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2022

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OPEN PLAN OFFICES: A SEMI-SYSTEMATIC LITERATURE REVIEW 2012–2022

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INTRODUCTION

Open Plan Office Design, characterised by large office spaces with few physical barriers, is a megatrend in office design across the industrialised world, spanning multiple industries, organisation types, and sizes (James et al., 2021; Konnikova, 2014). However, a plethora of research in recent years, across diverse academic fields, has identified paradoxical consequences of this approach to office layout, with research findings making contrasting claims about its impacts on performance. The global pandemic brought the health risks of open office spaces into sharp focus, with an associated emphasis on employee wellbeing. Some recent studies question if this means the end of the open office as a foundational approach to workplace design (Oygür et al., 2022; Samani and Alavi, 2020).

This semi-systematic review analyses a decade of research on open plan offices, both pre and post the COVID-19 pandemic, with a focus on employee wellbeing and satisfaction. As a team who work in open-plan offices, we experience the impacts—both positive and negative—every day. We also notice how new hybrid work structures that allow people to work from home have changed how we perceive and operate in these spaces. These observations and experiences led us to ask the research question, what are the human resource impacts of the open plan office in the contemporary work environment?

The contrasting results, and the current health risks associated with open offices, make this a fascinating and important current issue for research (James et al., 2021). Knowledge in any discipline emerges from cumulative results of many studies (Hansen et al., 2022), so semi-systematic reviews, such as this study, which synthesise material from a range of sources to create a single point of reference, are important to unravel the complexities of a topic and facilitate evidence-based decision making (Eykelbosh & Fong, 2017).

BACKGROUND

The open office layout has been a foundational approach to workplace design throughout the last century. In 1906, Frank Lloyd Wright unveiled the Larkin Administration Building in New York, a revolutionary vision in its day, with regimented rows of desks in a vast open space, overlooked by managerial offices. Since then, open plan office design has taken many forms, from the cheap call-centre cubicles of the 1980s to Frank Gehry's multi-million-dollar design for the new Facebook campus MPK20. Gehry's campus, which opened in 2015, is reputedly the largest open office floor plan in the world, accommodating 3,000 employees. According to Konnikova, in 2014 70 percent of workplaces in the industrialised world had adopted some form of open office layout, with the world's largest corporations, including Google, Yahoo, eBay, Goldman Sachs, and American Express, investing

millions in state-of-the-art open-plan offices. In Aotearoa New Zealand, Fonterra in Hamilton and Mercury Energy NZ in Tauranga, among others, have invested in office developments of this type in recent years.

The term “open plan office” (OPO) is a generic term encompassing a variety of different spaces, from undefined open spaces seating large numbers of employees, to much smaller offices seating fewer than 10 people (see Table 1).

Office design	Functional features
Cell-office	Personal room for one person
Shared-room office	Two to three people in a room
Small open plan office	Four to nine people share a workspace
Medium-open plan office	Ten to 24 people share a workspace
Large open plan office	More than 24 people share a workspace
Combi-offices	A type of Activity Based Office with shared workspace and facilities
Hot-desking office	Non-personal workstations with no access to supportive facilities for work that requires more space, such as back-up offices, meeting rooms, and project rooms

Table 1. Types of office layout (adapted from Bodin-Danielsson & Theorell, 2018, p. 9).

The open office layout came under intense scrutiny during the global COVID-19 pandemic due to the increased exposure to air-borne infection it created (Burridge et al., 2022; Oygür et al., 2022). This risk to health, combined with the increase in hybrid and remote working options since the onset of the pandemic, has dramatically changed the use of office space (Bradley et al., 2022; Marshall, 2022). The aftermath of the COVID-19 pandemic made us contemplate on how our workspaces impact our physical and mental health, making it worthy to review current, relevant research on the impact of the open office on employee wellbeing and satisfaction in the contemporary work setting.

METHOD

This is a qualitative study in the form of a semi-systematic review of research literature published in peer reviewed journals over the decade from 2012 to 2022. Snyder (2019) highlights the importance of integrated literature reviews in business research, noting that “knowledge production within the field ... is accelerating at a tremendous speed while at the same time remaining fragmented and interdisciplinary” (p. 333). She promotes a rigorous, systematic methodology for literature reviews to better enable the synthesis of ideas and enhance the validity of findings.

