Joyce et al., 2010): 1. study design used (including causal inference, appropriate control groups, and follow-up duration); 2. baseline response rate (>60%); 3. follow-up response rate (>70%); 4. protection from contamination through blinding; 5. use of validated measures; 6. adjustment for confounders; and 7. use of appropriate analyses. Each criterion was scored for 0 (low), 1 (moderate), or 2 (high) quality. While other methods for assessing the impact of an intervention may incorporate more contextual and process factors, our quality assessment focused on the strength of the study design for establishing causal effects (average treatment effects) with confidence. Reviewers first rated 10 articles together, discussing any differences to resolve disagreements. After reaching consensus, reviewers each rated a set of seven additional articles separately, and discussed ratings to verify they were consistent. The remaining 51 articles were divided between reviewers for individual assessment. Overall scores for each article were obtained by taking the mean of scores across all criteria (range 0-2). Articles scoring >1 were rated high-quality according to these criteria and those scoring ≤0.75 were rated low-quality with the remainder categorised as moderate (full quality assessment ratings are available upon request). Quality assessment was completed on full articles but applied to individual studies when >1 study was reported in an article. Of 68 articles evaluated, 30.9% were rated high, 36.8% rated moderate, and 32.4% rated lower in quality.

Results

Figure 1 demonstrates the article selection process. Our search strategy yielded 12,752 articles; 11,327 were screened on title and abstract after 1,425 duplicates were removed. We examined 256 articles using full text, and retained 67 articles. After screening references of the included studies, one additional study was added for a total of 68 articles in this review. Nine articles discussed multiple intervention studies and two different articles discussed the same intervention, each focusing on different mediators and factors influencing the intervention's effects, resulting in 83 individual studies reported by 68 articles.

Study characteristics

Tables 2–5 present study characteristics, including location of each study, industry represented, main intervention type, and outcomes assessed. The majority of studies are from Europe, the United States, Canada, and Australia, with a heavy concentration in Nordic countries. Interventions were conducted in knowledge industries (e.g. technology, insurance, education), public and social sector employees (e.g. social workers, police), and labour (e.g. manufacturing, mining). The most commonly studied industry is healthcare.

RQ1: What organisational- and group-level interventions have been implemented?

The first author initially coded and categorised interventions across all 83 studies based on stated goals for the intervention, intervention activities, and level (organisational or

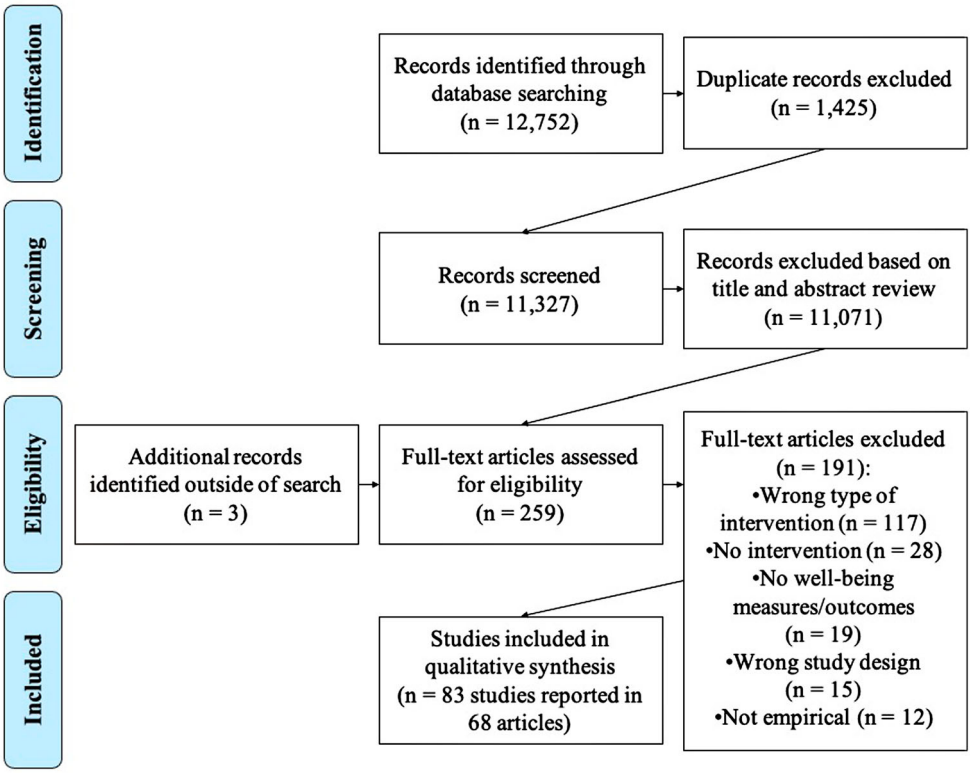

Figure 1. Flow diagram of article selection. The PRISMA flow diagram of literature search detailing the steps of the article selection process.

group) of the targeted change. Using this inductive process, we identified four general intervention types: 1) changes in *flexible work policies and scheduling practices* that modify when and where the work is completed; 2) implementation of *job and task changes* to enhance work processes, addressing how individuals complete their work; 3) efforts to improve *relationships and team dynamics* within a work group, by changing the way workers interact and work together; and 4) *participatory interventions* that emphasise the change process itself by helping workers identify workplace challenges, brainstorm solutions, and make changes that they deem appropriate to address multiple work domains (e.g. work practices, resources, interpersonal relationships). Flexible work policies, scheduling pratices, and job or task change interventions target change to the organisational-level while relational and team dynamics interventions target change to the group level; participatory interventions include changes at either or both levels. While many interventions have multiple targets, we categorised each according to the primary change target as described in that study.

