



Perception of Work Environment and Well-being in Activity-based Office – Three-wave Longitudinal Study¹

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ABSTRACT

Activity-based offices (ABOs) have become increasingly common. Yet, longitudinal studies investigating the effects of change are rare. This three-wave longitudinal study compared perceptions of privacy and office support, satisfaction with the work environment, and well-being in an organization that renovated private offices into an ABO (maintaining assigned desks). Questionnaires were administered four months before and eight and 21 months after the change. Data on 34 employees from the first and 21 from the second follow-up were analyzed. Privacy, perceived office support for work tasks, and work engagement decreased at both follow-ups. No effects were found on perceived office support for interaction or job satisfaction. Satisfaction with the work environment decreased at the eight-month follow-up. This study's long follow-up demonstrated the negative effects of office redesign on the perception of privacy, support for work tasks, satisfaction with the work environment, and well-being.

KEYWORDS

Activity-based office / Interaction / Job satisfaction / Privacy / Satisfaction with work environment / Work engagement

Introduction

Digitalization and greater flexibility to choose where and when to work has led to increased multilocational work and new ways of using and designing office facilities. Different forms of activity-based offices (ABOs) have become common, as they are considered best suited to flexible working, communication and collaboration, and better productivity (Kim et al., 2016; Wohlers & Hertel, 2017). By changing to ABOs, organizations also aim to reduce facility costs and achieve space and energy efficiency targets (van der Voordt, 2004). In recent years, Nordic researchers have also contributed to investigating this global trend of changing work environments (e.g., Babapour et al., 2018; Bodin Danielsson & Theorell, 2018; Sirola et al., 2021; Wijk et al., 2020).

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However, longitudinal studies of the effects of moving to an ABO on how well it supports work tasks, satisfaction with the work environment, and well-being are still rare.

The definitions of ABOs in the literature vary (Bodin Danielsson et al., 2015; Hoendervanger, 2021; Lahtinen et al., 2015; Wohlers et al., 2019). Typically, this office type has different spaces for different types of activities and work processes and usually includes open spaces that contain areas for communication and collaboration, silent spaces for tasks that require concentration, separate spaces for phone calls, and spaces for formal and informal meetings. As the basic idea is to switch between workspaces or zones according to task-related needs, employees do not usually have assigned desks (Hoendervanger, 2021). However, ABO design can also be combined with assigned desks in an open area (Engelen et al., 2019; Lahtinen et al., 2015), which can be seen as an intermediate form between a traditional open-plan office and a non-territorial ABO. This office type, for which there is no established term (e.g., Bodin Danielsson & Bodin, 2009; De Been & Beijer, 2014; Haapakangas et al., 2018; Lahtinen et al., 2015; Morrison & Stahlmann-Brown, 2020), has been less researched under the umbrella of ABO design, although it has been associated with more negative results (Haapakangas et al., 2018; Morrison et al., 2020; Sirola et al., 2021) than ABOs with non-assigned desks (Engelen et al., 2019). Our study brings new insights into this less studied ABO concept, which combines the features of a traditional open-plan office with the activity-based use of additional workspaces.

The theoretical framework of Wohlers and Hertel (2017) proposes that ABO features (e.g., openness of the main work environment, activity-related work locations) affect working conditions (e.g., territoriality, privacy), which, in turn, have different short and long-term consequences for employees. The salutogenic and user-centric approach of Ruohomäki et al., (2015) suggests that a workplace can promote human well-being by, for example, supporting work tasks, respecting privacy, enhancing work engagement, and promoting communication. In traditional open-plan offices, that is, offices with an open main working area but no alternative spaces or desk-sharing, negative effects have been observed on concentration and privacy (Bodin Danielsson & Bodin, 2009; De Croon et al., 2005; Pejtersen et al., 2006), satisfaction and work performance (Kaarlela-Tuomaala et al., 2009), and well-being (Bodin Danielsson & Bodin, 2008).

In contrast, ABOs that combine open work areas with flexible use of activity-related locations and desk sharing have been associated with increased environmental satisfaction (Hoendervanger et al., 2016, 2021), less distractions, and improved communication, particularly when moving from open-plan offices (Engelen et al., 2019). These results are explained by the ability to better regulate work conditions in relation to one's needs and tasks (Gerdenitsch et al., 2018; Wohlers & Hertel, 2017), meaning that the better is the fit between the space and the needs of the individual, the better are the results. However, results are still contradictory, as privacy, for example, is also a challenge in ABOs (Engelen et al., 2019; Öhrn et al., 2021). One explanation for this has been that the ABO is not always used in the intended way (Haapakangas et al., 2022), for example, finding a suitable workspace and adjusting work desks are perceived difficult or time-consuming (Babapour et al., 2018) and work desks have sometimes been reserved (e.g., Berthelsen et al., 2018).