Semi-systematic reviews are popular in business research as the design is appropriate for “topics that have been conceptualized differently and studied by various groups of researchers within diverse disciplines” (Snyder, 2019, p. 335). This diversity is the case with research literature on open offices, which spans the fields of business, human resource management, psychology, health, architecture, building, and design. Hansen et al. (2022) acknowledge that qualitative analysis can capture insights and contextual nuances from diverse studies which quantitative meta-analysis does not. Therefore, semi-systematic review is an appropriate methodological approach for this study.

This study followed the guidelines recommended by Eykelbosh and Fong (2017) and Snyder (2019) which provide a protocol for semi-systematic literature reviews. This improves academic rigour via a research process that is both intentional and systematic. Eykelbosh and Fong (2017) note that semi-systematic reviews are most effective when conducted by a team of reviewers across an extended timeframe with access to data analysis software, as was the case for this project. A team of researchers is helpful in qualitative research as it enables a large amount of data to be processed, provides additional data triangulation, and helps avoid bias (Braun & Clarke, 2006; Eykelbosh & Fong, 2017; Green et al., 2006).

Data selection

Having developed our research question, the team identified key words to use in an online literature search. Due to the volume of literature on the topic, the data search was streamlined by dividing the timeframe into three subsets with pairs of research colleagues focusing on identifying suitable literature published in a given period. Each pair searched across several different databases to avoid database bias (Eykelbosh & Fong, 2017). Databases included JSTOR, Business Source Complete (EBSCO), Taylor and Francis online, Emerald Insight, Wiley online library, and Google Scholar. Potential articles were selected against agreed criteria.

The search terms used were: “open-plan office,” “open-plan workplace,” and “open-plan workplace design.” The selection criteria for sources were: Academic peer-reviewed journal articles, in English, focusing on human resource outcomes such as productivity, wellbeing, and satisfaction (as opposed to acoustic levels, temperature, layout).

Selected articles were recorded in tables for each timeframe and cross-checked against the selection criteria by different team members. The search was then repeated to ensure a complete set of data was identified (Eykelbosh & Fong, 2017). The selection process identified 26 articles which were published in peer-reviewed, academic journals across a variety of fields including industrial health, management, architecture, and design.

Data analysis

The team conducted separate narrative reviews, with each team member analysing a subset of the data. Themes were collated in a literature review matrix and discussed with the group. Data sets were then swapped and re-analysed by different team members. This process provided triangulation and deepened our overall understanding of the findings.

RESULTS

Our analysis revealed themes which were summarized in a Literature Review Matrix, (available upon request). The themes of noise, distractions, lack of privacy, stress, and lack of personal space appeared repeatedly as negative dimensions of open office workspaces. Collaboration was commonly identified as a positive dimension of open plan workspaces but evidence for this is less consistent. Other positive aspects such as creativity and knowledge transfer were mentioned in only four of the studies we reviewed (Samani et al., 2017; Smollan & Morrison, 2019; Vink et al., 2012; Yunus & Ernawati, 2018). Negative reported impacts were far more prevalent than positive across the body of literature reviewed.

Employee satisfaction, wellbeing, and the open plan office

Most of the studies we reviewed showed that employees rate the open plan office low in terms of workplace satisfaction. Kim and de Dear (2013) noted that occupants of open plan offices had the lowest overall satisfaction with their workplace whilst those in enclosed office spaces reported the highest rating. A study by Bodin Danielsson and Theorell (2018) in Sweden found the same results, their study suggesting a strong association between office design, wellbeing, and satisfaction.

The studies presented various reasons for employees' negative reactions to the open plan office. Kim and de Dear (2013) identified that key sources of dissatisfaction in the OPO are privacy issues, space constraints, noise, and uncontrolled interruptions from co-workers. Taskin et al. (2019) proposed that the OPO results in "organizational de-humanisation" (p. 264). In Australia, Morrison and Macky's (2017) survey of 1,000 office workers found that unfavourable working environments in the OPO increased the social demands on, and mental workload of, employees.