Our inductively-derived categorisation matches or partially matches those described in previous research on workplace interventions (e.g. Montano et al., 2014; Quick et al., 2013). For example, Semmer identifies interventions characterised by altering task characteristics, work conditions, role clarification and social relationships

Table 2. Flexible work and scheduling study characteristics and outcomes.

Study characteristics				Outcomes		
Author, publication year *Country*	Industry	Primary intervention	Quality *Study design*	Context-free	Work-domain	Work-family
Bloom et al., 2015 *China*	Call centre	Flexible work	High *RCT*	↑	↑	
Kelly et al., 2014 *United States*	Knowledge	Flexible work	High *RCT*			↑
Kelly et al., 2011 *United States*	Knowledge	Flexible work	High *QE*			↑
Kossek et al., 2017 *United States*	Healthcare	Flexible work	High *RCT*	—		
Marino et al., 2016 *United States*	Healthcare	Flexible work	High *RCT*			—↑
Moen et al., 2011 *United States*	Knowledge	Flexible work	High *QE*	—	↑	↑
Moen et al., 2016 *United States*	Knowledge	Flexible work	High *RCT*	↑	↑	↑
Moen et al., 2013 *United States*	Knowledge	Flexible work	High *QE*	↑	↑	
Nijp et al., 2016 *Netherlands*	Knowledge	Flexible work	Mod *QE*		↑	—
Albertsen et al., 2014 (3 studies) *Denmark*	Healthcare (a) Healthcare (b) Call centre (c)	Self-scheduling	Mod *QE**			— ↑ ↓
Garde et al., 2012 (3 studies) *Denmark*	Healthcare (a) Healthcare (b) Call centre (c)	Self-scheduling	High *QE*	— ↑ —	↑ ↑ —	
Hansen et al., 2015 (3 studies) *Denmark*	Healthcare (a) Healthcare (b) Call centre (c)	Self-scheduling	Low *QE*		— — —	
Nabe-Nielsen et al., 2011 (3 studies) *Denmark*	Public/social service	Self-scheduling	Mod *QE*	↑ ↑ ↑	↑ ↑ ↑	— — —
Pryce et al., 2006 *Denmark*	Healthcare	Self-scheduling	Low *QE**	↑	↑	↑
Auger et al., 2012 *United States*	Healthcare	Shift change	Low *PRCS*		—↓	—↓
Härmä et al., 2006 *Finland*	Labour	Shift change	Low *QE*		↑	↑
Hossain et al., 2004 *Canada*	Labour	Shift change	Low *QE*		↑	
Innstrand et al., 2004 *Norway*	Public/social service	Shift change	Low *QE*		↑	
Kullberg et al., 2016 *Sweden*	Healthcare	Shift change	Low *QE*	↑		
Schiller et al., 2017 *Sweden*	Call centre	Shift change	Mod *RCT*	↑		
Strouse et al., 2003 *United States*	Public/social service	Shift change	Low *QE*		↑	

Abbreviations

Study design: RCT (randomised controlled trial); QE (quasi-experiment); PT/PT (pre-/post-test); FE (field experiment); PRCS (partially randomised cohort study); * (process evaluation reported)

Findings: ↑ *(statistically significant positive intervention effect);* ↓ *(statistically significant negative intervention effect);* — ↑ *(mixed effects);* — *(null effect); if blank, that outcome was not measured*

(Semmer, 2006, 2011). Though participatory intervention processes are not identified in previous typologies, we suggest they represent a distinct type of intervention that identifies relevant problems and solutions through engagement with employees, rather than a priori.

Table 3. Job and task change study characteristics and outcomes.

Study characteristics				Outcomes		
Author, publication year *Country*	Industry	Primary intervention	Quality *Study design*	Context-free	Work-domain	Work-family
Bond & Bunce, 2001 *United Kingdom*	Public/social service	Job redesign	Low *QE*	↑	—	
Bond et al., 2008 *United Kingdom*	Call centre	Job redesign	Mod *QE*	↑	—	
Cifre et al., 2011 *Spain*	Labour	Job redesign	Low *QE*	↑	—↑	
Fairbrother et al., 2010 *Australia*	Healthcare	Job redesign	Low *QE*		↑	
Holman & Axtell, 2016 *United Kingdom*	Call centre	Job redesign	Mod *QE*		↑	
Holman et al., 2010 *United Kingdom*	Knowledge	Job redesign	High *QE*		—↑	
Workman & Bommer, 2004 (1st of 3 studies) *United States*	Knowledge	Job redesign	Low *FE*		↑	
Hosseinabadi et al., 2013 *Iran*	Healthcare	Lean management	Low *QE*		↑	↑
Nahmens et al., 2012 *United States*	Labour	Lean management	Low *PT/PT*		—↑	
Parker, 2003 (3 studies) *United Kingdom*	Labour	Lean management	Mod *QE*		↓	
				↓		
				↓		
von Thiele Schwarz et al., 2017 (2 studies) *Denmark (a)*	Public/social service	Lean management	High *RCT*	↑	↑	
Sweden (b)				↑	↑	
Workman & Bommer, 2004 (2nd of 3 studies) *United States*	Knowledge	Lean management	Low *FE*		↑	
Engström et al., 2005 *Sweden*	Public/social service	Staff and material resources	Low *QE*	↑	↑	
Gidwani et al., 2017 *United States*	Healthcare	Staff and material resources	Mod *RCT*		↑	
Liu et al., 2018 *China*	Labour	Staff and material resources	Mod *FE*		↑	
Rickard et al., 2012 *Australia*	Healthcare	Staff and material resources	Low *QE*	↑	↑	
Vallières et al., 2016 *Sierra Leone*	Healthcare	Staff and material resources	Mod *RCT*		—	
Venkatesh et al., 2010 *India*	Knowledge	Staff and material resources	Mod *FE*		↓	

Abbreviations

Study design: RCT (randomised controlled trial); QE (quasi-experiment); PT/PT (pre-/post-test); FE (field experiment); PRCS (partially randomised cohort study); * (process evaluation reported)

Findings: ↑ *(statistically significant positive intervention effect);* ↓ *(statistically significant negative intervention effect);* — ↑ *(mixed effects);* — *(null effect); if blank, that outcome was not measured*

Flexwork and scheduling

Of the 83 studies examined, 29 (34.94%) include organisational-level changes that affect time and place of work. Flexibility in schedules or work location (which we call *flexwork*) and *self-scheduling* are employee-driven efforts, where employees gain flexibility with

Table 4. Relational and team dynamics study characteristics and outcomes.

