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Conceptualizing social well-being in activity-based offices

Conceptualizing
social well-being

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Abstract

Purpose – The purpose of this article is to aid conceptualization of social well-being at work by identifying its components in a contemporary office context, so adequate measures can be developed to monitor social well-being and to assess the impact of interventions in the workplace.

Design/methodology/approach – This study used existing interview data from recent post-occupancy evaluations of two large activity-based flexible offices in the Dutch public sector. Data-driven concept mapping of 182 different employees' statements on social aspects of well-being was used to find communalities in their perceptions.

Findings – From the data 14 key concepts emerged referring to employees' social needs, reactions to (anti-) social behaviour of others and perceived social affordances of the work environment. Contrary to established theory, social well-being appeared to be a context-bound phenomenon, including components of both short-term hedonic and long-term eudaimonic well-being.

Research limitations/implications – The findings serve as an inductive source for the further development of adequate measures of social well-being at work. Limitations concern the specific (cultural) setting of the cases and the use of existing data.

Practical implications – Preliminary suggestions for fostering social well-being include change management, participatory design, being alert of the identified risks of activity-based offices and supporting privacy regulation, identity marking and a sense of community, as well as a diversity of informal face-to-face interactions balanced with quiet spaces.

Originality/value – This article contributes to the conceptualization of social well-being in contemporary offices by discussing established social well-being theory and analysing real-world data, using a method novel to management research.

Keywords Social well-being, Social interaction, Activity-based working, Office, Concept mapping

Paper type Research paper

Currently, many organizations have programmes to support employee's health and well-being (Browne and Evans, 2018). This is not surprising, since higher employee well-being has shown to increase organizational performance and decrease turnover (Harter

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et al., 2003; De Voorde *et al.*, 2012). For human beings, interactions and relationships with people around them are crucial to their health and well-being (Baumeister and Leary, 1995; Diener and Seligman, 2004; Ryff and Keyes, 1995). This also applies to the work environment (Kahn, 2007). As Rath and Harter (2010) state: “We are social beings, and our need to be connected to others does not disappear when we enter the office.” The organization benefits as well, because face-to-face contact at work boosts mood and productivity (Pinker, 2014), and high-quality connections are a source of organizational improvements (Dutton and Heaphy, 2003). Additionally, friendship (Lopes Morrison, 2005) and perceived inclusion (Chen and Tang, 2018) at work increase engagement. For many, the current COVID-19 pandemic requiring long periods of social isolation and working from home has increased awareness of their social needs in the workplace: they miss meeting co-workers in the office (Gensler Research Institute, 2020).

Fostering employee well-being requires proper measurements covering this important social dimension, to determine the need for and impact of interventions and to monitor well-being over time. Still, conceptualization and measurement of social well-being at work are in its infancy (Fisher, 2014) compared to physical and mental well-being. Organizational literature covers many social aspects of employee well-being, such as professional isolation (Golden *et al.*, 2008), loneliness in the workplace (Wright *et al.*, 2006), incivility (Schilpzand *et al.*, 2016) and conflict (Ayoko *et al.*, 2003), but there have been few attempts to conceptualize the social dimension as a whole. This holistic view is important because a positive experience of one aspect of social well-being could be undermined by a negative experience on other aspects. Also, relatively few connections have been made with the office environment (Appel-Meulenbroek *et al.*, 2018). In organizational research, the role of the physical environment has long been outside the usual scope (Ashkanasy *et al.*, 2014; Khazanchi *et al.*, 2018), while it is clear that the social and physical work environments are intertwined (e.g. Ayoko and Ashkanasy, 2020; Gifford, 2014, p. 342; Sander *et al.*, 2019). Yet, in research on healthy offices, social aspects are underexposed (Bennett, 2018; Colenberg *et al.*, 2020; Forooraghi *et al.*, 2020). As noted recently, there is a need for clearer definition of well-being constructs in building research (Hanc *et al.*, 2019).

Developing a valid multiple-indicator measurement requires clear conceptual grounding (DeVellis, 1991; Rosas and Camphausen, 2007). The purpose of this article is, therefore, to aid scale development by identifying components of social well-being in office environments. First, current social well-being theory and related characteristics of activity-based offices, given the current trend in office environments, are analysed. Second, social well-being components are identified as they have emerged from case-study data. The results are discussed in the light of scale development and workplace management.

Social well-being theory

Established theory

The most prominent conceptualization of social well-being is by Keyes (1998), published half a century after the 1948 World Health Organization’s acknowledgement of a social dimension to well-being, next to physical and mental well-being (WHO, 2006). Individual social well-being – as opposite to societal or sociological well-being – traditionally has been measured through satisfaction with social support and adjustment to the social environment, which is closely related to mental health (Larson, 1993). The positive mental health approach of functioning well in social life has been the premise of Keyes’ theory. He deduced five dimensions of social well-being from philosophy, social psychological theory and cultural analysis, reflecting the individual’s (1) *integration* in a community, feeling part of a group, (2) *acceptance* of diverse characters and qualities of other people, feeling comfortable with others, (3) perceived *contribution* to the community, feeling a valued group member, (4) *actualization* or belief in the

community's evolution, feeling hopeful about its progress and (5) perceived *coherence* of their social world, feeling they can understand what is happening around them. In psychological research, social well-being is positioned as the outer-directed aspect of well-being that complements hedonic inner pleasure and eudaimonic inner growth (Fisher, 2014; Gallagher *et al.*, 2009). Keyes levels social well-being with long-term and competence-oriented eudaimonic well-being (Ryff and Keyes, 1995; Ryff and Singer, 2008), together labelled flourishing (Keyes, 2002), and separates it from transient moods of hedonic well-being or happiness (Diener and Ryan, 2008). This separation characterizes two main streams of psychological well-being research, although it is still under debate if these also reflect two types of well-being (Biswas-Diener *et al.*, 2009; Gallagher *et al.*, 2009; Magyar and Keyes, 2019).

Application to work environments

Recent measurements of the social dimension of employee well-being (Czerw, 2019; Kazemi, 2017; Rautenbach, 2015; Redelinguys *et al.*, 2019) rely on Keyes' (1998) conceptualization. However, there is reason to believe that the phenomenon might be organized in a different way, at least in the context of specific work environments, which might explain unsatisfying consistency coefficients of aforementioned measurements (Kazemi, 2017; Page and Vella-Brodrick, 2009). For instance, Cockshaw *et al.* (2012) found that workplace belongingness and general belongingness are distinct constructs, although both are related to depression. Gallagher *et al.* (2009) found a better fit for their well-being model when positive relationships, part of eudaimonic well-being (Ryff and Singer, 2008), were moved to the social dimension, serving as an addition to Keyes' dimensions. Considering this, as well as the notion that high-quality connections (Dutton and Heaphy, 2003; Stephens *et al.*, 2011) include both positive short-term interactions and longer-term relationships, Fisher (2014) proposes the following conceptualization of social well-being at work: "*feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others*". This definition taps into hedonic well-being and acknowledges the role of emotions and affective events at work as well as the eudaimonic notion of meaning and purpose. Integration of short-term and long-term aspects also characterizes Morrison and Macky's (2017) socially oriented well-being measure aiming at workplace evaluation. As Kazemi (2017) discusses, maybe Keyes' dimensions reflect conditions contributing to social well-being and not the sense of social well-being *per se*.