High office density was reported to be another unfavourable attribute of the OPO. Otterbring et al. (2018) and Weziak-Bialowolska et al. (2018) both found an inverse relationship between the number of people sharing an office space and employee satisfaction. Essentially, the more people in a shared open office, the lower the level of workplace satisfaction. This concurs with prior assertions by Kim and de Dear (2013) that office density is a significant determinant of workplace satisfaction.

Studies also investigated the effects of the OPO on employees' perceived health. A 12-month longitudinal study by Bergstrom et al. (2015) in Sweden reported that employees who moved to an open office felt a decline in the quality of their work environment which resulted in deteriorating work performance and perceived health. Weziak-Bialowolska et al. (2018) also explored employees' perceptions of their overall health after moving to an open plan office but found no significant changes in health perceptions amongst participants. It appears that the subjective nature of self-reports would account for the difference in findings between these two studies.

Noise and other distractions

Stress caused by exposure to irrelevant speech and other visual and auditory distractions were identified as having a negative impact on employee wellbeing and satisfaction in most of the studies we reviewed. Distractions caused by ambient noise in open plan offices were reported to have negative impacts on productivity. Kang et al. (2017) found that noise had the greatest influence on productivity, with conversation noise having the most significant negative impact. Similar results were found in a survey by di Blasio et al. (2019) where employees report that the resulting annoyance from irrelevant speech noise resulted in decreased productivity.

Three experimental studies provided empirical evidence on the impact of noise on productivity, satisfaction and employee wellbeing. Jo and Jeon (2022) noted that irrelevant speech noise is a primary cause of annoyance, resulting in dissatisfaction, lower productivity and increasing perceived workload stress. Jahncke and Hallman (2020), findings confirmed that employee performance was impacted negatively by noise distraction and found that privacy, including acoustic and visual privacy, was vital to work performance. Sander et al. (2021) demonstrated a causal relationship between noise exposure in OPOs and physiological stress responses. It was also noted in the latter study that individuals vary in their sensitivity to noise.

Although distractions are considered to be an inconvenience in the OPO, some studies suggest that the impacts of these distractions vary according to individual characteristics such as age, with younger generations appearing to be more amenable to OPOs (Rasila & Rothe, 2012; Smollan & Morrison, 2019; Yunus & Ernawati, 2018). Other studies observed that some personality types are more susceptible to distractions (Gerlitz & Hülbeck, 2023; Seddigh et al. 2016). Agreeable employees, who are less likely to confront distracting colleagues, were found to be more significantly affected in open plan offices whilst more emotionally stable personalities appeared to be less affected by noise and distractions (Seddigh et al. 2016). Gender differences were also found to be a factor on how open office spaces are perceived by employees, with women more likely to be impacted by the lack of privacy in the OPO compared to men (Smollan & Morrison, 2019).

The impact of personal control on wellbeing and satisfaction in the open plan office

Whilst the studies reviewed showed that various inconveniences are associated with the OPO, our review also showed that flexibility and personal control of the workspace can mitigate its negative attributes. Research by Gou et al. (2018) revealed that adverse conditions were alleviated when employees had personal control of their workspaces. Samani et al. (2017) also proposed that privacy issues in the open plan office are mitigated when employees can control auditory and visual privacy, and this eventually results in feelings of wellbeing, satisfaction, and productivity. The need for individual control over the workspace was also highlighted in Jahncke and Hallman's (2020) experimental study, suggesting that work tasks that require focused concentration are best performed without background distractions. There is some evidence that employees are exercising some form of individual control by choosing to work remotely for all or part of the working week (Barnes et al., 2020).

Design of workspace

Most of the studies we reviewed showed the OPO to be generally disliked by occupants. However, other studies suggest that better workplace design can mitigate negative perceptions of the OPO. A longitudinal study in Aotearoa New Zealand by Smollan and Morrison (2019) reported that employees found moving to one open office space favourable, having managed to adapt their reduced and more inconvenient workspaces. This positive outlook was attributed to progressive organisational culture and good communication throughout the change process. In their subsequent publication, Morrison and Smollan (2020) suggested that the design consultation process and provision of private workspaces for focused work mitigated the negative effects of the OPO, and proposed a "safe by design" approach to promote wellbeing and employee satisfaction. The importance of having a human-centred approach to office interior design was also highlighted in other studies (Bodin Danielsson & Theorell, 2018; Candido et al., 2019; Vink et al., 2012) stating that workplace aesthetics, comfort of furnishings, and adaptability of work areas were among the highest ranked factors in alleviating dissatisfaction with the open plan workspace.