Study characteristics				Outcomes		
Author, publication year *Country*	Industry	Primary intervention	Quality *Study design*	Context-free	Work-domain	Work-family
Amos et al., 2005 *United States*	Healthcare	Team dynamics	Low *PT/PT*		—↑	
Bergman et al., 2015 *Sweden*	Healthcare	Team dynamics	Mod *QE*	↑	—↑	
DiMeglio et al., 2005 *United States*	Healthcare	Team dynamics	Low *QE*		↑	
Glisson et al., 2006 *United States*	Public/social service	Team dynamics	High *RCT*	↑	↑	
Glisson et al., 2012 *United States*	Public/social service	Team dynamics	High *RCT*		↑	
Kanste et al., 2010 *Finland*	Healthcare	Team dynamics	Low *QE*	—	—↑	
Nielsen & Randall, 2009; 2012 *Denmark*	Healthcare	Team dynamics	Mod *QE**	↑	↑	
Tsirikas et al., 2012 *Greece*	Public/social service	Team dynamics	Mod *QE*		↑	
Tran et al., 2010 *Australia*	Healthcare	Team dynamics	Low *QE*		—	
Workman & Bommer, 2004 (3rd of 3 studies) *United States*	Knowledge	Team dynamics	Low *FE*		—	
Yeatts & Cready, 2007 *United States*	Healthcare	Team dynamics	Low *QE*		—↑	

Abbreviations
Study design: RCT (randomised controlled trial); QE (quasi-experiment); PT/PT (pre-/post-test); FE (field experiment); PRCS (partially randomised cohort study); * (process evaluation reported)
Findings: ↑ *(statistically significant positive intervention effect);* ↓ *(statistically significant negative intervention effect);* — ↑ *(mixed effects);* — *(null effect); if blank, that outcome was not measured*

regard to when and where they work and have a greater voice in scheduling. These changes are hypothesised to improve worker well-being because they enable employees to accommodate family or other personal demands more effectively and facilitate a better balance of personal and professional commitments. *Shift change* interventions, on the other hand, are employer-driven initiatives whereby management institutes a new schedule to consolidate or limit the length or scheduling of shift blocks.

Flexwork. Nine studies (10.84%) assessed interventions that increase employees' control over when and where they complete their work (Bloom et al., 2015; Kelly et al., 2011, 2014; Kossek et al., 2017; Marino et al., 2016; Moen et al., 2011, 2013, 2016; Nijp et al., 2016). These include telecommuting or off-site work whereby workers can complete some or all of their work outside of the office, and flextime whereby workers choose the time they start and finish work.

Self-scheduling. Another 13 studies (15.66%) contained in five articles examined self-scheduling practices where individual workers could request their schedules within parameters set by the manager or scheduler (Albertsen et al., 2014; Garde et al., 2012; Hansen et al., 2015; Nabe-Nielsen et al., 2011; Pryce et al., 2006). These interventions involve setting work hours to ensure the organisation's staffing needs are met while employees have the opportunity to indicate their specific work hour preferences. Many protocols use IT software that records employees' preferences for shift length, start and end times and allow banking hours across pay periods.

Table 5. Participatory interventions.

Study characteristics				Outcomes		
Author, publication year *Country*	Industry	Primary intervention	Quality *Study design*	Context-free	Work-domain	Work-family
Anderzén & Arnetz, 2005 *Sweden*	Public/social service	Participatory and diffuse	Mod *PT/PT*	↑	↑	
Bourbonnais et al., 2011 *Canada*	Healthcare	Participatory and diffuse	High *QE*	↑	↑	
Bourbonnais et al., 2006 *Canada*	Healthcare	Participatory and diffuse	Mod *QE*	↑	↑	
Dollard & Gordon, 2014 *Australia*	Public/social service	Participatory and diffuse	Mod *QE*		—	
Gupta et al., 2018 *Denmark*	Labour	Participatory and diffuse	High *RCT**	—	—	
Hasson et al., 2014 *Canada*	Knowledge	Participatory and diffuse	Mod *QE*			—
Linzer et al., 2015 *United States*	Healthcare	Participatory and diffuse	High *RCT*		—↑	
Linzer et al., 2017 *United States*	Healthcare	Participatory and diffuse	High *RCT*		↑	
Nylén et al., 2017 *Sweden*	Public/social service	Participatory and diffuse	Mod *QE**		—	
Sørensen & Holman, 2014 *Denmark*	Knowledge	Participatory and diffuse	Mod *QE**		↑	
Strolin-Goltzman et al., 2009 *United States*	Public/social service	Participatory and diffuse	Mod *QE*		↑	
Uchiyama et al., 2013 *Japan*	Healthcare	Participatory and diffuse	High *RCT**	—		
Biron et al., 2016 (3 studies) *Canada*	Knowledge (a)	Participatory but targeted	Mod *QE**	↑		
	Knowledge (b)			↑		
	Healthcare (c)			↑		
Dahl-Jørgensen & Saksvik, 2005 (2 studies) *Norway*	Retail (a)	Participatory but targeted	High *QE*		—↑	
	Healthcare (b)				—↑	
Framke et al., 2016 *Denmark*	Knowledge	Participatory but targeted	High *RCT**	—	—	
Hall et al., 2008 *Canada*	Healthcare	Participatory but targeted	Mod *QE*		—↑	
Kobayashi et al., 2008 *Japan*	Labour	Participatory but targeted	Mod *QE*	↑	—↑	
Tsutsumi et al., 2009 *Japan*	Labour	Participatory but targeted	High *RCT**	—↑		
van der Wal et al., 2008 *Canada*	Healthcare	Participatory but targeted	Low *PT/PT*		—↑	