Overall, it is difficult to form a clear picture of the effects of change due to differences between the office concepts and their use, research designs, and studied variables.

Even though the need for research on the long-term effects of office concepts was highlighted by a systematic review over 15 years ago (De Croon et al., 2005), pre-post studies investigating the long-term effects of relocation to ABOs are still rare and contradictory (Engelen et al., 2019). A growing number of studies have investigated the effects at more than one time point (Bergsten et al., 2021; Gerdenitsch et al., 2018; Haapakangas et al., 2019; Meijer et al., 2009; Robertson et al., 2008; Wijk et al., 2020) ending up with mixed results for different variables and regarding whether the effects are positive or negative and whether adaptation occurs or not.

To our knowledge, only few studies have followed the longitudinal effects of an ABO redesign for at least a year (Bergsten et al., 2021; Haapakangas et al., 2019; Meijer et al., 2009; Öhrn et al., 2021) and studies of the effects on satisfaction with the office environment and well-being are especially lacking (Engelen et al., 2019). This is a clear research gap, since adapting to new ways of working and to a new work environment takes time (Babapour et al., 2018) and may be challenging, especially when moving from private offices (Sirola et al., 2021). Moreover, the effects on well-being develop over the long term (Wohlers & Hertel, 2017), which makes long follow-up times essential.

A few previous studies with longer follow-up times have found some adaptation to change (Bergsten et al., 2021; Meijer et al., 2009), whereas others have found the negative effects to persist even a year after the change (Haapakangas et al., 2019; Öhrn et al., 2021). For example, Öhrn et al., (2021) found a negative effect on privacy and satisfaction with office design 18 months after the change. As some previous studies have indicated negative long-term effects, more longitudinal studies are needed for evaluating the long-term implications of office redesign for employees. The aim of this study was to investigate employees' perceived privacy and office support, satisfaction with the work environment, and well-being at work using follow-up times of eight and 21 months after redesigning private offices into an ABO.

Material and methods

Study design

This three-wave longitudinal intervention study investigated a redesign of private offices into an ABO with assigned desks in a public social and health care office. Data were originally gathered as contract research, in which the aim of the organization was to follow employee experiences and learn about them for similar changes that were planned for other units in the future. Quantitative methods were used. Questionnaire data were collected four months prior to moving to the new office (baseline), eight months after the change (first follow-up), and 21 months after the change (second follow-up). The study followed ethically responsible scientific practices (TENK, 2019).

Context of the study

The planning of the workplace change and participative design started about two years before implementation, and the move to the ABO took place in spring 2016.



It was the first ABO for the city's social and health care office organization. The new office was located on one of the 10 floors of a building built in the 1970s. The employees who moved to the redesigned ABO had various administrative tasks related to finance, office, and facility management services. After the first follow-up, employees from communications moved to the ABO, but they were not included in the study. The opportunities for telework were very limited in the organization but increased somewhat after the move among the work groups for which it was useful and possible.

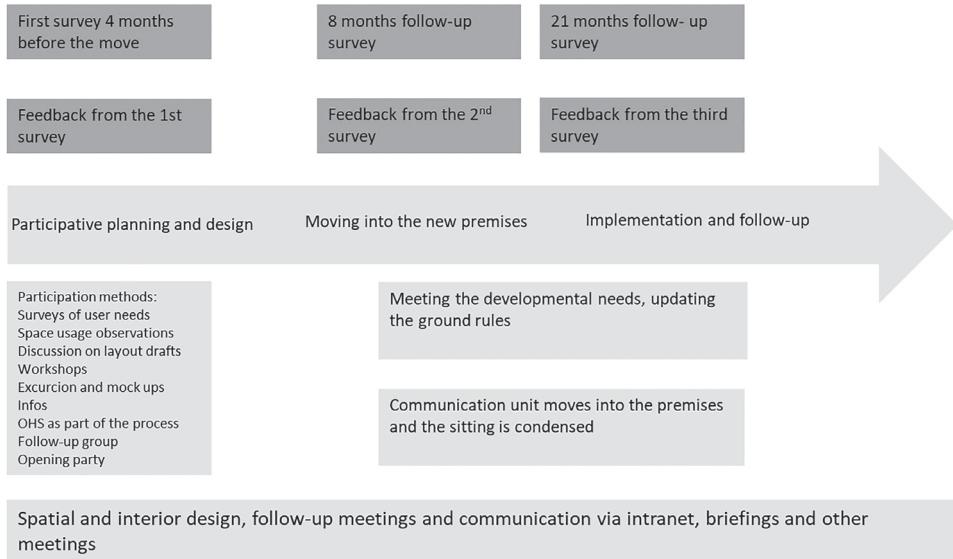
The aim of the organization's office redesign was to improve cooperation between employees, increase teamwork, learn more modern ways of working, and achieve space- and energy savings. A further aim was to learn from this workplace change in order to implement similar concepts in other city facilities in the future.