Three further recent case studies emphasize the design of workspaces and focus on activity based working (ABW), the latest incarnation of OPO design, which featured alternative spaces that cater to different task needs and employee preferences. For Candido et al. (2021), interior design is a key predictor of wellbeing, satisfaction, and performance in a space. Other studies found that negative impacts on productivity resulting from distraction and a lack of privacy in ABW offices were consistent with studies on OPO layouts. Barnes et al. (2020) conducted a case study with employees who moved to an ABW office who subsequently reported negative impacts of the ABW on their satisfaction, work effectiveness, wellbeing, and engagement. Babapour Chafi et al. (2020) concurred with other studies, such as Jahncke and Hallman (2020), and discovered that, even though alternative workstations in ABWs provide flexibility, many employees did not switch workspaces but chose instead to stay in the same place, which rendered the provision of different workspaces redundant.

DISCUSSION

Open office research from across the globe over the past decade reveals remarkably consistent findings. Despite the diversity of locations, measures, methodologies, and research aims, clear themes emerge. Noise and other distractions, and lack of privacy and personalised space, are shown to adversely impact employee wellbeing, satisfaction, and performance. Our findings concur with identified themes from earlier reviews. The negative impacts of OPO on health were significant findings in previous literature reviews by Richardson et al. (2017) and Colenberg et al. (2021). We do note, however, that studies on the impacts of the OPO on perceived health can have conflicting results and attribute the inconsistency of findings to the subjective nature of self-report data collected in these studies. Our review revealed that noise and distractions can have varying impacts depending on individual characteristics, findings which were also noted in reviews by Gerlitz and Hülsebeck (2023) and James et al. (2021).

Introducing flexibility and personal control over workspaces are identified as strategies that mitigate the negative impacts of open plan offices to some degree. These are exemplified in activity-based workspaces, although the extent to which employees take advantage of these alternatives is questionable. The results accentuate the need to consider organisational, task, and individual needs in designing workspaces which not only consider the physical space but also provide appropriate social and individual spaces. As Barnes et al. (2020) note, there are multiple design factors to consider if the space is to be used effectively. Our findings on the role of personal control in mitigating the negative impacts of the OPO were similarly noted by Colenberg et al. (2021) who also stated the importance of thoughtful design of interior space.

Our review provided insights on the emergence of activity-based workspaces as an intended improvement of the open plan office. Whilst ABWs were purported to be better than the traditional OPO as they offer flexibility (Candido et al., 2021), our review noted that inherent issues in open office environments such as distractions and lack of privacy are still felt by workers in ABWs.

IMPLICATIONS

There are clear implications arising from the research that need to be considered in the design and management of open offices, to enhance employee wellbeing and satisfaction.

1. *Noise and other distractions.* The issue of noise and other distractions is the biggest obstacle to employee wellbeing, satisfaction, and performance in open offices, and needs to be addressed in the design and management of open plan office spaces. Design can mitigate noise levels through choice of materials and layout, while management can consider individual preferences, offering flexibility and personal choice in the use of spaces.
2. *Designing the space.* The literature identifies three types of space that need to be considered in open plan office design:
 - Physical space—the attributes and characteristics of the physical environment.
 - Social space—opportunities for interpersonal connection, culture, and social support.
 - Individual space—choice of personal activity, and personal control of the environment.
3. *Flexibility and personal control.* This is consistent across a decade of research: employees who have control over where they work experience higher levels of satisfaction and wellbeing. The new trend for remote working exemplifies this more than ever and highlights the need for workplace cultures and leadership that support autonomy.

THE FUTURE OF THE OPEN OFFICE AND A FUTURE RESEARCH AGENDA

There is emerging evidence, as identified in this study, that employees are solving the ‘open office problem’ themselves, by simply opting to work from home when they are able. This is an important area for future research, as the popularity of remote and hybrid working appears to be a consistent global trend (Bradley et al., 2022). The Gallup organisation reports that half of remote-capable employees are engaged in hybrid work patterns and expect to continue in this way in the long term (Wigert et al., 2023). Questions have also arisen as to the future of office design in the post-pandemic workplace (D’Angelo, 2023) and this is an important area for emerging research (James et al., 2021).