Social interactions, relationships and belongingness

Fisher's (2014) definition might be a useful start for further conceptualization of social well-being at work, but first its dimensions require elaboration. Feeling embedded in a meaningful community refers to the need to belong (Baumeister and Leary, 1995); its satisfaction called belongingness (Malone *et al.*, 2012). It may comprise concepts such as a sense of community, affective and normative organizational commitment and group cohesion, and on the negative side loneliness, social exclusion and ostracism. Sense of community results from feelings of inclusion, importance and mutual benefit, as well as shared emotions with others at work (Blatt and Camden, 2007), which refers to social interactions. Social interaction can range from noticing other people's presence to deliberate exchange of information. In essence, social interaction refers to seeing, hearing, smelling and touching other people (Argyle, 1968). It involves verbal and nonverbal behaviour between two or more individuals and can be contextual or enabling (De Jaegher *et al.*, 2010). In open workspaces, conscious co-presence is an important contextual aspect, whereas verbal and non-verbal interactions enable transaction of information, including knowledge, feelings and emotions. Social interactions can be experienced positively or negatively. Positive interactions at work hold the subjective experience of vitality, positive regard and

mutuality, and they help building and maintaining relationships (Stephens *et al.*, 2011), which provide emotional and instrumental social support (Dutton and Ragins, 2007). Friendships, referring to informal and expressive relationships that include personal and confidential communication (Khazanchi *et al.*, 2018), are particularly beneficial for well-being. In summary, Fisher's (2014) conceptualization includes cognitive and emotional long-term and short-term reactions to the presence and behaviour of other people at work and to representations of a work community, being a formal team, department or organization or an informal group of co-workers.

Contemporary office context

Currently, many people in the Western world work in offices which increasingly feature open workspaces and desk-sharing. The ongoing trend is an office concept referred to as activity-based working (Engelen *et al.*, 2019) or activity-based flexible office (Wohlers and Hertel, 2017), offering a diversity of open and enclosed spaces designed to support different work activities, usually accompanied with a policy of desk-sharing (Brunia *et al.*, 2016). Field assumptions behind this office concept are that open spaces and flexible use of workstations increase communication, which should be beneficial to collaboration and performance. This seems a simple causal relation but is actually a complex mutual interaction, since the physical work environment does not determine employee behaviour (Gifford, 2014, p. 341; Vischer, 2008). Moreover, simply more communication is not always better for (social) well-being.

Although the diverse activity-based working environment is relatively new, open-plan and flexible (non-territorial) offices have been around for a few decades now, and research on the impact of open workspaces and desk-sharing on social interaction and well-being has been cumulating. Partly in accordance with aforementioned assumption, open workspaces featuring desk-sharing have been found to better support affinity than private offices (Bodin Danielsson and Bodin, 2009). Good opportunities for communication and interaction have also been found advantages of activity-based offices (Engelen *et al.*, 2019).

However, open workspaces have been associated with increased noise and lack of privacy (Bodin Danielsson and Bodin, 2009) too, which outweighed the benefits for communication (Kim and de Dear, 2013), worsened interpersonal relations (De Croon *et al.*, 2005) and increased conflict (Bodin Danielsson *et al.*, 2015). Furthermore, employees in flexible, or non-territorial, offices experienced more uncooperative behaviours, feelings of distrust and negative relationships compared to employees with their own workspace (Morrison and Macky, 2017). Hirst (2011) noted that the flexible use of workstations, or hot-desking, may create social tensions, mutual indifference and a sense of isolation from colleagues. Haapakangas *et al.* (2019) found that, after moving to an activity-based office, employees' belongingness and satisfaction with communication had decreased, and employees who came from private offices experienced negative effects on social support. When moving from open plan with assigned desks to a non-territorial activity-based office, reasons for dissatisfaction with the working environment were the high workstation-occupancy ratio, teams being split up, difficulties in finding colleagues and perceived injustice due to nesting (Rolfö *et al.*, 2018).

In summary, the activity-based working environment can impact social well-being in many ways, both positively and negatively. However, it remains unclear what social well-being as a whole comprises in these specific work environments. Considering the possibly context-sensitive nature of social well-being and empirical research on specific demands and resources of activity-based offices regarding social aspects of well-being, this study aims to answer the following research question: "What are components of social well-being in activity-based offices?"

Method

Using existing case-study data

This study used interview data from recent post-occupancy evaluations of two activity-based offices in the Dutch public sector. The choice for public offices is based on the observation of Engelen *et al.* (2019) that this sector is underexposed in activity-based office research. These two cases represent the latest standards for Dutch governmental offices, such as an employee–desk ratio of 0.9 to 0.7, a minimum of 6 m² floor space per desk and an average occupancy of 75% on peak days (Rijksvastgoedbedrijf, 2015).

Both cases are renovation projects where employees were brought together from several big and small offices located elsewhere into one large office (over 1000 workstations) emphasizing open-plan layout and featuring desk-sharing. In both cases for some employees, desk-sharing was new, while others already were used to it. Although officially non-territorial, most floors were assigned to (sub)departments, sharing building facilities. The evaluation was conducted by the Center for People and Buildings around 6–12 months after the organizations had moved into the new offices and included occupancy measures, a building assessment and an online survey followed by deepening group interviews (focus groups). This article used data from these live documented 60–90 min interviews with 2–8 employees each, who volunteered to participate and were grouped by department. The participants were not questioned directly about their social well-being, but aspects of social well-being came up while they were discussing their experiences with the new work environment. They were asked to name positive and negative aspects of their new work environment, to explain their feelings and to discuss possible solutions for perceived problems. Focus groups like this allow participants to bring up issues they deem significant and to challenge each other's views, offering the researcher insights in the way people collectively make sense of a phenomenon (Bryman, 2016, pp. 501–503).

Identifying key concepts through concept mapping

To identify communalities in the interviewees' perceptions of social well-being, concept mapping was performed, a conceptualization methodology used in a wide variety of disciplines (Trochim, 1989, 2017). It consists of a multi-step process of quantitative and qualitative analysis resulting in a conceptual map of related concepts. Concept mapping is a useful technique for specifying target constructs in an inductive approach to scale development (Rosas and Camphausen, 2007) and for thematic analysis (Jonsen *et al.*, 2009). Also, it offers a solid method for establishing content validity (Rosas and Ridings, 2017) and improves reliability of text analysis by coupling human judgement to statistical analysis and by engaging the target group (Jackson and Trochim, 2002).