Figure 1 shows the implementation process in the organization. The change was coordinated by a group of representatives from the organization's HR, facility management (FM), ICT unit, financial administration, and substance departments. An external consulting office carried out a survey of user needs according to work tasks (e.g., external mobility), space usage observations, workshops, and discussions, and designed a preliminary concept for the ABO. Another architect office conducted the architectural design. The organization's own facilities management collaborated with the consultants and architects. In Finland, occupational health services (OHS) have a designated team that collaborates with the organization and can act as an expert in workplace change projects. In the studied organization, the city's own OHS provided expert support from doctors, a physiotherapist, and a psychologist for well-being and ergonomics throughout the change. The physiotherapist and psychologist from OHS also took part in the ground rule workshops. When the ABO was completed, the physiotherapist helped employees adjust and use the furniture.

The employees were given opportunities to participate through the questionnaires before (consultants' survey of user needs and the researchers' survey) and after the change (researchers' follow-up surveys). They also participated in workshops (discussions on layouts and ground rules). Layouts were available to everyone, and whenever changes were made, the new plans were put on display. Excursions were made to similar facilities. The renovation was arranged so that the employees were temporarily located in smaller spaces elsewhere on the same floor.

The organization wanted to monitor and develop the facilities during the process. Thus, the survey results of this study were utilized to develop the facilities between the first and second follow-up. Apart from this, the ABO was designed and implemented without the involvement of the research group. The results of the first follow-up led to the following changes in the workspaces: One meeting room was converted into a workspace because constant passage to and from the meeting room disturbed those working nearby. Acoustic panels were added to some of the spaces to prevent echoing and to reduce sound propagation. Higher shelves were put up in front of the toilets to prevent sounds carrying. Additional computer screens (in quiet rooms), stand-up carpets, and noise-cancelling headphones were purchased. Employees were reminded of the ground rules, as they did not always follow them, and guests, for example, did not always understand the rules.

Figure 1 Workplace change process and follow-up study.



The space efficiency of the new office was approximately 18 m²/FTE and was divided into open-plan areas that were separated by glass walls. Open areas were meant for daily concentration work, and the idea was to move to informal interaction areas, quiet rooms, or meeting rooms if there was a need to communicate for longer periods. There was also a separate break-out area in the ABO. Employees from the same units were located close to each other. The workstations were surrounded by screens and were equipped with computer screens, keyboards, mice, and wireless internet. Ground rules were drawn up for all areas to reduce distractions.

Data gathering and participants

The organization informed the employees of the study in advance. Participation was voluntary. At baseline, 64 employees were approached via a web-based questionnaire, and the response rate was 78% (n = 50) (Figure 2). At both follow-ups, the same survey was sent to all employees working at the premises, including those who had not responded to the baseline survey. The response rates were 79% for the first and 48% for the second follow-up. Seventeen employees responded to all three questionnaires but, in order to increase statistical power, we included data from employees who responded to the baseline survey and at least one follow-up survey. Thus, the analyses had 34 respondents at the first follow-up and 21 respondents at the second follow-up. No statistical differences were found between the studied samples in terms of age and gender. Further, the employees who dropped out did not differ from those included in the analysis in terms of age and gender. Table 1 provides descriptive information on the respondents.

Figure 2 Questionnaire response rates at baseline, eight, and 21-month follow-up, and respondent inclusion in the study.

