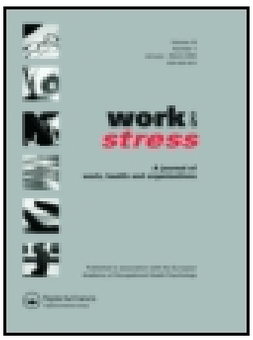

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REVIEW ARTICLE

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Workplace resources to improve both employee well-being and performance: A systematic review and meta-analysis

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ABSTRACT

Organisations are becoming increasingly aware of the importance of employees in gaining and maintaining competitive advantage. The happy worker–productive worker thesis suggests that workers who experience high levels of well-being also perform well and vice versa; however, organisations need to know how to ensure such happy and productive workers. The present review and meta-analysis identifies workplace resources at the individual, the group, the leader, and the organisational levels that are related to both employee well-being and organisational performance. We examine which types of resources are most important in predicting both employee well-being and performance. We identified 84 quantitative studies published in print and online from 2003 to November 2015. Resources at either of the four levels were related to both employee well-being and performance. We found no significant differences in employee well-being and organisational performance between the four levels of workplace resources, suggesting that interventions may focus on any of these levels. Cross-sectional studies showed stronger relationships with well-being and performance than longitudinal studies. Studies using objective performance ratings provided weaker relationships between resources and performance than self-rated and leader/third-party-rated studies.

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Introduction

The happy worker–productive worker thesis states that employees high in well-being also perform well, and vice versa (Wright & Cropanzano, 2000). A limitation of this thesis is that it does not establish the antecedents of such states and thus offers organisations little guidance as to what they can do to promote workers who are both happy (or high in well-being) and productive (have high performance). In the desire to drive employee well-

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being, and organisational growth and performance, there has been an increasing interest in resources at work. Day and Nielsen (in press) identify psychologically healthy workplaces as those workplaces where resources at the individual, group, leader, and organisational (IGLO) levels are promoted to ensure employee well-being and performance. As research on resources has expanded rapidly in the past decade since the presentation of the Job Demands-Resources (JD-R) model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), there is a need to synthesise the empirical studies in the field to provide an overview of the resources most often explored, examine whether they are related to employee well-being and performance, and understand the possible moderators of the relationships between resources and well-being and performance.

The aims of the present literature review and meta-analysis are to (1) bring together two largely separate strands of research on workplace resources, well-being, and performance from the human resource management (HRM) and the applied/organisational psychology literatures; (2) offer a framework for classifying workplace resources based on the source of these resources, that is, whether the resources are inherent in the individual, reside within the social context – either horizontally (the work group), or vertically (the immediate leader), or are afforded by the way work is organised, designed, and managed, for example, through job design or human resource (HR) practices; (3) provide an overview as to which types of resources are examined in relation to both employee well-being and performance at each level; (4) provide valuable input to organisations and researchers on whether they should focus on developing interventions at the IGLO levels when aiming to improve both employee well-being and performance; and finally (5) examine the potential moderators which may influence the relationships between resources and well-being and performance. The contribution of the present literature review and meta-analysis is unique in that it goes beyond existing systematic literature reviews and meta-analyses, most of which have emphasised resources at one level, for example, the individual (Claessens, van Eerde, Rutte, & Roe, 2007), the group (Balkundi & Harrison, 2006), the leader (Judge & Piccolo, 2004), or the organisational level (e.g. van De Voorde, Paauwe, & Van Veldhoven, 2012), or they have focused on either employee well-being or performance as an outcome (Halbesleben, 2010; Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010; Judge & Piccolo, 2004; Skakon, Nielsen, Borg, & Guzman, 2010).

By exploring simultaneously, the impact of resources in relation to well-being and performance, the present review minimises the potential to draw conclusions about relationships that may have been influenced by questionnaire measures or sample sizes specific to a particular study or by the organisational context. Rather than defining workplace resources upfront, we manually searched high-impact journals. As resources have only recently gained mainstream popularity, we initially restricted our search to the period between 2003 and 2013, and later extended our search to the end of 2015 prior to submission of the manuscript. We used a rigorous systematic approach that allowed a flexible search for a wide range of workplace resources.

Background: defining resources, performance, and well-being

Resources are defined as "anything perceived by the individual to help attain his or her goals" (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014, p. 6). Resources thus enable employees to successfully complete their tasks and goals, as a way to

enhance their well-being and capacity to perform well (Bakker & Demerouti, 2007; Balducci, Schaufeli, & Fraccaroli, 2011). In the present paper, we focus on resources present in the workplace, that is, resources that may help employees achieve their work task goals and that the organisation may develop. We do not include resources outside the workplace nor the interaction of the work–family interface in recognition of the debate as to whether organisations should or could influence resources outside of work (Hall & Richter, 1988).

A criticism of existing research is that resources are not clearly identified. Based on previous research on how organisations may promote a psychologically healthy workplace, we classify resources according to their source (Day & Nielsen, in press; Nielsen & Abildgaard, 2013). We propose that workplace resources may be operationalised at multiple levels of the organisation, that is, the IGLO levels, to improve employee well-being and enhance performance (Day & Nielsen, in press).

First, resources may be inherent within the individual, that is, personal characteristics or behaviours may enable the individual to cope with the demands of the job and perform well. Examples of such resources include self-efficacy, competence, and self-esteem (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Second, the social context may afford workplace resources, that is, group-level resources associated with shared relationships that foster a quality exchange of information and interaction between individuals within the workplace. Group-level workplace resources may be identified in terms of social support and good interpersonal relationships between employees. Reviews have explored the relationship between teamwork and performance (Balkundi & Harrison, 2006; Maynard, Mathieu, Gilson, O'Boyle, & Cigularov, 2013).