Most studies have focused on preventing health problems rather than looking at ways that the office space could enhance health, a further area for future research. “It seems that open-plan offices should be avoided, although it is not yet clear to what extent the number of occupants, spatial density and openness are related to health

complaints" (Colenberg, 2021, p. 362). Although there is substantial evidence on the detrimental effects of the OPO on employee health and wellbeing, most of which was gathered through self-report methods, further empirical evidence from future studies can support these findings.

Limitations

There is an enormous quantity of research data on open office environments. Our selection process used specific key words, which may have resulted in the exclusion of other relevant material. However, despite potential omissions, our aim of thematic salience was achieved through the diversity of studies included. There has been limited research conducted in Aotearoa New Zealand, so literature has been reviewed from a variety of locations and could involve cultural differences that may limit their transferability to other cultural contexts.

Anne Bradley is an award-winning teacher, writer and qualitative researcher with a 25-year career in vocational tertiary education in both the UK and Aotearoa New Zealand. She has published narrative research in the fields of education, human resource management and intercultural studies. Her belief in the transformative potential of narrative, and an interdisciplinary approach to research, shape and inform her practice.

Maree Hawkins's long career in Human Resource Management (HRM) provides a platform of experience which informs both her teaching and research. As an emerging researcher her focus is on organisational behaviour, diversity and HRM responses to sexual harassment in the workplace. She has a particular interest in the varying dimensions of employee experience and engagement: people are at the heart of her professional practice, whether in terms of teaching, researching or mentoring.

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Bronwyn Alton's teaching practice focuses on connecting students' learning experiences with the ever-changing business environment for mutual benefit. Joining the education sector over 10 years ago from the corporate sector, she is involved in research that supports the development of learners' employability skills and research that builds connections with the business community. She was awarded the Teaching Excellence 2017 and New and Emerging Researcher 2020 by Toi Ohomai Institute of Technology.

Clare Crawshaw came to the tertiary education sector from the tourism and events industry and has a strong focus on building students' employability skills, meaningful teaching and creating connections with the business community. Clare is a beginning researcher and has interest in career development and marketing topics. She was awarded the 2017 Sustained Teaching Excellence Award and in December 2020 she was nominated by Student Support colleagues for the Toi Ohomai Staff Value Award of Toitutanga: for being courageous and humble in the pursuit of excellence.