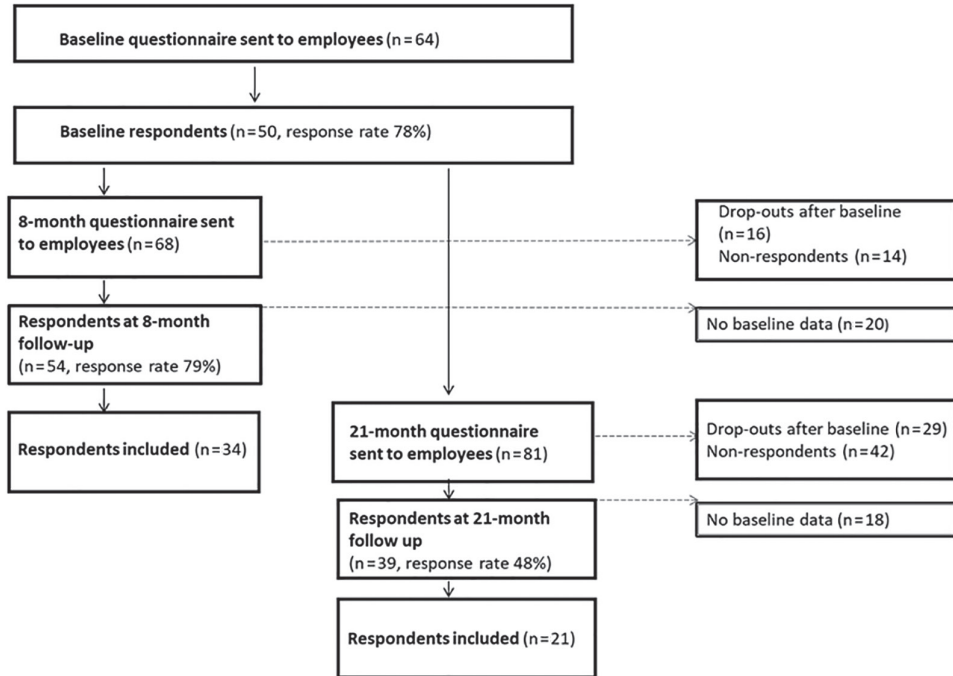


Table 1 Descriptive information on respondents. The table shows the statistics for all respondents and the samples used in the follow-up analysis at baseline.

Variables	All respondents at baseline (n = 50)	Participants in 8-month follow-up at baseline (n = 34)	Participants in 21-month follow-up at baseline (n = 21)
Age, years, mean (SD)	50.5 (9.2)	51.5 (9.3)	50.9 (8.7)
Age, range	28–62	28–63	30–61
Gender (%) female	72.0	73.5	76.2

Measures

Questionnaire

The Work Environment and Well-being questionnaire (Ruohomäki et al., 2013), modified for this context according to background questions, addressed several themes related to the physical and psychosocial work environment.

The study analyzed the following items:

- *Age and gender*, as basic demographic items.
- *Privacy*, evaluated by the following statement: ‘I am able to concentrate on my work in this environment’ (1 = Strongly disagree, 2 = More or less disagree, 3 = Neither agree nor disagree, 4 = More or less agree, 5 = Strongly agree) and by four items concerning noise and acoustic and visual privacy: (‘How much have the following work-related factors bothered you at your workplace lately?’); noise, lack of speech privacy, movement in the field of vision, and lack of visual protection (1 = Not at all, 2 = A little, 3 = To some extent, 4 = Quite a lot, 5 = Very much; Hongisto et al., 2016).
- *Perceived office support* for individual and interactive work tasks, measured by asking: ‘How do you view the following statements concerning your work premises?’ with the following single response options: ‘My work premises support the work tasks that I carry out alone and independently’, ‘My work premises support teamwork’, ‘My work premises support interaction between individuals’, and ‘My work premises are well-suited for carrying out my work tasks’ (1 = Strongly disagree, 2 = More or less disagree, 3 = Neither agree nor disagree, 4 = More or less agree, 5 = Strongly agree).
- *Satisfaction with the work environment*, evaluated on a seven-point scale: (‘How satisfied are you with your work environment as a whole?’); (1 = Very dissatisfied – 7 = Very satisfied; Hongisto et al., 2016).
- *Well-being at work*, using two variables: job satisfaction and work engagement. Job satisfaction was evaluated by asking: (‘How satisfied are you with your work as a whole?’); (1 = Very dissatisfied, 2 = Fairly dissatisfied, 3 = Neither satisfied nor dissatisfied, 4 = Fairly satisfied, 5 = Very satisfied), and work engagement using the UWES-9 work-engagement inquiry (Schaufeli & Backer, 2003; Schaufeli et al., 2002), which has good construct validity (Seppälä et al., 2009). The following question was used: (‘How often do you have the following feelings or thoughts about your work? Please read each statement carefully and decide if you ever feel this way about your job’ and the nine response options were: ‘At my work I feel that I am bursting with energy’, ‘At my job, I feel strong and vigorous’, ‘I am enthusiastic about my job, my job inspires me’, ‘When I get up in the morning, I feel like going to work’, ‘I feel happy when I am working intensively’, ‘I am proud of the work that I do’, ‘I am immersed in my work’, and ‘I get carried away when I am working’); (0 = Never–6 = Daily). We then calculated the sum of the nine items (Cronbach’s alphas varied from 0.95 to 0.98).