Third, it is well-established that leaders, by virtue of their position of power, influence performance and employee well-being within the organisation (Kelloway & Barling, 2010). Leader-level workplace resources include leadership characteristics and social interactions between leaders and employees. Typical leader-level workplace resources may include leadership style and the quality of leader–member exchanges (LMX). Finally, organisational-level resources are those resources inherent in the way work is organised, designed, and managed (Nielsen, Randall, Holten, & Rial-Gonzalez, 2010). A number of occupational and organisational theories stipulate the influence of job design on performance and well-being, for example, Hackman and Oldham's (1976) Job Characteristics Model (JCM), Karasek and Theorell's Demand-Control model (DC model; 1990), and the JD-R model (Demerouti et al., 2001). From the HRM literature, the mutual gains model suggests that HR practices, that is, the policies and practices put in place to develop employees' skills and abilities, motivate them to perform well, and provide opportunities for employees to exert discretionary effort (Jiang, Lepak, Hu, & Baer, 2012), are related to both employee well-being and performance (van De Voorde et al., 2012). Examples of organisational-level resources include autonomy, skills variety, compensation schemes, and performance appraisals. To the best of our knowledge, this is the first meta-analysis to simultaneously examine the relationships between HR practices and well-being and performance.

We propose that workplace resources at any of the four levels may impact on employee well-being and organisational performance. We suggest that the IGLO classification can be perceived as a heuristic model and as a starting point in the effort to clarify and classify resources in the workplace.

We chose to include a wide range of resources at the four levels to get an overview of whether resources afforded by the individual, the group, the leader, or the organisation may be related to both well-being and performance. The underlying principle is that we test clusters of resources to identify which sources organisations may target when aiming to promote a psychologically healthy workplace. We acknowledge that particular organisational-level resources may affect different aspects of an individual's well-being; for example, compensation schemes may be related to job satisfaction, while autonomy may be related to vigour, but together, all organisational-level resources improve overall well-being. Similarly, all group-level resources have a combined/overall impact on the performance of the group. By categorising the resources according to the IGLO coding scheme, we emphasise the overall combined importance of clusters of resources at each level.

Studies have often measured performance as objective (or externally rated) and subjective (or self- or other-rated) performance. Objective performance refers to non-self-reported workplace outcomes that are neither influenced nor measured by individual raters' perceptions. Typical objective performance indicators include reports on sales performance, financial profits, and productivity (e.g. Paré & Tremblay, 2007). In the present study, we refer to these types of measures as objective-data performance.

On the other hand, subjective performance refers to self-reported performance based on individual raters' personal judgement of their own performance or their perceptions of the organisation's performance. Subjective performance can be rated by the employee him- or herself (self-rated performance) or the leader or colleagues (other-rated performance). Subjective performance may be influenced by factors such as individuals' positive or negative emotional states, perceived organisational support (POS), and interpersonal relationships with supervisors and colleagues. In the present review, we included studies that examined either subjective or objective performance, or both.

We adopted the broad definition of well-being developed by Danna and Griffin (1999). They define employee well-being as the state of individuals' mental, physical, and general health, as well as their experiences of satisfaction both at work and outside of work. In this light, employee well-being is influenced by the pleasure or displeasure derived from the job itself, as well as individuals' interactions with colleagues, teammates, and supervisors. Employee health is considered a sub-dimension of employee well-being (Danna & Griffin, 1999). Well-being comprises both psychological outcomes such as lack of distress, anxiety, and emotional exhaustion, and physiological outcomes such as blood pressure, heart condition, and general physical exhaustion (Danna & Griffin, 1999). In the present study, we include studies that measure employee well-being in terms of positive outcomes such as job satisfaction, happiness, organisational commitment, intention to remain with the organisation, work engagement, sense of purpose, and affective well-being. We also consider general physical and psychological health and include both work-related and non-work-related well-being outcomes. Previous research has found that workplace resources are related to non-work-related well-being (Grebner, Semmer, & Elfering, 2005; Kinnunen, Feldt, Siltaloppi, & Sonnentag, 2011), and therefore, we included both work-related and non-work-related well-being. We argue it is positive if work can have a positive spillover to the non-work domain.

Workplace resources, employee well-being, and organisational performance

According to the JD-R model, workplace resources have motivational potential and may lead to high well-being through two mechanisms (Demerouti et al., 2001). Through intrinsic motivation, resources may fulfil basic human needs, such as the needs for autonomy, competence, and relatedness (Deci & Ryan, 1985). Through extrinsic motivation, workplace resources may enable individuals to achieve their work goals and thus perform better (Demerouti et al., 2001). For example, supportive leaders and colleagues who provide instrumental support in completing work tasks may increase an individual's capacity to complete his or her work goals, thus leading to greater job satisfaction and better performance. The JD-R model has been validated in that the relationship between workplace resources and employee well-being has been established in meta-analyses (Crawford, LePine, & Rich, 2010; Halbesleben, 2010), and studies have confirmed the relationship between workplace resources and performance (e.g. Bakker, Demerouti, & Verbeke, 2004), although this relationship has yet to be confirmed using a meta-analytic approach. A central tenet of the JD-R model and conservation of resources (COR) theory is that resources may take many forms and there is no defined set of resources (Demerouti et al., 2001); it is therefore essential to use a flexible approach to identifying which resources to include in a meta-analysis.