Following the approach of Jackson and Trochim (2002), in our study the first step (see Figure 1) involved unit creation by cutting different interviewees' statements (a maximum of two sentences) on social well-being from the interview transcriptions and pasting them into an Excel file. Criteria for statement extraction were (1) content relating to aforementioned descriptions of social interactions, relationships and belongingness, following Fisher's (2014) definition of social well-being, and (2) substantial literal difference to previous extractions, since this study aims to *identify* themes rather than gather data on frequency or importance of topics. The extraction procedure was terminated after the analysis of the 19th group interview, at the number of 182 units, considering the capacity of human sorters to handle a maximum of 150–200 units each (Jackson and Trochim, 2002). Also, at that time no substantially different statements were coming forward, so criterion b seemed to be saturated. Saturation is recognized as a guiding principle in determining sample size of (group) interviews (Bryman, 2016, p. 418; Mason, 2010).

The second step included manually grouping the employees' statements, which were printed on paper strips to provide the sorters with a better overview than on screen

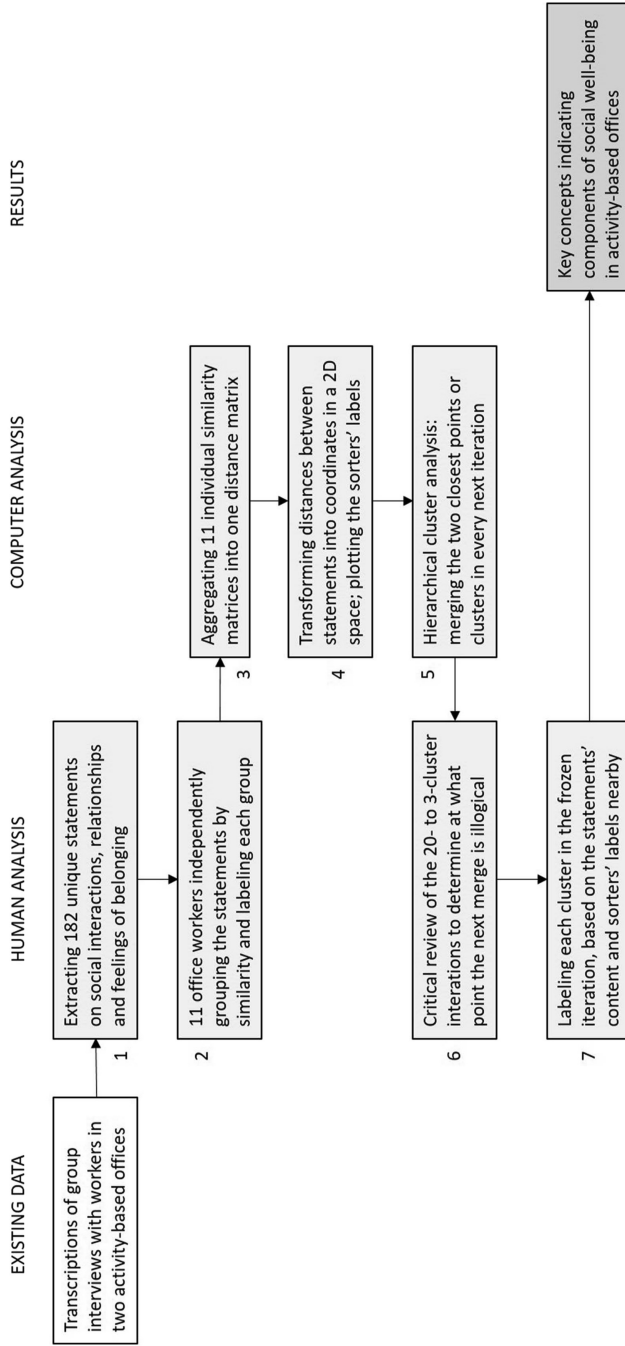


Figure 1. Overview of the concept mapping procedure taking seven steps

(Trochim, 2017). Trochim (1989) has suggested that a minimum of ten sorters is needed for a reasonable output reliability. In this study, 11 office workers – having experienced activity-based offices and being native Dutch speakers – volunteered to sort the 182 statements by content similarity and to label their self-determined groups. For each of them, the sorting task took around 90 min, which underlines the maximum capacity of 200 units.

Steps 3–5 (see Figure 1) included computer analysis of the statements' mathematical similarity. First, the 11 binary similarity matrices that indicate if statements belong to the same group or not, according to the sorter, were aggregated into one distance matrix. On this matrix, *t*-stochastic neighbour embedding was performed using Ward's algorithm and Python scikit-learn (Pedregosa *et al.*, 2011), chosen to realize maximal distinction and internal consistency of the groups in a clear visualization (Van Der Maaten and Hinton, 2008). Their distances translated into coordinates, the statements were plotted in a two-dimensional space, including the sorters' labels. The hierarchical cluster analysis started with the 182 statements as single units, merging the two closest ones in every next iteration. From the 20–3-cluster stage, every iteration was studied to determine when further merging was considered illogical based on content. In the last two concept mapping steps, human judgement was used again to freeze the merging procedure at a logical moment and to label the clusters based on their statements' content.

Additional analysis for concept interpretation

Parallel to the concept mapping, the individual statements' content was reviewed to support the interpretation of the concepts to emerge. Two native Dutch speakers independently determined if the statement was phrased in a negative, neutral or positive way (inter-rater consistency $\kappa = 0.814$) and if it referred to short-term interactions, long-term relationships or feelings of belonging ($\kappa = 0.811$). Both reviewers entered their judgements into the Excel file. After termination of the cluster analysis, the statements were sorted by their cluster.

Results

Identified: 14 concepts in three areas

Figure 2 shows the 14 key concepts that emerged from the interview data, visualizing the statements' similarity, as judged by the sorters, by their spacing on the map (the closer the similar). The number of 14 concepts results from the decision to freeze the clustering process (Figure 1, step 6) before the statements on privacy and identity of the environment, two clearly different aspects, would have been merged. This number of 14 happens to be close to the sorters' average of 13 groups. The 14 key concepts are situated in three regions of meaning (Jackson and Trochim, 2002), or overarching categories, based on the 3-cluster stage of the analysis: social needs, experiences with (anti-)social behaviour of others and perceived social affordances of the physical environment. The number of statements per cluster rather reflects the duration or nuances of the conversation on this topic than the importance of the theme, since only distinctive statements were extracted, no matter their frequency.