Abbreviations
Study design: RCT (randomised controlled trial); QE (quasi-experiment); PT/PT (pre-/post-test); FE (field experiment); PRCS (partially randomised cohort study); * (process evaluation reported)
Findings: ↑ *(statistically significant positive intervention effect);* ↓ *(statistically significant negative intervention effect);* — ↑ *(mixed effects);* — *(null effect); if blank, that outcome was not measured*

Shift change. Seven studies (8.43%) evaluated effects of shift change interventions implemented by management (Auger et al., 2012; Härmä et al., 2006; Hossain et al., 2004; Innstrand et al., 2004; Kullberg et al., 2016; Schiller et al., 2017; Strouse et al., 2003). In these, management determines the new shift length, rotation, or how shifts are scheduled. Changes in shift length included lengthening shifts to decrease number of days worked per week; limiting shift lengths to 12 h; or cutting total work hours

across shifts while maintaining or increasing wages. These practices enable employees to avoid consecutive shifts or have more free time between shfts (Härmä et al., 2006).

Job and task changes

A second type of intervention emphasised organisational-level changes at work. Twenty-six studies (31.33%) evaluated interventions targeting how a job is done or processes for completing specific tasks. We identify three subtypes: *job redesign* that changes workplace processes, often by increasing frontline workers' control or autonomy; *lean management practices* where work groups are encouraged to identify operational goals and formalise or standardise processes during their workday; and adding *staff or material resources* to support employees' ability to perform their jobs.

Job redesign. Seven studies (8.43%) focus on job redesign interventions (Bond et al., 2008; Bond & Bunce, 2001; Cifre et al., 2011; Fairbrother et al., 2010; Holman et al., 2010; Holman & Axtell, 2016; Workman & Bommer, 2004). These interventions are often developed through formative work incuding surveys of employees, focus groups, or steering committees to help investigators identify challenges perceived by workers and propose specific changes to the organisation. Job redesign interventions emphasise providing more autonomy to employees, along with other goals. Common changes include greater skill utilisation, involvement in problem-solving, and new avenues for feedback.

Lean management. Eight studies (9.64%) build on lean management models of production to change the work processes of groups (Hosseinabadi et al., 2013; Nahmens et al., 2012; Parker, 2003; von Thiele Schwarz et al., 2017; Workman & Bommer, 2004). Lean management practices incorporate employee participation in decision-making through regular team meetings and other processes (e.g. quality circles, kaizen boards) that bring together employees to review regular work plans and identify problems. Lean production models emphasise team interdependence and systematic processes to enhance productivity and evaluate quality (Parker, 2003). While lean management practices began in manufacturing environments, these work process interventions have expanded into other industries, such as healthcare and social service, as seen in four studies.

Staff and material resources. Six studies (7.23%) add resources in the form of additional staff or material resources (Engström et al., 2005; Gidwani et al., 2017; Liu et al., 2018; Rickard et al., 2012; Vallières et al., 2016; Venkatesh et al., 2010). Three studies are conducted in the healthcare industry and provide additional resources to physicians, nurses, and community healthcare workers, such as scribes to support physicians (Gidwani et al., 2017; Rickard et al., 2012; Vallières et al., 2016). Other studies incorporate technology as a resource for achieving work tasks, and examine effects among bank tellers in India or among manufacturing employees in China (Liu et al., 2018; Venkatesh et al., 2010). The technology evaluated provides information to workers about their productivity, which can help employees change their work practices or adapt to changes in the work environment.

Relational and team dynamics

Eleven studies (13.25%) evaluate group-level changes designed to to improve interpersonal and working relationships among employees (Amos et al., 2005; Bergman et al., 2015;

DiMeglio et al., 2005; Glisson et al., 2006, 2012; Kanste et al., 2010; Nielsen & Randall, 2009, 2012; Tran et al., 2010; Tsirikas et al., 2012; Workman & Bommer, 2004; Yeatts & Cready, 2007). Unlike interventions that prompt work teams to change their work processes (see lean management), these interventions aim to change the organisational culture or communication and coordination among employees, and thereby enhance well-being. By devoting time to understanding each others' roles and encouraging "a climate with open discussions and joint decision-making," workers gain additional support which can lead to more effective self-management (Nielsen & Randall, 2009). Studies of these team interventions are primarily found in healthcare or social and public sector environments where employees assist external clients as part of their job and often rely on other employees to provide those services effectively.

Participatory processes

Twenty-two studies (26.51%) evaluate participatory interventions that address a variety of work practices and interpersonal relationships. Participatory interventions often address both organisational- and group-level changes. Rather than identifying any specific change, these interventions emphasise the *process* of creating change, where work groups identify problems and propose solutions with multiple components. Within this participatory process type, there were important differences in the breadth or openness of interventions so we further divided these into two subtypes: 1) *participatory and diffuse* interventions that expected multiple targets of change; and 2) *participatory but targeted* interventions were focused on a specific target of change.