Research has shown that interventions can improve resources at all these four levels (van der Klink, Blonk, Schene, & van Dijk, 2001; Michie & Williams, 2003); thus, it is worthwhile to identify whether resources at any of the four levels are more strongly associated with both employee well-being and performance. Knowing whether individual-level resources are more strongly related to both employee well-being and performance than, for example, leader-level resources may provide valuable insights for organisations on which types of interventions they may focus their efforts. We, therefore, developed the following research questions:

> Research Question 1: Which types of resources at the four levels are explored in the literature with regard to both well-being and performance outcomes?
>
> Research Question 2: Are workplace resources related to both employee well-being and performance when studied as outcomes in the same study?

Moderators of the relationship between resources and well-being and performance

In this section, we explore potential moderators of the relationship between resources and well-being and performance. We consider the possibility that the relationships between resources and well-being and performance can be moderated by a number of factors, such as the IGLO level at which the resource operates and the study design.

Levels of resource

For decades, there has been a debate in the intervention literature as to whether organisations should focus their efforts towards promoting happy and productive workers through individual-level or organisational-level interventions (Martin, Sanderson, & Cocker, 2009; Richardson & Rothstein, 2008). Important questions have thus been

raised concerning the extent to which organisations should focus their intervention efforts across these levels to promote happy and productive workers and psychologically healthy workplaces.

We extend the individual- and organisational-level intervention debate by examining resources at the group and the leader levels. It is increasingly acknowledged that work groups play an important role in organising work and creating innovations in today's workplaces (Mathieu, Maynard, Rapp, & Gilson, 2008; Peltokorpi & Hasu, 2014) and that interpersonal relationships may potentially promote health (Day, Hartling, & Mackie, 2015). Furthermore, an emergent body of literature suggests that leadership behaviours do not only influence employee performance (Judge & Piccolo, 2004), but also employee well-being (Skakon et al., 2010). Interventions focused on leaders may thus be a cost-effective means of achieving both (Kelloway & Barling, 2010). It is thus important to determine whether resources at any of the four levels are more strongly related to employee well-being and performance than workplace resources at other levels. We provide valuable information on which interventions organisations should focus on in promoting employee well-being and performance.

> Research Question 3: Are resources at any of the four levels (IGLO) more strongly related to employee well-being and performance than resources at the other three levels?

Study design

Internal validity of a study is characterised by covariation, time–order relationship, and elimination of plausible alternative causes (Shaugnessy, Zechmeister, & Zechmeister, 2006). Compared to longitudinal and experimental designs, cross-sectional and case study designs tend to have lower internal validity as they do not fulfil the time–order condition and lack control over alternative explanations for their findings. A further related problem associated with cross-sectional designs is common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). When respondents' reports of internal states, for example, well-being, are collected at the same time as their perceptions of the resources, this may lead to inflated correlations between these two types of variables (Lindell & Whitney, 2001). Cross-sectional studies may over-report the relationship between resources and well-being and performance. One might expect the strength of this relationship to differ significantly between cross-sectional and longitudinal study designs. We, therefore, examine whether the temporal design of the study influenced the relationship between resources and well-being and performance.

> Research Question 4: Is there a difference in the strength of the relationships between resources and well-being and performance in studies either using cross-sectional or longitudinal study designs?

Rating source

To accurately estimate the relationship between resources and well-being and performance, it is crucial to have valid and accurate measures of both outcomes. Well-being represents employees' individual responses to the environment and it is, therefore, appropriate to measure well-being using self-reports (Frese & Zapf, 1988; Kompier, 2005). As mentioned above, performance can be rated either objectively, using

organisational data such as return-on-investment or sales performance data, or subjectively, through employees' self-reports or the reports of others. There have been debates concerning the extent to which subjective reports are reliable (Atwater, Ostroff, Yammarino, & Fleenor, 1998; Fletcher & Baldry, 1999). Although some studies have found that self-rated and other-rated performances are highly correlated (Moneta, Amabile, Schatzel, & Kramer, 2010; Shalley, Gilson, & Blum, 2009), other studies have found that self–other discrepancies exist for performance ratings (e.g. Allen, Barnard, Rush, & Russell, 2000). Because of these opposing views, we examined whether differences exist between resources and performance relationships when performance is rated using either self, other, or objective performance ratings.

Research Question 5: Is there a difference in the strength of the relationship between resources and self-reported, other-reported, and objective performance?

Method

We conducted a meta-analysis to answer Research Questions 2–5. In this section, we first describe the literature search and then the analytical methods applied in the meta-analysis.

Literature search

As existing research frameworks such as the JD-R model (Demerouti et al., 2001) and COR theory (Hobfoll, 1989) do not specify a definitive list of resources, we decided to employ a flexible search that enabled the identification of a broad range of workplace resources beyond those previously identified in the existing models. We focused on high-impact journals in anticipation that articles with rigorous and valid methods and designs are more likely published in such journals. A similar approach has been used in previous reviews (Doherty, Haugh, & Lyon, 2014). We began by a comprehensive search for relevant academic journals based on their rankings in the Thomson Reuters Journal Citation Reports (JCR) and the Association of Business Schools (ABS) list of high-quality journals. JCR compares academic journals using citation data and measures of journals' research impact. We selected relevant high-impact journals from the Management and Applied Psychology lists. The ABS list ranks academic journals in five categories (1–4, and 4*), where 1 is the lowest category, 4 the highest category, and 4* for elite journals. We selected relevant highly ranked journals from the HRM and psychology lists. Journals considered for the present review include those with high JCR research impact (>1.5), and those ranked in categories 3, 4, and 4* on the ABS list. In total, 23 journals were searched. We first identified papers that included both performance and well-being measures according to our definitions above. We then identified whether any antecedents could be classified as resources.