Table 1 shows that according to the additional interpretative analysis, the 14 concepts together reflect long-term eudaimonic well-being, represented by belongingness and relationships, as well as short-term hedonic well-being represented by social interactions, while most of the statements emphasize short-term social interactions.

In the statements on social interaction, the interviewees described observations of different behaviours and ways of communicating and their emotional reactions to the presence and behaviour of random others. Most of the statements on relationships relate to encounters, proximity, community and norm setting, referring to maintenance of social ties through meeting and co-locating with colleagues and to clear rules of conduct as a way to stay

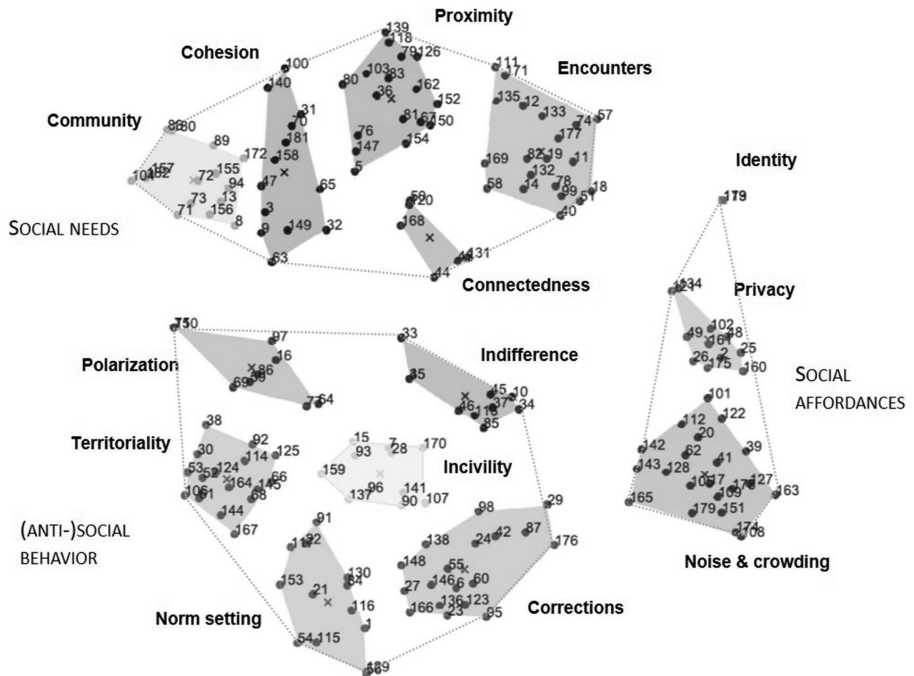


Figure 2. Each of the 182 employee statements on social well-being, grouped into 14 key concepts and three overarching categories that emerged from the concept mapping analysis

on good terms. Statements on belonging are prominent in cohesion, polarization and identity and mainly refer to familiarity with both people and environment, to group rights and obligations and to social exclusion. There is a negative tendency in the majority of statements on social well-being. Further, the identified concepts within the three main areas are described based on the included statements.

Social needs

One of three main topics of the extracted statements refers to the employees' thwarted or fulfilled social needs. As to negative experiences, they express how they feel disconnected from their close colleagues while having an emotional and functional need to be seated together. In their statements on connectedness and physical proximity, they refer to an increased social distance caused by the new office environment. They observe that to escape from the office noise and crowding, or because it feels useless to go to there if they cannot be with their co-workers, working from home has increased, resulting in less frequent co-worker contact. While in the office, the use of headphones makes co-workers look inapproachable, and contacts are formalized because deliberately meeting each other now requires appointments. Regarding community and cohesion, the interviewees observe less socializing, they miss "the traditional jokes", celebration of birthdays and staying in touch with personal events in their colleagues' lives. They express feeling like a visitor in their own office and missing the visibility of their team's work. Statements on these thwarted social needs reflect deterioration of close relationships and lack of belongingness as an observed downside of the new working environment in these cases.

Positive statements in the social needs area focussed on desirable encounters, such as the increase of spontaneous positive interactions while being on the move and at the coffee

Conceptualizing social well-being

		Inter- actions	Relation- ships	Belongingness	Illustrative statement
Social needs	Encounters	●●	●	●	"It is nice to meet new people."
	Cohesion	–	●	●●	"I feel like a guest in my own office."
	Proximity	●●	●●	●	"I miss having sparring partners around."
	Community Connectedness	●	●●●	●	"I miss the socializing."
(Anti) social behaviour		●	●	●●●	"Working from home has increased."
	Polarization	●	●	●●●	"People were sent away; "You do not belong here"."
	Territoriality	●●●	●	●	"Everybody creates a common for their own spot."
	Indifference	●●	●	●	"People do not report issues anymore."
	Norm setting	●●	●●	–	"Managers need to set the good example."
	Incivility	●●●	–	●	"We share a building but they behave like a jerk."
	Corrections	●●●	●	●	"I find it difficult to correct co-workers."
Social affordances	Identity	–	●●	●●	"It is sad what the guest reception areas look like."
	Privacy	●●●	●	–	"There's no place for confidential conversations."
	Noise and crowding	●●●	–	–	"I need less noise, less crowding, no doors opening behind my back, less chatting and telephone calls."

Table 1. Identified social well-being concepts and their relation to interactions, relationships and belongingness

Note(s): ● minority/●● around half/●●● clear majority/–none of the cluster's statements refers to this social well-being dimension

machine and the ease of meeting colleagues due to spatial openness and mobility. Interviewees also enjoy choosing their workstation based on, for instance, visibility (the manager who wants to be approachable to his team) or inspiration (in the proximity of interesting colleagues), increasing the chance of positive social interaction. They perceive the new working environment to invoke more informal communication as well as more diverse connections.

Co-workers' (anti-)social behaviour

The statements on co-workers' behaviour in the shared workspace are largely about negative social interactions, such as claiming workspaces, disregard and downright hostile reactions (polarization), excluding outsiders. They describe experienced, witnessed and instigated incivility, as distinguished by [Schilpzand et al. \(2016\)](#), which seems to be connected to scarcity of workstations and may be unintended judging from interviewee statements such as: "It is not clear to me if it's sabotage or ignorance". As territory marking is restricted by the office concept lacking possibilities to personalize the workstation or to lock drawers, the employees apparently resort to other strategies for marking and controlling their workspace. The statements on territoriality refer to identity marking, such as spreading out belongings and using one's voice as an audible marker and to both anticipatory and reactionary defences as defined by [Brown et al. \(2005\)](#). One of the interviewees describes a creative or perhaps

desperate strategy: “I came across a note saying ‘out of order’, but it turned out to be a reservation.” Another refers to social pressure: “Co-workers told me I was a fool to give up my workstation, so now I leave my stuff too.” They experience difficulties in correcting such behaviours of others, because they do not feel they have the right to do so, do not feel comfortable doing so, have had negative experiences while doing it or do not want to put the effort into it. Therefore, they desire more clear rules and stronger action taken by the managers (norm setting). The concept of indifference includes decreased responsibility, for instance, cancelling meeting rooms and reporting issues, emotional social support dealing with the new situation or the lack of support, as well as a positive side effect of less social cohesion being less social pressure to answer charges of absence. The only other positive statement in this overarching category refers to making an example by giving emotional social support.