Participatory and diffuse. Twelve (14.5%) interventions emphasise a participatory process through which workers improve their psychosocial work environment. These interventions engage workers in determining workplace changes, where different changes could be pursued by work units or groups depending on their needs (Anderzén & Arnetz, 2005; Bourbonnais et al., 2006, 2011; Dollard & Gordon, 2014; Gupta et al., 2018; Hasson et al., 2014; Linzer et al., 2015, 2017; Nylén et al., 2017; Sørensen & Holman, 2014; Strolin-Goltzman et al., 2009; Uchiyama et al., 2013). A particular group identifies specific work processes or relational targets as important changes for their team but the process of identifying problems and potential solutions *is* the intervention, and is considered a way to build capacity for sustained changes in workplaces (Abildgaard et al., 2020; Nielsen et al., 2010).

Participatory but targeted. Ten interventions (12.04%) use a similar participatory process but with more specific targets in mind (Biron et al., 2016; Dahl-Jørgensen & Saksvik, 2005; Framke et al., 2016; Hall et al., 2008; Kobayashi et al., 2008; Tsutsumi et al., 2009; van der Wal et al., 2008). These interventions did not implement a specific, pre-planned change but used a structured participatory process *to identify possible changes* with guidance or encouragement to focus on a particular work condition or process. These interventions foster a variety of suggestions and changes around a target area, enhancing employee engagement in the change process but with more direction.

Overall, the four intervention types identified differ in target and scope but all emphasise changes in the conditions of work, whether it be the time, tasks, or relationships at work, to improve the well-being. Changes range from being somewhat narrow, like allowing employees to work from home certain days per week (Bloom et al., 2015) or providing scribes to doctors in order to improve their efficiency and job satisfaction

(Gidwani et al., 2017) to being much broader, where teams work together to build networks, share training, establish feedback, and redesign their work processes (Glisson et al., 2006; 2012) or engage in a collective process to determine individual and team action plans (Gupta et al., 2018).

RQ2: What aspects of well-being have been considered in these workplace intervention studies?

We assessed which well-being domains were measured in each study with special attention to whether they capture well-being or ill-being. Across studies, well-being outcomes are heterogeneous, with 37 specific outcomes assessed using 92 different scales or measures (see Table 6). Based on prior literature, we categorise well-being outcomes into three domains: context-free psychological well-being or ill-being; domain-specific, i.e. work-specific well-being or ill-being; and work-family well-being or ill-being. While well-being across domains tend to be correlated, they are also distinct and can have different drivers (Page & Vella-Brodrick, 2009).

Work-specific well-being was the most common domain examined. Among the 83 studies, 68 (81.9%) evaluated work-specific well-being, with job satisfaction (n=48) and burnout (n=21) as the most common measures. Thirty-six studies (43.4%) assessed context-free well-being, with psychological distress (n=15) and perceived stress (n=8) most frequently examined. Seventeen studies (20.5%) examined work-family well-being, with work-family conflict (n=10) and work-life balance (n=4) most commonly considered.

Fifty-one studies (61.4%) evaluated well-being in only one domain and only 6 studies (7.2%) considered well-being in all three domains. Studies considering all three domains of well-being were evaluating either flexible work or self-scheduling interventions, showing the connection between work schedules with work-family concerns, work-

Table 6. Well-being domains, outcomes, and measures.

Well-being domain	Outcomes included	Measures used (# of unique measures/# of studies capturing construct)
Context-free	10	Psychological distress (5 measures/15 studies); Perceived stress (5 measures/8 studies); Affective well-being (5 measures/6 studies); Mental ill health (5 measures/5 studies); Energy (2 measures/3 studies); Life satisfaction (2 measures/2 studies); Depersonalisation (1 measure/1 study); Depression (1 measure/1 study); Exhaustion (1 measure/1 study); Vitality (1 measure/1 study)
Work-specific	21	Job satisfaction (20 measures/48 studies); Burnout (7 measures/21 studies); Job stress (5 measures/11 studies); Need for recovery (1 measure/4 studies); Job anxiety (1 measure/3 studies); Job depression (1 measure/3 studies); Job-related well-being (2 measures/3 studies); Motivation (3 measures/3 studies); Self-efficacy (1 measure/3 studies); Absorption (2 measures/2 studies); Work-specific vigour (1 measure/2 studies); Discomfort with work (1 measure/1 study); Growth satisfaction (1 measure/1 study); Happiness at work (1 measure/1 study); Meaningfulness (1 measure/1 study); Mental resources (1 measure/1 study); Personal accomplishment (1 measure/1 study); Positive and negative attitudes towards work (1 measure/1 study); Work engagement (1 measure/1 study); Work-specific cynicism (1 measure/1 study); Work-specific self-esteem (1 measure/1 study)
Work-family	6	Work-family conflict (3 measures/10 studies); Work-life balance (3 measures/4 studies); work-family facilitation (1 measure/3 studies); Negative work-family spillover (1 measure/2 studies); well-being related to family life (1 measure/1study); work-life quality (1 study/1 measure)

specific well-being, and general well-being. Fifteen of the 17 studies that included work-family well-being evaluated flexwork and scheduling interventions, which reflects these interventions' emphasis on accommodating family and personal demands. Half of participatory (50.0%) and flexwork (48.3%) intervention studies evaluated context-free well-being. In contrast, only about one-third of job and task change (26.9%) and relational and team dynamics intervention studies (36.4%) measured context-free well-being but all measured some form of work-specific well-being.

RQ3: Effectiveness of workplace interventions in addressing well-being

Considering the effect of these interventions on well-being outcomes, we see generally positive results. Across all studies, 50 (60.2%) reported improved well-being in at least one domain; see the right columns of Tables 2–5. Of these, 39 studies (47.0%) reported improved well-being across all outcomes, and and 23 studies (27.7%) reported a mix of null and positive results. In contrast, 15 studies (18.1%) reported solely null results, one study reported a mix of null and negative results, and five studies (three from the same article) reported negative impacts on worker well-being. The higher proportion of intervention studies reporting positive results may be due, in part, to publication bias although the impact of this bias is unclear (Ayorinde et al., 2020) and the inclusion of null, negative, and mixed results in these studies may help to mitigate some of these concerns (Vasilev, 2013).