We performed a manual and electronic search of all selected journals to identify published articles where the potential impact of workplace resources on employee well-being and organisational performance has been examined simultaneously. For example, if a study on team climate and well-being among teleworkers and a study on team climate and performance among nurses revealed a relationship with performance, but not well-being, we cannot ascertain whether this outcome are due to the different

occupational contexts: We cannot not delineate whether team climate has little importance for well-being universally or only among people who mostly work on their own or whether team climate is universally linked to performance, but not well-being between team climate and performance, but not well-being, we cannot ascertain whether these outcomes are due to the different occupational contexts: we cannot delineate whether team climate has little importance for well-being among people who mostly work on their own or whether team climate is universally linked to performance, but not well-being.

To reflect the recent growth in interest of researchers and practitioners on (i) the importance of both employee well-being and organisational performance, and (ii) increased theoretical knowledge about workplace resources, we focused on empirical studies published between 2003 and December 2015. At first, we manually searched journals from 2003 to the end of 2013, but prior to submission, we updated our search to include issues up to the end of 2015. We also included papers published online first. The vast majority of papers identified were published after 2010. One rater identified papers by searching through the journals and identifying papers that included resources, employee well-being, and performance. A second rater reviewed the selected papers to ensure they all included at least one workplace resource and both employee well-being and performance outcomes. Consensus was reached through discussion between the raters, and any discrepancies were cross-checked by a third rater and resolved through discussion. One rater classified the resources into the four categories and these were checked by a second rater. Again, any discrepancies were resolved through discussion. Full information on the literature search can be obtained upon request from the authors.

Inclusion and exclusion criteria

We focused on empirical, quantitative studies that included correlation coefficients between a workplace resource and well-being and performance. We identified papers that included both well-being and performance outcomes (based on the definitions described above) and examined whether antecedents of these were identified and whether these antecedents could be termed as "workplace resources." We used the following inclusion criteria. First, the study had to be published in a high-impact journal. Second, the study had to provide a zero-order correlation between a resource and any potential outcome. Third, in order to calculate the sample size, the study had to include the sample size.

We excluded resources outside of work (e.g. family support) and negative factors that may impair well-being and performance (e.g. emotional demands) due to the explicit focus on the positive aspects of work/resources at work that may drive rather than hinder employee well-being and performance. Studies adopting laboratory research designs were excluded because they do not provide an adequate social and organisational context for employee well-being and organisational performance (Chang, Johnson, & Yang, 2007). We also excluded the grey literature, that is, non-commercial and non-academic literature such as dissertations, conference papers, and unpublished articles, as these are not usually subjected to robust and stringent editorial processes. Finally, books and book chapters were excluded as they do not often undergo the same rigorous review procedure as applied in high-impact journals.

Meta-analytic approach

All meta-analyses and analyses of publication bias were carried out using the Comprehensive Meta-analysis (versions 2 and 3) software developed by Biostat (Borenstein, Hedges, Higgins, & Rothstein, 2005). In contrast to some other meta-analytic methods, such as the Hunter and Schmidt (2004) approach, which weights studies by sample size, the Comprehensive Meta-analysis programme weights studies by inverse variance. Inverse-variance weighting is a method of aggregating two or more random variables, where each random variable is weighted in inverse proportion to its variance in order to minimise the variance of the weighted average. The inverse variance is roughly proportional to sample size, but is a more nuanced measure, and serves to minimise the variance of the combined effect (Borenstein, Hedges, & Rothstein, 2007).

The Q_{within} statistic was used to assess the heterogeneity of studies. A significant Q_{within} value rejects the null hypothesis of homogeneity. An I^2 statistic was computed as an indicator of heterogeneity in percentages. Increasing values show increasing heterogeneity, with values of 0% indicating no heterogeneity, 50% indicating moderate heterogeneity, and 75% indicating high heterogeneity (Higgins, Thompson, Deeks, & Altman, 2003). As considerable heterogeneity was found in our analyses, we calculated the pooled mean effect size using the random effects model. Random effects models are recommended when accumulating data from a series of studies where the effect size is assumed to vary from one study to the next, and where it is unlikely that the studies are functionally equivalent (Borenstein et al., 2007). Random effects models allow statistical inferences to be made to a population of studies beyond those included in the meta-analysis (Berkeljon & Baldwin, 2009). Under the random effects model, two levels of sampling and two sources of error are taken into consideration. First, the true effect sizes are distributed about the mean with a variance that reflects the actual distribution of the true effects about their mean. Second, the observed effect for any given effect size will be distributed about that effect size with a variance that depends primarily on the sample size for that study. Therefore, in assigning weights to estimate the mean, one needs to deal with both sources of sampling error, that is, within studies and between studies (Borenstein et al., 2007; Borenstein, Hedges, Higgins, & Rothstein, 2009).