Perceived social affordances

The third group of social well-being concepts that emerged from the concept mapping refers to social affordances (Gibson, 2014; Spreitzer *et al.*, 2020), properties of the environment facilitating or obstructing positive social interactions or feelings of belonging. The interviewees’ statements on the perception of these affordances are all negative. They refer to a lack of spatial enclosure and to the high spatial and social density, increasing the negative consequences of social interaction (noise, feelings of crowding) while not being able to control the amount of interactions. Many statements concern unwanted talking in an open workspace and the feeling of having nowhere to go for a (private) phone call: “My colleague prefers making calls in the toilet for the disabled.” Regarding belongingness there are two different remarks on the unwelcoming décor and a complaint on getting reprimands for hanging things on the wall.

Discussion

Theoretical implications

In addition to deductive models of social well-being (Fisher, 2014; Gallagher *et al.*, 2009; Keyes, 1998), this study serves as an inductive source of outer-directed well-being aspects that are significant to employees working in activity-based offices. The social well-being components identified reflect the broad spectrum as well as the significant nuances of social well-being as it is perceived in contemporary activity-based offices.

The results indicate that social well-being might not only include long-term, relatively stable eudaimonic well-being but also short-term hedonic well-being. Our data show that interviewees bring up how specific social interactions at work directly impact their well-being as well as how interactions, or lack of social contact, add up to thwarted belongingness and disintegration of social cohesion. This aligns with literature on relationship and community building (Blatt and Camden, 2007; Stephens *et al.*, 2011). In their statements the interviewees emphasize short-term interactions and emotional responses. This points at the significance of daily hassles in the office or affective events (Ashkanasy *et al.*, 2014) for social well-being and favours Fisher’s (2014) conceptualization of social well-being including both short-term and long-term well-being. After a period of opposition between these two philosophical traditions, namely hedonics questioning the conceptual and methodological sophistication of the younger eudaimonia and eudaimonics considering hedonic pleasure less important to a good life, several scholars now think both should be integrated (Henderson and Knight, 2012; Lambert *et al.*, 2015). As Waterman (2008) argued, eudaimonia does not exist without hedonia, which the concept mapping appears to confirm.

Regarding social well-being components, the results show that of Keyes’ (1998) five dimensions, only two are – to some extent – represented in the identified concepts. Although

the statements differ significantly from Keyes' operationalization into survey questions, it could be argued that the concepts of cohesion, community, connectedness and incivility refer to (1) social integration and that the perceived polarization, territoriality, indifference and norm setting relate to (2) social acceptance. None of the identified concepts seems to relate to (3) social contribution, (4) social actualization or (5) social coherence. Possibly this is the case because these dimensions require reflection on their own role and understanding from a higher level of abstraction, which apparently did not come up for discussion in the group interviews, at least not explicitly related to presence and behaviour of co-workers, supervisors or the organization and may be less significant to employee well-being.

Additionally, a new dimension has risen from the data, reflecting a connection with the physical context. This dimension comprised undesired social interaction, lack of support of relationship building and thwarted belongingness, as well as increased possibilities for positive interactions invoked by the environment. The concepts of the environments' visual identity, privacy support and noise and crowding caused by co-presence and positive encounters reflect the known pros and cons of activity-based offices as summarized earlier. This indicates that social well-being might not be a general phenomenon, reflecting functioning in social life anywhere, but a local phenomenon bound to (physical) context, reflecting the entanglement of social and physical environment.

Limitations

The cases' office workers were not directly asked about their social well-being, thus their statements refer to topics put forward by one or more group members. These topics might have been their most prominent or most recent experiences, or the ones that were easiest to talk about, particularly in a group interview. These could have been the negative experiences, because those are remembered more easily and in one of these cases the evaluation showed that the users were relatively dissatisfied. It is possible that especially dissatisfied employees volunteered to participate in the group interviews. Furthermore, the longer the discussion, the more different statements could have been made about the specific topic, possibly at the expense of other topics. This might explain the emphasis on short-term interactions, since these are more concrete and probably more frequent than thoughts about long-term relationships or community awareness. On the other hand, the topics that have come up do reflect participants' significant experiences.

Other limitations concern the cases' specific cultural setting (Dutch government offices), relatively dissatisfied users and size (over 1,000 workstations), as well as the one-researcher-only extraction of units and labelling of clusters. Using multiple interpreters and repeating the study with data from other settings, for example, smaller offices where people know each other better, offices where there is less scarcity on workstations, that have more enclosed spaces or where the users are more satisfied with their environment, could yield additional social well-being components to be considered in further conceptualization.

Directions for future research

The context-bound properties and hedonia–eudaimonia integration of social well-being found in this study require further exploration and validation, for instance, by developing and testing an occupational social well-being scale that captures the specific conditions in an activity-based office and addresses both hedonic and eudaimonic well-being. The study can be taken as a first step of inductive item generation, to be completed with deductive item generation from existing scales and theories and several iterations of testing and validation, as suggested by [Boateng et al. \(2018\)](#). An item pool could be built up by mapping items from existing scales onto the 14 key concepts. Additionally, the 14 concepts could be used as a conceptual coding scheme for analysing qualitative data on social well-being aspects in contemporary offices, which could lead to new items or concepts serving scale development.

Practical implications

The interviewees' statements on the impact of their new working environment provide knowledge for team managers as well as facilities and human resource management. To prevent decrease of social well-being when moving into an activity-based office, managers should carefully prepare their team for the new situation and discuss possible difficulties as described in this article. In the new environment they should be alert to the signs of weakening ties, environmental stress, conflict and withdrawal. They should keep in touch with their team, monitor social well-being, acknowledge the sense of loss of the old environment and act upon troubles, for instance, addressing an evolving incivility spiral (Andersson and Pearson, 1999) as soon as possible.

To facilitate building positive relationships and nurture feelings of belonging in activity-based offices, workplace managers and designers should carefully balance the visual and physical openness and standardization of the environment with the employee's need for privacy, identity marking and a sense of community. The interior surfacing should provide adequate sound absorbing and the work environment should offer a variety of spaces for personal conversations, uplifting chit-chat (Methot *et al.*, 2020), spontaneous encounters and social events, as well as possibilities for and marking of team and organizational identity. Participatory design that involves employees and managers could be a fruitful way to inform the design as well as enhance belongingness and feelings of ownership.