Statistical methods

We used IBM SPSS Statistics, Version 27 (IBM Corporation) for the statistical analyses. Descriptive statistics were derived using frequencies and percentages for categorical variables and means and standard deviations (SD) for continuous variables. The Wilcoxon Signed Ranks test was used to determine whether employee perceptions (privacy, perceived office support, satisfaction with the work environment, and well-being at work) changed following the redesign of workspaces. In order to increase statistical power, we conducted separate comparisons between baseline and the eight-month follow-up, and baseline and the 21-month follow-up. We chose a nonparametric method due to the small sample size. Differences between the samples and dropouts were determined using t-tests for continuous and z-tests for categorical variables. We calculated nonparametric



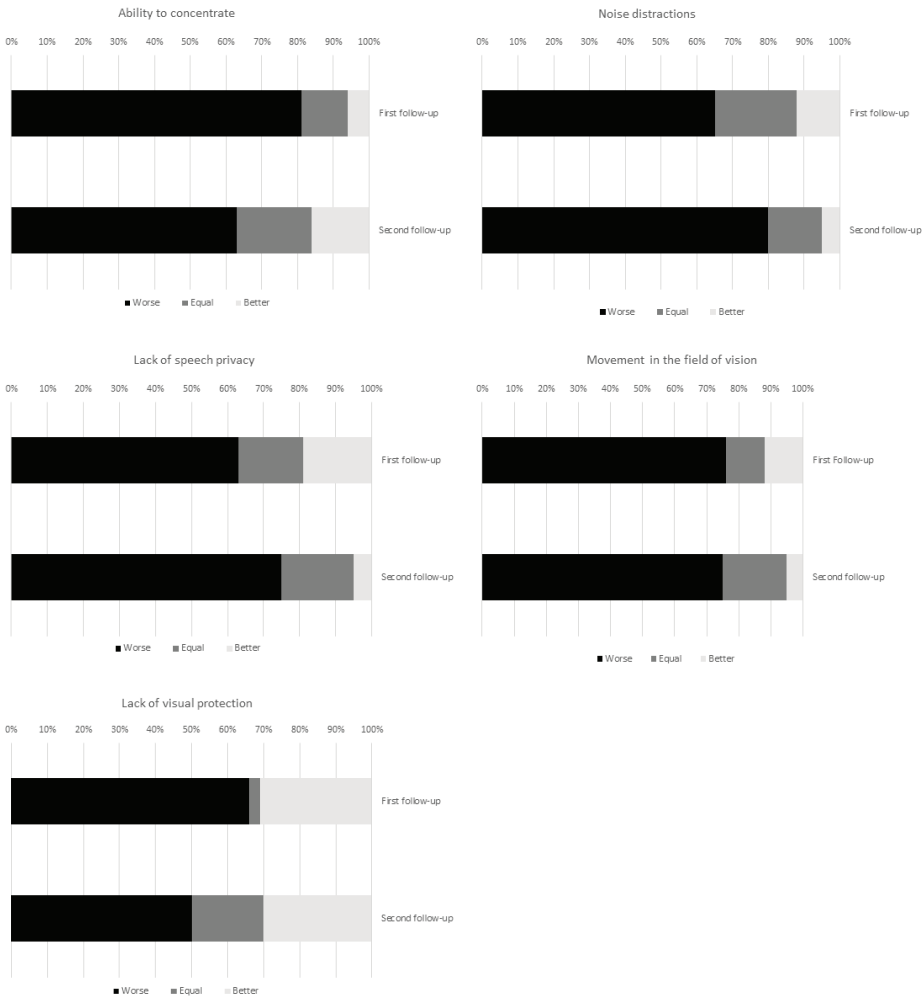
effect size for related samples using the following formula: $r = Z/\sqrt{N}$ (Rosenthal, 1994). The effect sizes were interpreted as follows: $r = 0.1$ to 0.3 (small effect), $r = 0.3$ to 0.5 (medium effect), and $r = 0.5$ to 1 (large effect). The significance level was set at $p < 0.05$.

Results

Privacy

Descriptive analysis showed that the majority of respondents experienced that privacy deteriorated at the eight and 21-month follow-ups, in comparison to baseline (Figure 3).

Figure 3 Proportions (%) of respondents with negative, positive, and no changes in privacy at work at first ($n = 34$) and second follow-ups ($n = 21$) in comparison to baseline.