To make the strongest case for interventions that can improve the work environment and worker well-being, we centre our assessment of effectiveness on the 25 high-quality studies that provide the most rigorous causal evidence based on their research design, measures, and analyses.

Overview of high-quality studies

As seen in Tables 2–5, studies assessed as high-quality by these criteria included all interventions types, including flexible work practices (n=8), self-scheduling (n=3), job redesign (n=1), lean management practices (n=2), relational (n=2), particpatory process with diffuse changes (n=5), and participatory process with targeted changes (n=4). Within these high-quality studies, five flexwork studies showed consistently positive results and one reported mixed finding (in a healthcare setting) for the work-family well-being domain but the outcomes of both context-free and work-specific well-being domains are more mixed for flexwork and self-scheduling interventions. Among flexible work studies, three studies conducted in technology and call centre workforces demonstrated positive effects in two domains (Bloom et al., 2015; Moen et al., 2011, 2013), and one had positive effects across all well-being domains (Moen et al., 2016). However, in this latter study only employees (not managers) benefitted in terms of work-specific well-being (i.e. improved job satisfaction), and women benefitted more than men in the context-free domain (i.e. stress, psychological distress). Studies of similar flexwork interventions in healthcare settings showed null or mixed results, with positive effects only for work-family well-being of managers or those with specific family-care responsibilities (Kossek et al., 2017; Marino et al., 2016). The highest quality self-scheduling studies showed positive effects on context-free and work-specific well-being when implemented in healthcare settings but found null effects in call centres.

In the high-quality job redesign intervention study, mixed effects on work-specific well-being were evident (Holman et al., 2010) while studies of lean management interventions showed increases in both context-free and work-specific well-being (von Thiele Schwarz et al., 2017) among public and social service workers. Those workers have a shared sense of purpose, and therefore may benefit particularly from the group problem-solving central to lean management processes. In two studies conducted in another social service setting, the ARC (Availability, Responsiveness, and Continuity) intervention emphasised team dynamics and led to increases in both work-specific and context-free well-being (Glisson et al., 2006, 2012). The limited number of high-quality studies of job redesign (n=1), lean management practices (n=2), and relational interventions (n=2) suggests more research is needed before assessing how those changes compare to other intervention types.

Studies of participatory interventions show a mix of null and positive results for effects on well-being with only one study demonstrating positive effects for both context-free and work-specific outcomes (Bourbonnais et al., 2011) and another showing uniformly positive results on the work-specific domain (Linzer et al., 2017). The more mixed findings may stem from the range of changes that are made even within a single organisation; thus, these studies cannot reliably evaluate effects of any given change but rather can only evaluate the effects tied to making changes using a participatory process. While such findings can indicate if this type of participatory *process* affects well-being, it can be difficult to ascertain the particular changes in work conditions that matter most. Therefore, it is critical in these participatory interventions to examine the target and context of the workplace interventions to assess if the process is either a vehicle for specific change or is a goal (e.g. increased voice or input) in itself (Abildgaard et al., 2020).

Interventions that most reliably improved well-being incorporated multiple facets of change within their overall intervention and provided many opportunities for employee engagement. While not following a formal participatory process, in both the WFHN and ARC interventions, investigators incorporated team and employee engagement to facilitate the change process; for example, teams in the WFHN interventions worked together to redesign jobs and make work more flexible, while individuals in the ARC intervention adjusted jobs through a team process with regular employee feedback. These studies suggest enhancing employee engagement as part of the intervention is valuable whether through a formal participatory process or by incorporating employee feedback and encouraging engagement when making specific changes.

Discussion

The aim of this review was to 1) examine the organisational- and group-level interventions that have been implemented to affect the well-being of workers; 2) identify the domains of well-being used in those studies; and 3) assess the effectiveness of these interventions in improving worker well-being. We contribute to the literature on organisational interventions by expanding the typology of intervention types to include participatory interventions along with those interventions using more discrete practices. Additionally, our review clarifies the domains of well-being that may be affected by workplace conditions, examining context-free and work-specific domains and incorporating work-family well-being as a distinct and important outcome. Finally, we highlight

some stronger intervention types that provide promise for improving worker well-being as well as those a studies that have adverse affects on employees.

In relation to our first research question, we identify four types of organisational- and group-level interventions that target worker well-being. These are *flexible work and scheduling changes*; *job and task changes*; *relational and team dynamics*; and *participatory processes* for improving work conditions. Flexible work and scheduling changes are organisational-level interventions that address when and where employees may work. Two of these intervention subtypes (flexible work and self-scheduling) are driven by employee needs while a third subtype (shift changes) are driven by employers. Job and task changes are also organisational-level interventions that change the practice of work through redesigning jobs, instituting lean management practices, and adding staff or material resources. Relational and team dynamic interventions are group-level interventions that address how employees work together. Participatory process interventions involve employees and teams in identifying and implementing the changes or new actions, and may be carried out at both the organisational and group level.

Our second research question examining the aspects of well-being measured in these intervention studies shows significant heterogeneity in conceptualisation and measurement of well-being. Across studies, we see wide variation in the domains of well-being measured and the specific measures used within each domain. For example, job satisfaction, the most common work-specific well-being outcome assessed, is evaluated in 48 studies using 20 different measures and burnout is evaluated in 21 studies with 7 different measures. Among the 23 studies (27.7%) that assess positive psychological well-being beyond job satisfaction, a broad range of measures are used, with few studies using the same measures. Job satisfaction itself is a blunt as a measure of well-being that does not provide a clear indication of how individuals are faring overall. While evaluating job satisfaction can be informative, it may not yield sufficient insight into how workers function across domains. Moreover, the heterogeneity in well-being measures makes comparisons across studies complicated (for researchers as well as practitioners considering workplace interventions) and supports stronger theorising around the type of well-being at which an interventions is aiming before measure selection. By looking at the specific well-being domains, there is an opportunity to look at how different interventions may impact separate well-being domains and strengthen our understanding of the links between context-free, work-specific, and work-family well-being.