Regarding the return to the office after COVID-19 lockdown, managers should balance protection against the virus with support of relationship-building activities and give special attention to new employees' integration and staying in touch with home-workers. Now increased working from home is expected to stay, the office's social function as a meeting and community place will become even more important. This requires appropriate facilities for a larger proportion and diversity of face-to-face interactions, as well as hybrid meetings combining conventional and video conferencing, but this still has to be balanced with adequate spaces for rest and working individually. The office has to offer a welcoming place for work and bonding with co-workers and organization. A positive side effect of COVID-19 social distancing rules might be a reduction of crowding and related noise problems.

Although from a hygiene and belongingness perspective, fixed workstations might be better than hot-desking, with substantial working from home this probably is not financially efficient. However, introducing identity rich home zones for teams may serve as a semi-territorial compromise, while a well-considered location of teams and mixing of departments and centralized facilities will still support casual encounters.

Conclusion

This article contributes to conceptualization of individual social well-being at work. It provides a first step in development of a social well-being scale tailored to the context of contemporary offices. Concept mapping of case-study data revealed 14 key concepts reflecting employees' social needs, their confrontations with co-workers and the physical environment's social affordances. This indicates that – contrary to established theory – social well-being includes components of both short-term hedonic and long-term eudaimonic well-being and is nested in a spatial context, and thus, workplace characteristics are to be considered when measuring and managing social well-being at work.

References

- Andersson, L.M. and Pearson, C.M. (1999), "Tit for tat? The spiraling effect of incivility in the workplace", *Academy of Management Review*, Vol. 24 No. 3, pp. 452-471.

-
- Appel-Meulenbroek, R., Clippard, M. and Pfnür, A. (2018), "The effectiveness of physical office environments for employee outcomes: an interdisciplinary perspective of research efforts", *Journal of Corporate Real Estate*, Vol. 20 No. 1, pp. 56-80.
- Argyle, M. (1968), *Social Interaction*, Methuen & Co, London.
- Ashkanasy, N.M., Ayoko, O.B. and Jehn, K.A. (2014), "Understanding the physical environment of work and employee behavior: an affective events perspective", *Journal of Organizational Behavior*, Vol. 35, pp. 1169-1184.
- Ayoko, O.B. and Ashkanasy, N.M. (2020), "Organizational behaviour and the physical environment - introduction", in Ayoko, O.B. and Ashkanasy, N.M. (Eds), *Organizational Behaviour and the Physical Environment*, 1st ed., Routledge, New York, pp. 3-12.
- Ayoko, O.B., Callan, V.J. and Härtel, C.E.J. (2003), "Workplace conflict, bullying, and counterproductive behaviors", *The International Journal of Organizational Analysis*, Vol. 11 No. 4, pp. 283-301.
- Baumeister, R.F. and Leary, M.R. (1995), "The need to belong: desire for interpersonal attachments as a fundamental human motivation", *Psychological Bulletin*, Vol. 117 No. 3, pp. 497-529.
- Bennett, J.B. (2018), "Integral organizational wellness: an evidence-based model of socially inspired well-being", *Journal of Applied Biobehavioral Research*, Vol. 23 No. 4, pp. 1-32.
- Biswas-Diener, R., Kashdan, T.B. and King, L.A. (2009), "Two traditions of happiness research, not two distinct types of happiness", Vol. 4 No. 3, pp. 208-211.
- Blatt, R. and Camden, C.T. (2007), "Positive relationships and cultivating community", in Dutton, J.E. and Ragins, B.R. (Eds), *Exploring Positive Relationships at Work: Building a Theoretical and Research Foundation*, Lawrence Erlbaum, Mahwah, New Jersey, pp. 243-264.
- Boateng, G.O., Neilands, T.B., Frongillo, E.A., Melgar-Quinonez, H.R. and Young, S.L. (2018), "Best practices for developing and validating scales for health, social, and behavioral research: a primer", *Frontiers in Public Health*, Vol. 6 No. 149, doi: [10.3389/fpubh.2018.00149](https://doi.org/10.3389/fpubh.2018.00149).
- Bodin Danielsson, C. and Bodin, L. (2009), "Difference in satisfaction with office environment among employees in different office types", *Journal of Architectural and Planning Research*, Vol. 26 No. 3, pp. 241-256.
- Bodin Danielsson, C., Bodin, L., Wulff, C. and Theorell, T. (2015), "The relation between office type and workplace conflict: a gender and noise perspective", *Journal of Environmental Psychology*, Vol. 42, pp. 161-171.
- Brown, G., Lawrence, T.B. and Robinsohn, S.L. (2005), "Territoriality in organisations", *Academy of Management Review*, Vol. 30 No. 3, pp. 577-594.
- Browne, G. and Evans, R. (2018), *Employee Wellbeing Research 2018. How Employers, CEOs and Government Are Driving New Agendas*, London.
- Brunia, S., De Been, I. and Van der Voordt, T.J.M. (2016), "Accommodating new ways of working: lessons from best practices and worst cases", *Journal of Corporate Real Estate*, Vol. 18 No. 1, pp. 30-47.
- Bryman, A. (2016), *Social Research Methods*, 5th ed., Oxford University Press, New York.
- Chen, C. and Tang, N. (2018), "Does perceived inclusion matter in the workplace?", *Journal of Managerial Psychology*, Emerald Publishing, Vol. 33 No. 1, pp. 43-57.
- Cockshaw, W.D., Shochet, I.M., Obst, P.L. and Cockshaw, W.D. (2012), "General belongingness, workplace belongingness, and depressive symptoms", *Journal of Community and Applied Social Psychology*, Vol. 23, pp. 240-251.
- Colenberg, S., Jylhä, T. and Arkesteijn, M. (2020), "The relationship between interior office space and employee health and well-being – a literature review", *Building Research and Information*, doi: [10.1080/09613218.2019.1710098](https://doi.org/10.1080/09613218.2019.1710098).
- Czerw, A. (2019), "Diagnosing well-being in work context – eudemonic well-being in the workplace questionnaire", *Current Psychology*, Springer New York LLC, Vol. 38 No. 2, pp. 331-346.