The "one-study-removed" procedure was used to determine whether estimates were influenced by outlier studies. This sensitivity analysis provides average estimates for a given relationship by running a series of analyses where the overall effect size is re-estimated by removing one study in each successive analysis. That is, in the first analysis, all studies except the first are included. In the second analysis, all studies except the second are included, and so on. It is a potential shortcoming of meta-analyses that overall effect sizes can be overestimated due to a publication bias in favour of significant findings. To approach this "file drawer problem," the following four indicators of publication bias were included: funnel plot, Rosenthal's fail-safe N, Duval and Tweedie's trim and fill procedure, and Egger's regression intercept (Borenstein et al., 2009). The procedure proposed by Hedges and Olkin (1985) was used to investigate potential moderator effects. The presence of a moderator is indicated by a statistically significant Q_{Between}, which suggests a difference between the mean effect sizes across groups.

Results

The literature search resulted in 84 quantitative studies covering at least one level of workplace resources. Thirty-four studies covered individual resources, 17 examined group-level resources, 31 studied leader resources, and 48 included organisational resources. The majority of studies (45) explored resources at only 1 of the IGLO levels, 27 studies explored resources at 2 levels, and 8 studies included resources at 3 levels. Only 4 of the included studies examined resources at all 4 levels. The individual resources most often studied in relation to both employee well-being and performance were the four resources of self-efficacy, hope, optimism, and resilience that together form Psychological Capital (PsyCap; Luthans & Youssef, 2004). Four studies examined all four components of PsyCap, whereas self-efficacy on its own was examined in seven studies. Hope and optimism were each explored in one study. Resilience was explored in two studies, but in one study as a group-level construct. Job crafting, that is, the alterations employees make to their work in order to change the task, relational, and cognitive boundaries of their work (Wrzesniewski & Dutton, 2001), was explored in seven studies.

The group-level resources were most often studied as social support (seven studies), the fit between the group and the person (two studies), and characteristics related to the team (such as team learning or team climate; two studies). Job crafting was also explored in one study as a group-level construct.

At the leader level, the resource most often studied was LMX, that is, a good quality relationship between a leader and employees (10 studies; Graen & Uhl-Bien, 1995), followed by transformational leadership (seven studies). Transformational leaders are those leaders who intellectually stimulate their employees, act as role models, formulate a clear vision for the future, and show understanding for individuals' needs (Bass & Riggio, 2006). Only two studies focused on transactional leadership (transactional leaders focus on fulfilling employees' needs for reward and recognition in exchange for employees completing their job requirements; Bass & Riggio, 2006) and four studies focused on supervisor social support.

At the organisational level, 15 studies examined autonomy. Only one study examined all five job characteristics of Hackman and Oldham's (1976) JCM. HR practices as a cluster were examined in four studies. Eight studies examined one or more specific elements of HR practices such as compensation-based schemes (four studies), training (three studies), career supporting activities (two studies), and performance appraisals (one study). Eight studies focused on POS and four studies examined the fit between the person and the organisation.

Meta-analysis

Weighted average relationships between the resources and the summary indicators of well-being and performance as estimated with a random effects model are displayed in Table 1. Answering Research Question 2, 30,317 respondents and 91 independent estimates gave an average correlation of .29 (95% CI = 0.23–0.34) with well-being. High levels of heterogeneity were found between the studies ($Q_{within} = 2438.65$; $p < .001$; $I^2 = 96.31$). A sensitivity analysis removing 1 study at a time resulted in 91 point estimates (one for each removal), with estimates ranging from $r = .28$ to $r = .29$.

Table 1. Overall relationships between resources, well-being, and performance (random effects model).

Outcome	*K*	*N*	Mean *r*	95% CI	80% PI	Q_{within}	I^2	τ	τ^2
Well-being	91	30,317	.29	0.23–0.34	.06–.51	2438.65***	96.31	.27	.07
Performance	92	29,624	.21	0.17–0.25	.04–.37	1232.28***	92.62	.19	.04

Note: *K* = number of correlations; *N* = total sample size for all studies combined; mean *r* = average weighted correlation coefficient; 95% CI = lower and upper limits of 95% confidence interval; 80% PI = lower and upper limits of 80% prediction interval.
***$p < .001$; ^{ns}not significant.

It showed no ineligible impact of any study. Duval and Tweedie's trim and fill procedure revealed no missing studies to the left of the mean. Altogether 18 missing studies were identified to the right of the mean. This shifted the point estimate to .37 (95% CI = 0.31–0.42). The classic fail-safe *N* indicated that 1487 missing studies were needed to bring the *p*-value above the α level. Following the recommendations for interpretations by Sterne et al. (2011), a funnel plot showed that the studies were equally distributed around the mean, thus suggesting that there were no missing studies. Funnel plots are available upon request from the first author. Egger's regression test showed that the intercept was not different from zero ($B_0 = -.03$; 95% CI = −2.25 to 2.17), thus indicating symmetry in the included studies.

Also, in answer to Research Question 2 and based on 29,624 respondents and 92 independent estimates, the analysis of relationships between resources and performance yielded an average correlation of .21 (95% CI = 0.17–0.25). High levels of heterogeneity were found between the studies ($Q_{within} = 1232.28$; $p < .001$; $I^2 = 92.62$). A sensitivity analysis removing 1 study at a time resulted in 92 point estimates (1 for each removal), with estimates ranging from $r = .20$ to $r = .21$, thus showing no impact of any individual study on the overall estimate. Duval and Tweedie's trim and fill procedure revealed no missing studies to the left of the mean, whereas 23 missing studies were found to the right of the mean. The missing studies to the right shifted the point estimate to $r = .27$ (95% CI = 0.23–0.30). The classic fail-safe *N* indicated that 5695 missing studies were needed to bring the *p*-value above the α level. A funnel plot showed that the studies were more or less equally distributed around the mean. Egger's regression test showed that the intercept was not different from zero ($B_0 = .99$; 95% CI = −0.53 to 2.51).