The ability to concentrate deteriorated for 81% of the respondents at the eight-month follow-up and for 63% of the respondents at the 21-month follow-up. The Wilcoxon Signed Ranks test confirmed that these changes were statistically significant at both follow-ups (eight months: $z = -4.213$, $p < 0.001$, $r = 0.53$; 21 months: $z = -2.532$, $p < 0.01$, $r = 0.41$) (Table 2).

Noise disturbances had increased for 65% of the respondents at the eight-month follow-up ($z = -3.716$, $p < 0.001$, $r = 0.45$) and for 80% of the respondents at the 21-month follow-up ($z = -3.454$, $p < 0.001$, $r = 0.54$). Similarly, more employees were bothered by the lack of speech privacy at both follow-ups (8-month follow-up: 63%; $z = -3.397$, $p < 0.001$, $r = 0.42$; 21-month follow-up: 75%; $z = -3.419$, $p < 0.001$, $r = 0.54$). Movement in the field of vision was more disturbing at the eight-month (76%; $z = -4.043$, $p < 0.001$, $r = 0.49$) and 21-month follow-ups (75%; $z = -3.002$, $p < 0.01$, $r = 0.47$). Lack of visual protection bothered more employees at eight months (66%; $z = -3.712$, $p < 0.001$, $r = 0.45$), but there was more dispersion in the direction of changes at the 21-month follow-up, as complaints about the lack of visual protection had increased among 50% of the respondents but decreased among 30% in comparison to baseline (Figure 3). Nevertheless, the increase in complaints remained statistically significant at 21 months ($z = -2.483$, $p < 0.01$, $r = 0.39$) (Table 2).

Table 2 Privacy, perceived office support, satisfaction with work environment, and well-being at work before and after change.

Variables	Baseline, mean, (SD)	First follow-up, mean, (SD)	Baseline, mean, (SD)	Second follow-up, mean, (SD)
	(n = 34)		(n = 21)	
Ability to concentrate on work	4.19 (1.01)	2.29 (1.19)***	4.11 (0.88)	2.84 (1.26)**
Noise disturbance	2.06 (0.89)	3.26 (1.33)***	2.15 (0.81)	3.50 (1.05)***
Lack of speech privacy	2.00 (1.19)	3.28 (1.49)***	2.00 (1.26)	3.70 (1.13)***
Movement in field of vision	1.38 (0.60)	2.91 (1.48)***	1.55 (0.69)	2.80 (1.40)**
Lack of visual protection	1.38 (0.60)	2.91 (1.48)***	1.55 (0.69)	2.80 (1.40)**
Suitability of premises for individual work	4.42 (0.83)	2.91 (1.35)***	4.30 (0.98)	2.90 (1.37)**
Suitability of premises for teamwork	3.38 (1.21)	3.16 (1.35)	3.20 (1.44)	3.55 (1.32)
Suitability of premises for interaction	3.71 (1.01)	3.45 (1.26)	3.74 (1.10)	3.74 (1.19)
Suitability of premises for work	4.36 (0.82)	3.24 (1.28)***	4.40 (0.75)	3.55 (1.39)*
Satisfaction with work environment	5.41 (1.29)	4.13 (1.86)**	5.56 (0.98)	4.78 (1.63)
Job satisfaction	3.55 (1.03)	3.33 (1.22)	3.71 (1.10)	3.43 (1.12)
Work engagement	4.62 (1.50)	4.16 (1.69)**	4.63 (1.34)	4.20 (1.51)*

Privacy: Ability to concentrate on work (1 = Strongly disagree – 5 Strongly agree), Noise disturbance, Lack of speech privacy, Movement in field of vision and Lack of visual protection (1 = Not at all – 5 = Very much), Perceived office support: Suitability of premises for individual work, teamwork and interaction, and for work (1 = Strongly disagree – 5 = Strongly agree) and Satisfaction with work environment (1 = Very dissatisfied – 7 = Very satisfied), Well-being at work: Job satisfaction (1 = Very dissatisfied – 5 = Very satisfied), Work engagement (0 = Never – 6 = Daily).