-
- De Croon, E.M., Sluiter, J.K., Kuijer, P.P.F.M. and Frings-Dresen, M.H.W. (2005), "The effect of office concepts on worker health and performance: a systematic review of the literature", *Ergonomics*, Vol. 48 No. 2, pp. 119-134.
- De Jaegher, H., Di Paolo, E. and Gallagher, S. (2010), "Can social interaction constitute social cognition?", *Trends in Cognitive Sciences*, Elsevier Current Trends, Vol. 14 No. 10, pp. 441-447.
- De Voorde, K. Van, Paauwe, J. and Van Veldhoven, M. (2012), "Employee well-being and the HRM-organizational performance relationship: a review of quantitative Studies", *International Journal of Management Reviews*, Vol. 14, pp. 391-407.
- DeVellis, R.F. (1991), *Scale Development: Theory and Applications*, 1st ed., Sage Publications, Inc., Thousand Oaks, CA.
- Diener, E. and Ryan, K. (2008), "Subjective well-being: a general overview", *South African Journal of Psychology*, Vol. 39 No. 4, pp. 391-406.
- Diener, E. and Seligman, M.E.P.P. (2004), "Beyond money. Toward an economy of well-being", *Psychological Science in the Public Interest*, Vol. 5 No. 1, pp. 1-31.
- Dutton, J.E. and Heaphy, E.D. (2003), "The power of high-quality connections", in Cameron, K.S., Dutton, J.E. and Quinn, R.E. (Eds), *Positive Organizational Scholarship: Foundations of a New Discipline*, 3rd ed., Berrett-Koehler Publishers, pp. 263-278.
- Dutton, J.E. and Ragins, B.R. (2007), "Positive relationships at work: an introduction and invitation", in Dutton, J.E. and Ragins, B.R. (Eds), *Exploring Positive Relationships at Work*, Lawrence Erlbaum, pp. 3-25.
- Engelen, L., Chau, J., Young, S., Mackey, M., Jeyapalan, D. and Bauman, A. (2019), "Is activity-based working impacting health, work performance and perceptions? A systematic review", *Building Research and Information*, Vol. 47 No. 4, pp. 468-479.
- Fisher, C.D. (2014), "Conceptualizing and measuring wellbeing at work", in Chen, P.Y. and Cooper, C.L. (Eds), *Wellbeing: A Complete Reference Guide, Work and Wellbeing*, Wiley Blackwell, New York, pp. 9-34.
- Forooraghi, M., Miedema, E., Ryd, N. and Wallbaum, H. (2020), "Scoping review of health in office design approaches", *Journal of Corporate Real Estate*, Vol. 22 No. 2, pp. 155-180, doi: [10.1108/JCRE-08-2019-0036](https://doi.org/10.1108/JCRE-08-2019-0036).
- Gallagher, M.W., Lopez, S.J. and Preacher, K.J. (2009), "The hierarchical structure of well-being", *Journal of Personality*, Vol. 77 No. 4, pp. 1025-1050.
- Gensler Research Institute (2020), "Back to the office", *US Work from Home Survey 2020*, available at: <https://www.gensler.com/uploads/document/695/file/Gensler-US-Work-From-Home-Survey-2020-Briefing-1.pdf>.
- Gibson, J.J. (2014), *The Ecological Approach to Visual Perception*, Classic Edition, Psychology Press, Taylor & Francis Group, New York.
- Gifford, R. (2014), *Environmental Psychology: Principles and Practice*, 5th ed., Optimal Books, Victoria.
- Golden, T.D., Veiga, J.F. and Dino, R.N. (2008), "The impact of professional isolation on teleworker job performance and turnover intentions: does time spent teleworking, interacting face-to-face, or having access to communication-enhancing technology matter?", *Journal of Applied Psychology*, Vol. 93 No. 6, pp. 1412-1421.
- Haapakangas, A., Hallman, D.M., Mathiassen, S.E. and Jahncke, H. (2019), "The effects of moving into an activity-based office on communication, social relations and work demands – a controlled intervention with repeated follow-up", *Journal of Environmental Psychology*, Academic Press, Vol. 66, p. 101341.
- Hanc, M., McAndrew, C. and Ucci, M. (2019), "Conceptual approaches to wellbeing in buildings: a scoping review", *Building Research and Information*, Vol. 47 No. 6, pp. 767-783.
- Harter, J.K., Schmidt, F.L. and Keyes, C.L.M. (2003), "Well-being in the workplace and its relationship to business outcomes: a review of the Gallup studies", in Keyes, C.L.M. and Haidt, J. (Eds),

-
- Flourishing: The Positive Person and the Good Life*, American Psychological Association, pp. 205-224.
- Henderson, L. and Knight, T. (2012), "Integrating the hedonic and eudaimonic perspectives to more comprehensively understand wellbeing and pathways to wellbeing", *International Journal of Wellbeing*, *International Journal of Wellbeing*, Vol. 2 No. 3, pp. 196-221.
- Hirst, A. (2011), "Settlers, vagrants and mutual indifference: unintended consequences of hot-desking", *Journal of Organizational Change Management*, Vol. 24 No. 6, pp. 767-788.
- Jackson, K.M. and Trochim, W.M.K. (2002), "Concept mapping as an alternative approach for the analysis of open-ended survey responses", *Organizational Research Methods*, Vol. 5 No. 4, pp. 307-336.
- Jonsen, K., Jehn, K.A., Bowen, G.A. and Riege, A.M. (2009), "Using triangulation to validate themes in qualitative studies", *Qualitative Research in Organizations and Management: An International Journal*, Vol. 4 No. 2, pp. 123-150.
- Kahn, W.A. (2007), "Meaningful connections: positive relationships and attachments at work", in Dutton, J.E. and Ragins, B.R. (Eds), *Exploring Positive Relationships at Work*, Lawrence Erlbaum, pp. 189-206.
- Kazemi, A. (2017), "Conceptualizing and measuring occupational social well-being: a validation study", *International Journal of Organizational Analysis*, Emerald Publishing, Vol. 25 No. 1, pp. 45-61.
- Keyes, C.L.M. (1998), "Social well-being", *Social Psychology Quarterly*, Vol. 61 No. 2, pp. 121-140.
- Keyes, C.L.M. (2002), "The mental health continuum: from languishing to flourishing in life", *Journal of Health and Social Behavior*, American Sociological Association, Vol. 43 No. 2, pp. 207-222.
- Khazanchi, S., Sprinkle, T.A., Masterson, S.S. and Tong, N. (2018), "A spatial model of work relationships: the relationship-building and relationship-straining effects of workspace design", *Academy of Management Review*, Vol. 43 No. 4, pp. 590-609.
- Kim, J. and de Dear, R. (2013), "Workspace satisfaction: the privacy-communication trade-off in open-plan offices", *Journal of Environmental Psychology*, Vol. 36, pp. 18-26.
- Lambert, L., Passmore, H.-A. and Holder, M. (2015), "Foundational frameworks of positive psychology: mapping well-being orientations", *Canadian Psychological Association*, Vol. 56 No. 3, pp. 311-321.
- Larson, J.S. (1993), "The measurement of social well-being", *Social Indicators Research*, Vol. 28, pp. 285-296.
- Lopes Morrison, R.K. (2005), "Informal relationships in the workplace: associated with job satisfaction, commitment and turnover", Massey University, Albany.
- Magyar, J.L. and Keyes, C.L.M. (2019), "Defining, measuring, and applying subjective well-being.", in Gallagher, M.W. and Lopez, S.J. (Eds), *Positive Psychological Assessment: A Handbook of Models and Measures*, 2nd ed., American Psychological Association, pp. 389-415.
- Malone, G.P., Pillow, D.R. and Osman, A. (2012), "The general belongingness scale (GBS): assessing achieved belongingness", *Personality and Individual Differences*, Vol. 52 No. 3, pp. 311-316.
- Mason, M. (2010), "Sample size and saturation in PhD studies using qualitative interviews | Mason | forum qualitative sozialforschung / forum: qualitative social research", *Forum Qualitative Social Research*, Vol. 11 No. 3, doi: [10.17169/fqs-11.3.1428](https://doi.org/10.17169/fqs-11.3.1428).
- Methot, J.R., Rosado-Solomon, E.H., Downes, P. and Gabriel, A.S. (2020), "Office chit-chat as a social ritual: the uplifting yet distracting effects of daily small talk at work", *Academy of Management Journal*, doi: [10.5465/amj.2018.1474](https://doi.org/10.5465/amj.2018.1474).
- Morrison, R.L. and Macky, K.A. (2017), "The demands and resources arising from shared office spaces", *Applied Ergonomics*, Vol. 60, pp. 103-115.
- Page, K.M. and Vella-Brodrick, D.A. (2009), "The 'what', 'why' and 'how' of employee well-being: a new model", *Social Indicators Research*, Vol. 90 No. 3, pp. 441-458.