Finally, to address the third research question, we identify which interventions improve worker well-being, with greater attention to studies using strong experimental evidence. Flexible work interventions demonstrate the most consistent benefits across studies and across all domains of well-being, but several caveats are noted. First, few studies beyond those emphasising flexible work and scheduling considered how workplace changes may impact work-family well-being. Future research should extend analyses of worker well-being to consider the relationship between work and non-work contexts more explicitly (Chari et al., 2018). Second, studies of interventions targeting either job and task changes or relational and team dynamics emphasised the effects on work-specific well-being (e.g. job satisfaction, burnout) versus context-free or work-family well-being. While it seems these job and task change or team interventions have benefits in relation to work-specific well-being, the findings are limited and their

impact on other domains of well-being needs to be evaluated before highlighting their effectiveness more broadly. Among the high-quality studies, participatory processes seem to be a promising strategy though there are mixed findings likely tied to the variety of actions taken across work groups and teams. Additionally, few of these intervention studies included detailed information on the intervention process limiting our understanding of how these changes impacted employees' well-being.

We also find some interventions that are less effective. Five studies (Albertsen et al., 2014; Auger et al., 2012; Parker, 2003) negatively impacted the well-being of employees in relation to work-specific and work-family well-being and showed no positive impact on employee well-being overall. It is notable that all of these intervention studies showing adverse effects are driven by the needs of the employer not the employees. For example, the three studies by Parker enacted lean management processes in a manufacturing industry that pushed quality circles for productivity and the study by Auger instituted shift changes for medical interns and speculate that the negative outcomes are driven by work compression with the changes in shifts. The final study with negative outcomes is a self-scheduling intervention was aimed at "optimising personnel resources" rather than improving employee control. These negative outcomes all point to the benefits of workplace interventions targetting employee concerns rather than employer desires.

Strengths and limitations

This review provides a broad assessment of the current state of knowledge and the benefits of different organisational- and group-level interventions for employee well-being. We find an expansive field with limited consensus on where to direct change efforts and what measures best represent worker well-being. Our systematic review also reveals this is a growing area of inquiry (with seven of 68 articles published in the 18 months before our search) and with clear improvement in the quality of research designs over time (>80% of the high-quality studies published since 2010). However, we note some limitations in our review of articles.

First, we limited our review to studies including experimental, quasi-experimental studies, field experiments, and pre–post-test study designs. One challenge of these designs is their limitation in identifying change processes that require full examination of the context and implementation (Nielsen et al., 2010). While our review did not look explicitly at process evaluation within the studies, we identified those studies that included process evaluation components and found that only 15 studies (18.1% of all studies) addressed the process. Nine of those 15 studies incorporating process evaluation were participatory interventions and four of them were high-quality studies that provide important insights into what does and does not work in how participatory processes are pursued (Framke et al., 2016; Gupta et al., 2018; Tsutsumi et al., 2009; Uchiyama et al., 2013).

Another limitation we identify is interconnectedness between many of the studies. More than one-third of the articles included in our review have shared authorship or come from a small number of collaborative studies. The concentration of research among a relatively small cadre of scholars limits the range of industries and may reflect substantial challenges involved in finding organisational partners for experimental and quasi-experimental studies of organisational- and group-level interventions. Several

factors contribute to these challenges. A key challenge for this kind of research is to identify partner organisations that are open to these methods. Managers and executives may be cautious about allowing workplace changes because they require intensive effort and commitment, and potentially also add uncertainy into organisational operations, leading to multiple studies in organisations where experienced researchers can negotiate access.

The challenge of identifying research partners leads to our final limitation that is the concentration of studies in a few industries; 39.8% of studies occurred in the healthcare industry where concerns about burnout and resilience are broadly recognised (Dyrbye et al., 2014; Shanafelt et al., 2002). Public and social services are also common settings for these studies. Because jobs in these domains tend to have lower wages relative to the education levels required of workers and also impose the stress of client-facing service work, employers may be more open to participating in research designed to minimise burnout, ill-being, and turnover in these sectors. These factors may explain the concentration of research with familiar research partners and within certain industries. Experimental methods are more likely acceptable when concerns about worker well-being are pressing, or when organisations believe highly-trained workers are leaving due to current conditions.

Future directions

Drawing on findings in this review, we identify several directions for future research. First, we see the incorporation of multiple intervention targets as important to the enhancement of intervention strategies. Other reviews have suggested interventions involving multiple changes or components are promising (Lamontagne et al., 2007; Montano et al., 2014). We concur but add some specificity: interventions that target one change (e.g. flexible work or team dynamics) but create opportunities for workers to participate through feedback and process modifications seem to be particularly effective. In fact, our review of high-quality experimental studies finds, regardless of intervention type, that those involving increased control and greater employee voice more reliably improve worker well-being, suggesting these components are critical drivers of well-being. For example, the most promising flexible work interventions address employees' ability to choose both when or where they work, forms of schedule and locational control (Moen et al., 2016). Among lean management interventions, those with structured opportunities for input (through quality circles or kaizen boards) have the most positive impact (Holman et al., 2010; Linzer et al., 2015, 2017; von Thiele Schwarz et al., 2017). Team-based interventions that address how individuals share information and coordinate work further suggest the value of including elements of job redesign when addressing team dynamics (Glisson et al., 2006, 2012).