In summary, the answers to our first and second research questions were that (a) resources had mostly been studied at the organisational level, while group-level resources have received the least attention in relation to both employee well-being and performance and (b) resources were significantly related to both well-being and performance.

Moderation analyses

Our third research question was related to the strength of the relationships between workplace resources at the four levels and well-being and performance: Are resources at some levels more strongly related to these outcomes than resources at other levels? In order to determine the impact of the level of resource (IGLO) on correlations between resources and outcomes, a moderation analysis was conducted to examine average weighted correlations at the four different levels. The findings on well-being are presented in Table 2, whereas the findings on performance are displayed in Table 3. The moderator analyses

Table 2. Findings from moderator analyses of point estimates for the correlations between resource levels and indicators of well-being (random effect models).

Outcome	*K*	*N*	Mean *r*	95% CI	80% PI	Q_{within}	I^2	τ	τ^2
Individual	41	8504	.24	0.16 to 0.33	−.00 to .49	1092.73**	96.34	.28	.08
Group	18	6697	.25	0.16 to 0.33	.08 to .41	211.50**	91.96	.19	.04
Leader	32	7507	.27	−0.19 to 0.35	.07 to .47	462.09**	93.29	.23	.05
Organisation	54	22,669	.31	0.24 to 0.38	.08 to .54	1701.90**	96.87	.27	.08

Note: *K* = number of correlations; *N* = total sample size for all studies combined; mean *r* = average weighted correlation coefficient; 95% CI = lower and upper limits of 95% confidence interval; 80% PI = lower and upper limits of 80% prediction interval.
*$p < .05$; **$p < .001$; ^{ns}not significant.

for both well-being ($Q_{between} = 1.83$; $df = 3$; $p > .05$) and performance ($Q_{between} = 91.63$; $df = 3$; $p > .05$) resulted in non-significant $Q_{between}$ values, thus indicating the established associations with both outcomes are consistent across levels.

In answer to Research Question 4, a moderation analysis showed no significant ($Q_{between} = 2.19$; $df = 2$; $p > .05$) difference in magnitude between cross-sectional ($K = 76$; $r = .30$, 95% CI = 0.24–0.36) and longitudinal ($K = 10$; $r = .21$, 95% CI = 0.11–0.31) studies in terms of the relationship between resources and well-being. With regard to performance, cross-sectional studies ($K = 71$; $r = .23$, 95% CI = 0.18–0.28) reported significantly ($Q_{between} = 10.73$; $df = 2$; $p < .01$) stronger associations between resources and performance when compared to studies with a longitudinal design ($K = 12$; $r = .12$, 95% CI = 0.06–0.18).

To determine whether rating source had an impact on the association between resources and performance (Research Question 5), we conducted a moderation analysis with rating source as the conditional factor. Five performance outcomes were measured at the organisational level, whereas 25 were measured at the group level. All other performance outcomes were measured at the individual level. As displayed in Table 4, studies using objective performance data ($K = 7$; $r = .09$; 95% CI = 0.03–0.15) provided a significantly ($Q_{between} = 12.05$; $df = 2$; $p < .01$) smaller estimate of the associations between resources and performance when compared to leader/third-party rating ($K = 43$; $r = .23$; 95% CI = 0.16–0.30) and self-rating studies ($K = 26$; $r = .23$; 95% CI = 0.16–0.30). On interpreting this finding, it should be noted that the number of objective data studies was small, and that the objective data studies had very low heterogeneity, that is, the effects being estimated in the different studies could be considered as relatively similar.

In summary, from our examination of the moderation research questions, we found no significant differences in terms of how strongly resources are related to employee well-

Table 3. Findings from moderator analyses of point estimates for the correlations between resource levels and indicators of performance (random effect models).

Outcome	*K*	*N*	Mean *r*	95% CI	80% PI	Q_{within}	I^2	τ	τ^2
Individual	42	8104	.21	0.14–0.27	.03–.39	560.72**	92.69	.22	.05
Group	17	5991	.17	0.09–0.26	.03–.32	143.23**	88.83	.17	.03
Leader	32	7619	.22	0.17–0.27	.11–.33	156.23**	80.16	.13	.02
Organisation	57	22,715	.20	0.15–0.25	.04–.37	0.32**	93.34	.19	.04

Note: *K* = number of correlations; *N* = total sample size for all studies combined; mean *r* = average weighted correlation coefficient; 95% CI = lower and upper limits of 95% confidence interval; 80% PI = lower and upper limits of 80% prediction interval.
*$p < .05$; **$p < .001$; ^{ns}not significant.

Table 4. Findings from moderator analyses of point estimates for the correlations between resources and indicators of performance as differentiated by rating source (random effect models).

Level	*K*	*N*	Mean *r*	95% CI	80% PI	Q_{within}	I^2	τ	τ^2
Self-report	26	25,824	.23	0.16–0.30	.07–.31	501.03**	95.01	.19	.04
Leader/third party	43	23,468	.23	0.16–0.30	.02–.44	585.58**	92.93	.25	.06
Objective	7	3409	.09	0.03–0.15	.09–.09	3.03^{ns}	0.00	.00	.00

Note: *K* = number of correlations; *N* = total sample size for all studies combined; mean *r* = average weighted correlation coefficient; 95% CI = lower and upper limits of 95% confidence interval; 80% PI = lower and upper limits of 80% prediction interval.
*$p < .05$; **$p < .001$; ^{ns}not significant.

being and performance across the four levels: IGLO (Research Question 3). In answer to Research Question 4, we found that cross-sectional studies showed stronger relationships than longitudinal studies when studying performance as an outcome, but not well-being. In response to Research Question 5, the findings showed that objective performance studies provided smaller relationships between resources and performance than self-rated and leader/third-party-rated performance studies.