-
- Pedregosa, F., Varoquaux, G., Gramfort, A., Michel, V., Thirion, B., Grisel, O., Blondel, M., Prettenhofer, P., Weiss, R., Vanderplas, J., Passos, A. and Cournapeau, D. (2011), "Scikit-learn: machine learning in Python", *Journal of Machine Learning Research*, Vol. 12, pp. 2825-2830.
- Pinker, S. (2014), *The Village Effect: Why Face-To-Face Contact Matters*, Atlantic Books, London.
- Rath, T. and Harter, J. (2010), *The Economics of Wellbeing*, Gallup Press, Omaha, NE, available at: http://www.ofyp.umn.edu/ofypmedia/focusfy/The_Economics_of_Wellbeing.pdf.
- Rautenbach, C.-L. (2015), *Flourishing of Employees in a Fast Moving Consumable Goods Environment*, North-West University, Vanderbijlpark.
- Redelinghuys, K., Rothmann, S. and Botha, E. (2019), "Workplace flourishing: measurement, antecedents and outcomes", *SA Journal of Industrial Psychology*, Vol. 45 No. 0, pp. 1-11.
- Rijksvastgoedbedrijf (2015), *Factsheet Fysieke Werkomgeving Rijk*, Den Haag, available at: <https://www.rijksvastgoedbedrijf.nl/documenten/richtlijn/2015/01/01/factsheet-fysieke-werkomgeving-rijk-fwr>.
- Rolfö, L., Eklund, J. and Jahncke, H. (2018), "Perceptions of performance and satisfaction after relocation to an activity-based office", *Ergonomics*, Taylor and Francis, Vol. 61 No. 5, pp. 644-657.
- Rosas, S.R. and Camphausen, L.C. (2007), "The use of concept mapping for scale development and validation in evaluation", *Evaluation and Program Planning*, Pergamon, Vol. 30 No. 2, pp. 125-135.
- Rosas, S.R. and Ridings, J.W. (2017), "The use of concept mapping in measurement development and evaluation: application and future directions", *Evaluation and Program Planning*, Pergamon, Vol. 60, pp. 265-276.
- Ryff, C.D. and Keyes, C.L.M. (1995), "The structure of psychological well-being revisited", *Journal of Personality and Social Psychology*, Vol. 69 No. 4, pp. 719-727.
- Ryff, C.D. and Singer, B.H. (2008), "Know thyself and become what you are: a eudaimonic approach to psychological well-being", *Journal of Happiness Studies*, Vol. 9, pp. 13-39.
- Sander, E.J., Caza, A. and Jordan, P.J. (2019), "Psychological perceptions matter: developing the reactions to the physical work environment scale", *Building and Environment*, Elsevier, Vol. 148 No. November 2018, pp. 338-347.
- Schilpzand, P., De Pater, I.E. and Erez, A. (2016), "Workplace incivility: a review of the literature and agenda for future research", *Journal of Organizational Behavior*, Vol. 37, pp. 57-88.
- Spreitzer, G., Bacevice, P. and Garrett, L. (2020), "Workplace design, the physical environment, and human thriving at work", in Ayoko, O.B. and Ashkanasy, N.M. (Eds), *Organizational Behavior and the Physical Environment*, Routledge, New York, pp. 235-250.
- Stephens, J.P., Heaphy, E.D., Dutton, J.E., Spreitzer, G.M. and Cameron, K.S. (2011), "High-quality connections", in Spreitzer, G.M. and Cameron, K.S. (Eds), *The Oxford Handbook of Positive Organizational Scholarship*, doi: [10.1093/oxfordhb/9780199734610.013.0029](https://doi.org/10.1093/oxfordhb/9780199734610.013.0029).
- Trochim, W.M.K. (1989), "An introduction to concept mapping for planning and evaluation", *Evaluation and Program Planning*, Vol. 12 No. 1, pp. 1-16.
- Trochim, W.M. (2017), "Hindsight is 20/20: reflections on the evolution of concept mapping", *Evaluation and Program Planning*, Vol. 60, pp. 176-185.
- Van Der Maaten, L. and Hinton, G. (2008), "Visualizing data using t-SNE", *Journal of Machine Learning Research*, Vol. 9, pp. 2579-2605.
- Vischer, J.C. (2008), "Towards an environmental psychology of workspace: how people are affected by environments for work", *Architectural Science Review*, Vol. 51 No. 2, pp. 97-108.
- Waterman, A.S. (2008), "Reconsidering happiness: a eudaimonist's perspective", *The Journal of Positive Psychology*, Routledge, Vol. 3 No. 4, pp. 234-252.

WHO (2006), *Constitution of the World Health Organization*, available at: https://www.who.int/governance/eb/who_constitution_en.pdf.

Wohlers, C. and Hertel, G. (2017), "Choosing where to work at work – towards a theoretical model of benefits and risks of activity-based flexible offices", *Ergonomics*, Vol. 60 No. 4, pp. 467-486.

Wright, S.L., Burt, C.D.B. and Strongman, K.T. (2006), "Loneliness in the workplace: construct definition and scale development", *New Zealand Journal of Psychology*, Vol. 35 No. 2, pp. 59-68.

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