REFERENCES

- Babapour Chafi, M., Harder, M., & Bodin Danielsson, C. (2020). Workspace preferences and non-preferences in activity-based flexible offices: Two case studies. *Applied Ergonomics*, 83, Article 102971. <https://doi.org/10.1016/j.apergo.2019.102971>
- Barnes, J., Wineman, J., & Adler, N. (2020). Open office space: The wave of the future for academic health centers? *Academic Medicine: Journal of the Association of American Medical Colleges*, 95(1), 52–58. <https://doi.org/10.1097/ACM.0000000000002992>
- Bodin Danielsson, C., & Theorell, T. (2018). Office employees' perception of workspace contribution: A gender and office design perspective. *Environment and Behavior*, 51(9), 995–1026. <https://doi.org/10.1177/001391651875914>
- Bergstrom, J., Miller, M., & Horneij, E. (2015). Work Environment Perceptions following relocation to open-plan offices. *Prevention, Assessment & Rehabilitation*, 50(2), 221–228. <https://doi.org/10.3233/WOR-131798>
- Bradley, A., Hawkins, M., & Wilson, M. (2022). The impact of remote working on organisational culture. *New Zealand Journal of Human Resource Management*, 23(1), 20–35.
- Braun, V., & Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, (3)2, 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Burridge, H. C., Fan, S., Jones, R. L., Noakes, C. J., & Linden, P. F. (2022). Predictive and retrospective modelling of airborne infection risk using monitored carbon dioxide. *Indoor and Built Environment*, 31(5), 1363–1380. <https://doi.org/10.1177/1420326X211043564>
- Candido, C., Chakraborty, P., & Tjondronegoro, D. (2019). The rise of office design in high-performance, open-plan environments. *Buildings*, 9(4), Article 100. <https://doi.org/10.3390/buildings9040100>
- Candido, C., Gocer, O., Marzban, S., Gocer, K., Thomas, L., Zhang, Zhonghua, G. Mackey, M., Engelen, L., & Tjondronegoro, D. (2021). Occupants' satisfaction and perceived productivity in open plan offices designed to support activity based working: Findings from different industry sectors. *Corporate Real Estate*, 23(2), 106–129. <https://doi.org/10.1108/JCRE-06-2020-0027>
- Colenberg, S., Jylhä, T., & Arksteijn, M. (2021). The relationship between interior office space and employee health and wellbeing – A literature review. *Building Research and Information*, 49(3), 352–366. <https://doi.org/10.1080/09613218.2019.1710098>
- D'Angelo, M. (2023, October 20). The end of a controversial era: Is the open office dying? *Business News Daily*. <https://www.businessnewsdaily.com/10923-is-open-office-dead.html>
- Di Blasio, S., Shtrepi, L., Puglisi, G. E., & Astolfi, A. (2019). A cross-sectional survey on the impact of irrelevant speech noise on annoyance, mental health and well-being, performance and occupants' behavior in shared and open-plan offices. *International Journal of Environmental Research and Public Health*, 16(2), Article 280. <https://doi.org/10.3390/ijerph16020280>
- Eykelbosh, A., & Fong, D. (2017). *Conducting a literature search and semi-systematic review: The NCCEH approach* [PowerPoint slides]. The National Collaborating Centre for Environmental Health. https://ncceh.ca/sites/default/files/Conducting_Semi_Systematic_Review_NCCEH_Approach-Eykelbosh-Fong.pdf
- Gerlitz, A., & Hülsbeck, M. (2023). The productivity tax of new office concepts: a comparative review of open-plan offices, activity-based working, and single-office concepts. *Management Review Quarterly*, 74, 745–775. <https://doi.org/10.1007/s11301-022-00316-2>
- Gou, Z., Zhang, J., & Shutter, L. (2018). The role of personal control in alleviating negative perceptions in the open-plan workplace. *Buildings*, 8(8), Article 110. <https://doi.org/10.3390/buildings8080110>
- Green, B. N., Johnson, C. D., & Adams, A. (2006). Writing narrative literature reviews for peer reviewed journals: Secrets of the trade. *Journal of Chiropractic Medicine*, 5(3), 101–117. [https://doi.org/10.1016/S0899-3467\(07\)60142-6](https://doi.org/10.1016/S0899-3467(07)60142-6)
- Hansen, C., Steinmetz, H., & Block, J. (2022). How to conduct a meta-analysis in eight steps: A practical guide. *Management Review Quarterly*, 72, 1–19. <https://doi.org/10.1007/s11301-021-00247-4>
- Jahncke, H., & Hallman, D. M. (2020). Objective measures of cognitive performance in activity-based workplaces and traditional office types. *Journal of Environmental Psychology*, 72. <https://doi.org/10.1016/j.jenvp.2020.101503>
- James, O., Delabbro, P., & King, D. L. (2021). A comparison of psychological and work outcomes in open-plan and cellular office designs: A systematic review. *Sage Open*, 11(1). <https://doi.org/10.1177/2158244020988869>
- Jo, H. I., & Jeon, J. Y. (2022). Influence of indoor soundscape perception based on audiovisual contents on work-related quality with preference and perceived productivity in open-plan offices. *Building and Environment*, 208, Article 108598. <https://doi.org/10.1016/j.buildenv.2021.108598>
- Kang, S., Ou, D., & Mak, C. M. (2017). The impact of indoor environmental quality on work productivity in university open-plan research offices. *Building and Environment*, 124, 78–89. <https://doi.org/10.1016/j.buildenv.2017.07.003>