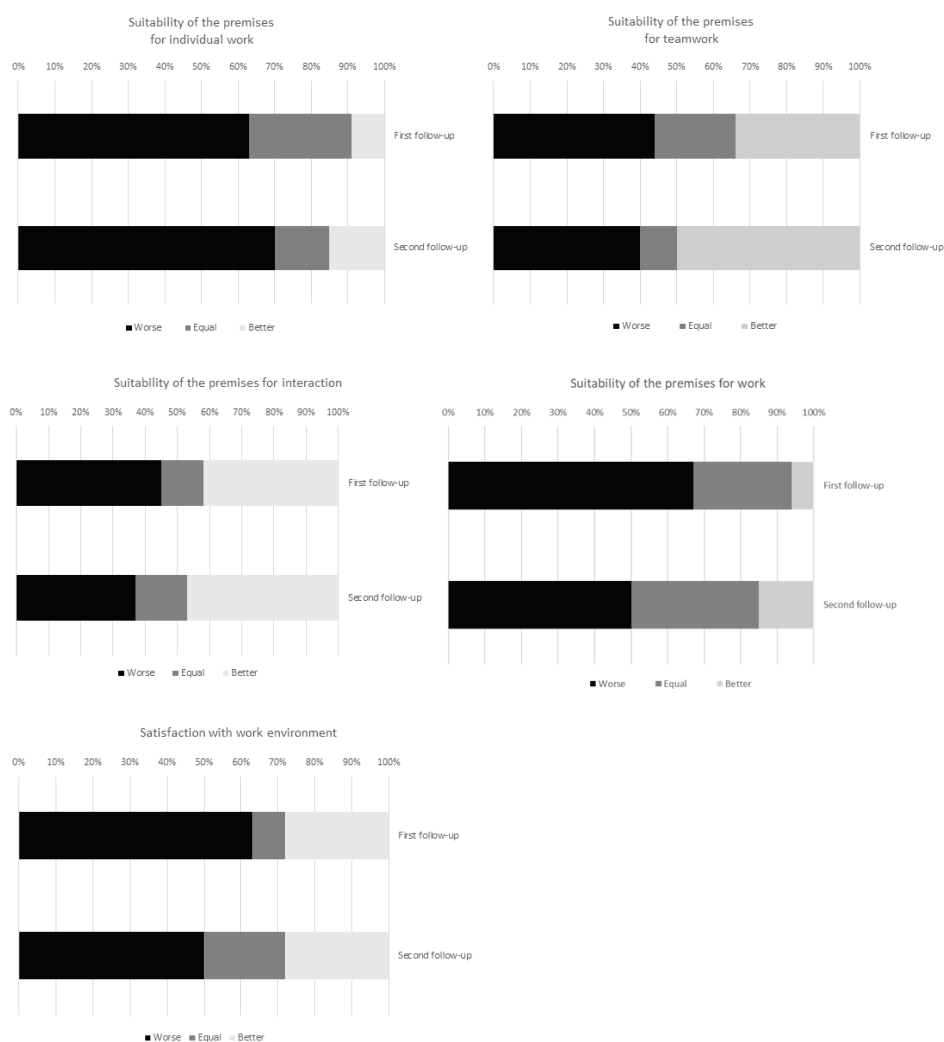
Note: (* $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$).



Perceived office support and satisfaction with work environment

As displayed in Figure 4 and Table 2, the perceived office support for individual work was statistically significantly impaired at both follow-ups (63% at 8 months: $z = -3.864, p < 0.001, r = 0.47$ and 70% at 21 months: $z = -2.871, p < 0.01, r = 0.45$). Interestingly, interaction and teamwork did not change ($p > 0.05$ at both follow-ups), though the share of positive experiences had increased by the second follow-up. Further, the suitability

Figure 4 Proportions (%) of respondents with negative, positive, and no changes in perceived office support and satisfaction with work environment at work at first ($n = 34$) and second follow-ups ($n = 21$) in comparison to baseline.



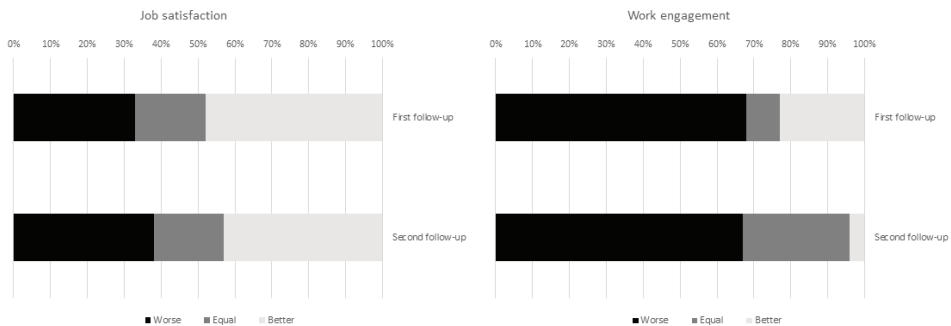
of the premises for work had deteriorated for 67% at the eight-month and for 50% at the 21-month follow-up (eight months: $z = -3.969$, $p < 0.001$, $r = 0.48$; 21 months: $z = -2.297$, $p < 0.05$, $r = 0.36$), although the effect was smaller at the 21-month follow-up (Table 2).