Discussion

Overall, our meta-analysis confirms that workplace resources at all the IGLO levels are related to both employee well-being and performance. Our main contributions are to (1) operationalise a four-level classification system of resources that may help organisations in determining where to focus their intervention efforts, (2) highlight the significance of resources at the IGLO levels that are related to both employee well-being and performance, (3) identify by meta-analyses which resources may be most strongly related to well-being and performance, and (4) illustrate potential moderators of the relationships between workplace resources and well-being and performance.

Our first research question considered which resources at the four IGLO levels were identified in the literature. We concluded that organisational-level resources were more often explored. The organisational resource most often explored was autonomy. This is hardly surprising as autonomy plays a crucial role in prominent work environment models such as the JCM (Hackman & Oldham, 1976) and the DC model (Karasek & Theorell, 1992). Interestingly, the second most often studied organisational resource was HR practices. Recent studies providing evidence on the impact of HR practices suggest that they promote organisational performance through their positive influence on employee well-being (van De Voorde et al., 2012). This evidence is often outlined in terms of the mutual gains perspective of HRM, according to which HR practices are associated with benefits for both employees (e.g. through enhanced job satisfaction) and the organisation (e.g. through workplace productivity). Sceptics of the mutual gains perspective have raised concerns that the benefits of HR practices are often skewed in favour of the organisation at the expense of employee well-being (Ogbonnaya, Daniels, Connolly, & van Veldhoven, 2017). They argue that HR practices are utilised primarily to drive organisational performance and may thus be experienced by employees as a form of work intensification. We found meta-analytic support for the mutual gain perspective.

The group-level variable most often studied was social support, which is also a central component in the revised DC-S(ocial support) model (Karasek & Theorell, 1992).

Relatively few studies examined team characteristics, which may to some extent be surprising due to the interest in group-based job design (Mathieu et al., 2008). The leader resources most often studied were LMX and transformational leadership. These two variables are some of the most studied in the leadership field (Avolio, Walumbwa, & Weber, 2009), so it is hardly surprising that they came out strongly in our review. Supervisor support which is central to the DC-S model received less attention. The individual resources attracting most scholarly attention are PsyCap, often measured as one construct, but in some studies, as subcomponents of self-efficacy, resilience, hope, and optimism. Recently job crafting, that is, the behaviours employees engage in to create a good person–environment fit, has gained popularity.

In answer to our second research question, we can conclude that workplace resources are related to both employee well-being and performance. These results are in line with previous meta-analyses that have examined resources in relation to well-being (Crawford et al., 2010; Halbesleben, 2010). We found that no workplace resource at a particular level was more strongly related to employee well-being and performance (Research Question 3). Together the answers to these two research questions support the JD-R model where resources play both intrinsic and extrinsic motivational roles, that is, satisfy individual needs and support the achievements of work goals, resulting in both good well-being and performance (Bakker & Demerouti, 2007). To retain statistical power, we did not explore specific resources at each level, but our literature review revealed the type of resources organisations may focus on. These resources include those that promote job crafting, social support, a good quality relationship between leaders and employees, and, at the organisational level, a job design that affords a high level of job autonomy.

Research Question 4 was concerned with the extent to which the relationships between workplace resources and well-being and performance depended on the study design. We compared cross-sectional and longitudinal designs (no experimental designs were identified). We found that the relationship with performance was stronger in cross-sectional studies compared to longitudinal studies. There are two possible explanations for this finding. First, it is possible that there may be immediate "effects" of resources; however, over time the relationships may be weaker. Another explanation may be that inflated correlations present a problem in cross-sectional designs (Lindell & Whitney, 2001). It is not within the scope of the present paper to discuss which methods may be employed to reduce the risk of inflated correlations. For an in-depth discussion, we refer to Podsakoff et al. (2003) and Podsakoff, MacKenzie, and Podsakoff (2012).

Adding to the debate on whether self-reports are reliable (Atwater et al., 1998; Fletcher & Baldry, 1999), we found that the associations between resources and performance were weaker when performance was measured using existing organisational data (objective performance) compared to ratings provided by the individual or the leader or other third party. In answer to Research Question 5, we can thus conclude that there is a difference in the strength of the relationship between resources and performance depending on how performance was rated. Our results add to the debate as to whether self–other discrepancies exist for performance ratings (e.g. Allen et al., 2000). Our result suggests that employees may be biased when rating their own performance (Taris, 2006) and that common method bias may pose a threat (e.g. Podsakoff et al., 2003), particularly because the majority of studies included employed a cross-sectional design. Also, leader

or other third party ratings may be biased in comparison to objective data, suggesting that objective ratings of performance should be obtained where possible and appropriate.