- Kim, J., & de Dear, R. (2013). Workspace satisfaction: The privacy-communication trade-off in open-plan offices. *Journal of Environmental Psychology*, 36, 18–26. <https://doi.org/10.1016/j.jenvp.2013.06.007>
- Konnikova, M. (2014, January 7). The open office trap. *The New Yorker*. <https://www.newyorker.com/business/currency/the-open-office-trap>
- Marshall, R. (2022, March 11). Back to business: Rethinking the open office. *Buildings*, <https://www.buildings.com/office-facilities/article/10196144/back-to-business-re-remembering-the-open-office>
- Morrison, R. L., & Macky, K. A. (2017). The demands and resources arising from shared office spaces. *Applied Ergonomics*, 60, 103–115. <https://doi.org/10.1016/j.apergo.2016.11.007>
- Morrison, R. L., & Smollan, R. K. (2020). Open plan office space? If you're going to do it, do it right: A fourteen-month longitudinal case study. *Applied Ergonomics*, 82, Article 102933. <https://doi.org/10.1016/j.apergo.2019.102933>
- Otterbring, T., Pareigis, J., Wästlund, E., Makrygiannis, A., & Lindström, A. (2018). The relationship between office type and job satisfaction: Testing a multiple mediation model through ease of interaction and well-being. *Scandinavian Journal of Work, Environment and Health*, 44(3), 330–334. <https://doi.org/10.5271/sjweh.3707>
- Oygür, I., Göçer, Ö., & Karahan, E. E. (2022). Hybrid workplace: Activity-based office design in a post-pandemic era. *Journal of Interior Design*, 47(3), 3–10. <https://doi.org/10.1111/joid.12218>
- Rasila, H., & Rothe, P. (2012). A problem is a problem is a benefit? Generation Y perceptions of open-plan offices. *Property Management*, 30(4), 362–375. <https://doi.org/10.1111/jpm.12121>
- Richardson, A., Potter, J., Paterson, M., Harding, T., Tyler-Merrick, G., Kirk, R., Reid, K., & McChesney, J. (2017). Office design and health: A systematic review. *New Zealand Medical Journal*, 130(1467), 39–49.
- Samani, S. A., & Alavi, S. M. S. Z. (2020). Are open plan offices still popular after the coronavirus pandemic? *Performance Improvement*, 59(8), 24–32. <https://doi.org/10.1002/pfi.21931>
- Samani, S. A., Rasid, S. Z. A., & Sofian, S. (2017). The influence of personal control and environmental distraction in open-plan offices on creative outcome. *Performance Improvement Quarterly*, 30(1), 5–28. <https://doi.org/10.1002/piq.21239>
- Sander, E. J., Marques, C., Birt, J., Stead, M., & Baumann, O. (2021). Open plan office noise is stressful: Multimodal stress detection in a simulated office. *Journal of Management and Organisation*, 27, 1021–1037. <https://doi.org/10.1017/jmo.2021.17>
- Seddigh, A., Berntson, E., Platts, L. G., & Westerlund, H. (2016). Does personality have a different impact on self-rated distraction, job satisfaction, and job performance in different office types? *PloS One*, 11(5). <https://doi.org/10.1371/journal.pone.0155295>
- Smollan, R. K., & Morrison, R. L. (2019). Office design and organizational change: the influence of communication and organisational culture. *Journal of Organisational Change Management*, 32(4), 426–440. <https://doi.org/10.1108/JOCM-03-2018-0076>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Taskin, L., Parmentier, M., & Stinglhamber, F. (2019). The dark side of office designs: Towards de-humanization. *New Technology, Work and Employment*, 34(3), 262–284. <https://doi.org/10.1111/ntwe.12150>
- Vink, P., Blok, M., Formanoy, M., De Korte, E., & Groenesteijn, L. (2012). The effects of new ways of work in the Netherlands: National data and a case study. *Work*, 41(1), 2600–2604. <https://doi.org/10.3233/WOR-2012-1027-2600>
- Weziak-Białowolska, D., Dong, Z., & McNeely, E. (2018). Turning the mirror on the architects: A study of the open plan office and work behaviours at an architectural company. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.02178>
- Wigert, B., Harter, J., & Agrawal, S. (2023, 8 October). The future of the office has arrived: It's hybrid. <https://www.gallup.com/workplace/511994/future-office-office-arrived-hybrid.aspx>
- Yunus, E. N., & Ernawati, E. (2018). Productivity paradox? The impact of office redesign on employee productivity. *International Journal of Productivity and Performance Management*, 67(9), 1918–1939. <https://doi.org/10.1108/IJPPM-12-2017-0350>