Second, we found that the heterogeneity in conceptualisation and measures of well-being across studies presents a challenge for comparing intervention effects and for identifying which are most effective. We argue for more focused inclusion of well-being measures that consider positive functioning. With the exception of job satisfaction, current research provides more guidance on which interventions reduce ill-being rather than identifying the kinds of workplace conditions that promote healthy functioning. The absence of a problem (e.g. burnout) is not the same as functioning well (e.g. a sense of vitality) and focusing only on deficits and problems limits our capacity to

understand health and identify conditions that promote positive health (Vanderweele et al., 2020). Examining the levers that might promote or enhance multiple facets of positive psychological well-being, including happiness, sense of purpose, and engagement is a critical next step for research seeking to identify ways in which workplace practices can contribute to positive well-being and other positive organisational outcomes. Attention to positive health and well-being can make interventions more appealing to organisations and their leaders, as well as individuals, and help scholars explore the full promise of workplace interventions. Additionally, our well-being findings suggest that the inclusion of work-family well-being as a distinct domain can offer important insights into how workplaces impact the non-work experiences of workers and can increase the efficacy of interventions seeking to address overall worker well-being. We recommend that studies aiming to improve worker well-being more broadly look at how those interventions address the work-family well-being domain along with the context-free and work-specific domains.

Third, with the focus on experimental studies, our findings emphasise causal inference but these studies do not fully address the mechanisms of change. Therefore, we recommend the inclusion of process evaluation in intervention studies to provide more insight into the mechanisms and expand on *how* specific interventions impact workers as well as specifying the context in which interventions bring benefits. Future studies should also include process evaluation research to elucidate how contextual factors affect intervention outcomes (Nielsen & Abildgaard, 2013; Nielsen & Miraglia, 2017), which would expand the understanding of mechanisms for improving workplaces and worker well-being. A systematic comparison of process evaluations would be valuable and future research might begin by synthesising findings and key insights from those studies with process evaluations, which are noted in Tables 2–5.

Furthermore, the mixed findings across intervention studies point to the value of evaluating moderating factors more extensively. For example, flexible work interventions resulted in systematic improvements of well-being in multiple settings but not among healthcare workers; different strategies may be needed to develop such initiatives in contexts of high interdependence and unpredictable surges in patient or client needs (Kossek et al., 2014). Similarly, the relational and team interventions were tested almost exclusively in the public sector and social services so the efficacy of these strategies for improving well-being in other industries (e.g. those with greater pressures for short-term profitability) or among different workforces remains unclear. Effects of interventions may also differ by management status, occupational status, gender, and perhaps immigration, parental, caregiver, or marital status. Greater insight may be gained by examining potential moderators, including workforce characteristics, company size, industry, and organisational climate (Nielsen & Miraglia, 2017). Incorporating process evaluations as part of intervention studies can improve the understanding of contextual factors that affect an intervention's success. Rich process evaluations can also help researchers guide practitioners more effectively, by providing more nuance on the contexts and conditions under which a given intervention strategy is more likely to improve well-being and by identifying specific actions or practices (by managers, employees, and facilitators or researchers in some cases) that help reach the intervention's intended aims.

Finally, we also recommend more attention to specific understudied groups, in particular low-wage workers. A substantial socioeconomic gradient in health is well

known and work contributes to that gradient as a social determinant of health (Syme, 2014). Yet research on efforts to improve well-being in low-wage workers (e.g. retail, hospitality, nonunionised manufacturing) is extremely limited; the studies of call-centre workers in this review are an exception. Understanding how to create work environments to promote the health and well-being of workers who face greater disadvantages in their communities and in labour markets is a critical strategy for increasing population health equity.

Conclusions

Our systematic review suggests strategies that aim to change work conditions have high potential to improve worker well-being. These organisational- and group-level interventions had demonstrable effects in all three well-being domains: context-free, work-specific and work-family well-being. Yet there is more to learn. We recommend future research implements high-quality research designs and measures well-being in multiple domains, including studies examining work-family well-being and measures of positive psychological well-being. Further we recommend future research include process evaluations to help clarify *how* interventions create positive changes and examine potential moderating variables to understand under what conditions specific types of interventions may be most effective.

We found promising evidence that flexible scheduling practices and team interventions that include elements of job redesign or employee input lead to improved well-being in multiple domains. We also identified less promising interventions. Failure to improve well-being or actual harms were more often evident when management prioritised increased productivity or higher quality standards rather than well-being, and did not consider worker capacity or provide opportunities for workers' input. Examples include shift changes to facilitate new production schedules, implementing lean management practices designed primarily to increase productivity or quality (rather than employee engagement), or implementing new technologies to improve production. These management-driven changes seem to create new stressors or pressures that often reduce well-being. Such findings may suggest efforts to craft "win-win" solutions are challenging, since organisational interventions that primarily prioritise the organisation's interests can actually threaten worker well-being.

We recommend continued efforts to evaluate workplace interventions with regard to multiple aspects of worker well-being. Given the complexity of undertaking randomised workplace intervention studies that require partnerships with employing organisations, we encourage multiple methodological approaches (Nielsen & Miraglia, 2017). Experimental and quasi-experimental studies are desirable, but natural experiments might be exploited fruitfully, particularly with longitudinal panel data that includes more nuanced well-being measures beyond the most common outcome of job satisfaction. Such designs could examine changes over time that occur both outside (e.g. shifts in economic insecurity or development of new technologies) and inside organisations (e.g. management policy changes not explicitly oriented to well-being). Longitudinal designs capturing both organisational and individual assessments, could further our understanding of how workplaces influence overall well-being. By triangulating evidence across studies using a broad range of methods and measures, evaluating the full spectrum

of well-being, and considering effects across diverse workers, we can identify effective strategies for sustainably improving worker health and well-being.

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