Implications for practice

By identifying which workplace resources at the IGLO levels are important to both employee well-being and performance, we provide valuable information to organisations as to which levels they should focus their workplace initiatives and interventions to promote both employee well-being and performance. Overall, our results suggest that organisations may successfully improve employee well-being and performance through interventions aimed at building resources at any of the four levels. There is, however, a body of literature to suggest that interventions at multiple levels are preferred due to the potential synergistic effects. For example, teamwork structures can be implemented to build social capital (group-level resource), and at the same time, autonomy (organisational-level resource) may be supported by training employees in problem-solving (an individual resource) and leaders on transformational leadership skills (a leader-level resource) (Nielsen, Randall, & Christensen, 2010). This illustration is consistent with the central element of COR theory (Hobfoll, 1989), which concerns the creation of resource caravans: employees high in self-efficacy can more actively engage with their peers and line managers. Thus, training people in self-efficacy may create additional resources, enhancing team climate and enabling leaders to exert transformational leadership behaviours (Nielsen & Munir, 2009). Studies have found that interventions may increase resources at the IGLO levels (van der Klink et al., 2001; Michie & Williams, 2003) and we suggest that multilevel interventions may be a way forward based on this literature. It is important to note that interventions at some levels may be less appropriate depending on the organisational context. For example, among distributed workers, group-level interventions may be less effective than individual-level interventions.

Strengths and limitations

The present review has a number of limitations that must be acknowledged. First, we constrained our search strategy to high-impact journals. If we had cast the net wider and included the grey literature, that is, non-commercial and non-academic literature, we may have identified more resources. However, a comparison between non-published and published literature reveals no differences in the percentage of non-significant correlations (Dalton, Aguinis, Dalton, Bosco, & Pierce, 2012), suggesting that we would not have found more resources. By including only quantitative studies, we may also have lost valuable information about important contextual information provided in qualitative studies. In future research, it would be worthwhile including a qualitative or case study approach to explore the local, regional, and national contexts and the dynamics between IGLO levels in different workplaces. Our meta-analysis could thus be supplemented by meta-syntheses and/or realist syntheses.

A second limitation refers to the classification of variables. Based on our heuristic four-level model, we categorised different levels of resources as antecedents of employee well-being outcomes, for example, work engagement. In some of the studies included, well-

being was operationalised as an organisational resource (e.g. Shipton, West, Parkes, Dawson, & Patterson, 2006). Based on this overlap between antecedents and outcomes, there are issues in explaining the causal influence between particular resources and employee outcomes. However, we argue that, based on our four-level model and classification according to the source of the resource, there was significant evidence to support a relationship between different levels of resources and employee well-being as an outcome.

A third limitation is that although we only included studies that examined both employee well-being and performance in the same sample, not all workplace resources were tested in relation to both outcomes. Where relationships were not tested and reported, we cannot know whether they were in fact tested, but not included because they showed no relationship or even the opposite relationship from that expected.

Fourth, meta-analysis has been viewed as an efficient approach to synthesise research findings, especially since stronger conclusions may be reached, compared to traditional impressionistic literary reviews (cf. Hunter & Schmidt, 2004; Lipsey & Wilson, 2001). Although a meta-analysis does not resolve the limitations inherent in the existing individual studies, this approach has the advantage of shifting the focus to the whole body of research on a given topic by bringing effects, strengths, and limitations of the field into sharper focus. Using such a meta-analytical approach as a remedy for the inconclusiveness in the existing literature, we add to the current understanding of the relationships between workplace resources and well-being and performance.

In the present meta-analysis, we included cross-sectional studies and we are, therefore, unable to conclude on reciprocal effects and causality, but can only conclude that the relationships between the four levels of resources and well-being and performance can be established across a large number of studies. It should be also noted that there are, despite the cumulative strength of meta-analysis, several issues which a meta-analysis is not able to resolve and which should be considered when interpreting the findings. Reliance on self-report survey data is one commonly cited issue, raising concerns regarding socially desirable responses, as well as other data collection phenomena, such as demand characteristics.

Furthermore, it would have been interesting to explore whether resources had a stronger relationship with work-related well-being compared to non-work-related well-being; however, few studies included non-work-related well-being, making it impossible to perform a reliable analysis.

Finally, it could be argued that using a very broad approach including many different types of resources under each cluster, we are comparing "apples and oranges." For example, HR practices may serve to improve employee commitment, whereas autonomy, another organisational-level resource related to the design of the job, may be related to employees' work engagement. Although the nature and impact of each resource may vary depending on what aspect of an individual's job experience it affects, the focus of our paper is on the overall importance of clusters of resources at each IGLO level and we acknowledge that we are unable to examine unique relationships. This is a common criticism of meta-analyses and, therefore, is also relevant to our study.

Conclusions

Our literature review identifies workplace resources at the IGLO levels that have been studied in relation to both employee well-being and performance. We offer a pragmatic

classification system of resources depending on the source of the resource. Our results provide important knowledge for organisations as to how, who, and what they need to target when aiming to improve both employee well-being and performance in the same intervention. At the individual level, PsyCap and job crafting were most often examined. At the group level, social support among colleagues was most often explored; at the leader level, a good quality relationship between leader and employees and transformational leadership were most often examined. Finally, at the organisational level, autonomy and HR practices have received most attention. We found that resources at all four levels were significantly related to both employee well-being and performance. Our results, therefore, suggest that interventions focused on any of these resources, and potentially in combination, may be successful in improving both employee well-being and performance.

Another contribution of the present study is the overview of where the research on resources has to date been focused. Organisational-level resources are more often studied, while resources at the individual, group, and leader levels have received less attention. Future studies should focus on how workplace resources may impact both employee well-being and performance to create mutual gains. Research is needed to explore which interventions and ways of implementing them may help organisations develop workplace resources to promote happy and productive workers.

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