Satisfaction with the work environment decreased statistically significantly at eight months (63%; $z = -2.979$, $p < 0.01$, $r = 0.37$), but the difference was no longer statistically significant at 21 months (50%; $p > 0.05$) (Figure 4; Table 2).

Well-being at work

Of the well-being variables, job satisfaction did not change ($p > 0.05$ at both follow-ups). However, work engagement had decreased statistically significantly at both follow-ups (eight months: 68%; $z = -3.119$, $p < 0.01$, $r = 0.37$; 21 months: 67%; $z = -2.111$, $p < 0.05$, $r = 0.32$) in comparison to baseline (Figure 5; Table 2).

Figure 5 Proportions (%) of respondents with negative, positive, and no changes in well-being at work at first ($n = 34$) and second follow-ups ($n = 21$) in comparison to baseline.



Discussion

This study examined how employees perceived the redesign of private offices into an ABO eight and 21 months after the change, in comparison to baseline, four months prior to the change. The experiences were studied in terms of privacy, perceived office support, satisfaction with the work environment, and well-being at work. This study is valuable and important, as it is one of the few to follow the effects of change for at least a year, at more than one timepoint (Bergsten et al., 2021; Haapakangas et al., 2019; Meijer et al., 2009; Öhrn et al., 2021) and to investigate the long-term effects on satisfaction with the work environment and employee well-being (Engelen et al., 2019). Furthermore, the employees moved from private offices to an ABO with assigned desks, which is a less researched context. The results of our study showed that moving to the ABO was a negative experience in the long term in terms of most of the studied factors. As we followed the change for 21 months, this study suggests that the unsatisfactory conditions of an ABO may be more permanent (e.g., Öhrn et al., 2021) and not only



reflect an adaptation phase. Such results raise the question of whether ABOs are generally such a ‘promising concept’ as expected (Engelen et al., 2019).

Privacy, which declined in our study, is a well-known problem in traditional open-plan offices (e.g., De Croon et al., 2005; Kaarlela-Tuomaala et al., 2009; Seddigh, 2014), and is also frequently reported in ABOs (Engelen et al., 2019). Noise disturbances and lack of speech privacy were an expected result, as the employees moved from private offices to shared workspaces (Haapakangas et al., 2019; Morrison et al., 2020; Öhrn et al., 2021; Sirola et al., 2021). However, the ABO concept aims to resolve the privacy issues of open office spaces by offering additional activity-based workspaces and flexible workspace use (Wohlers & Hertel, 2017). One potential explanation for the negative results of our study is that this may not be achieved if employees still have assigned desks (Bodin et al., 2009; Kim et al., 2016), as even in non-territorial ABOs, employees are often reluctant to actively switch workspaces (Appelmeulenbroek et al., 2011; Haapakangas et al., 2022; Hoendervanger et al., 2016). As a result, employees may have worked in conditions that were not appropriate for their needs and tasks (Gerdenitsch et al., 2018; Wohlers et al., 2017), particularly in cases of individual and highly concentrative work.

Although the assumed benefits of ABOs have generally been related to communication and interaction (Engelen et al., 2019), the experiences of how well the workspaces supported interaction or teamwork did not change in our study. These results resemble more those of open-plan office studies showing negative or no changes rather than improvements (e.g., De Croon et al., 2005; Kaarlela-Tuomaala et al., 2009). Moreover, this intermediate form between an open-plan office and a non-territorial ABO lacked the desk-sharing feature, which has previously been associated with improved interaction (e.g., De Croon et al., 2005; Kim et al., 2016). It may also be that the perceived lack of speech privacy reduced opportunities for spontaneous conversations, and hence, the ABO did not bring any extra value to interaction and teamwork.

Our study showed that satisfaction with the work environment had decreased eight months after the change, with no changes at the 21-month follow-up in comparison to baseline. This is in contrast with the results of Öhrn et al., (2021) who found that satisfaction with office space remained negative in the long term. This may be due to methodological differences, but as the descriptive statistics (Figure 4; Table 2) in the second follow-up were closer to those at baseline, the improvements made to the premises on the basis of the first survey may have made some contribution. In order to achieve the best possible end results, organizations should continue monitoring and developing premises according to the needs of the employees, even after moving to an ABO, as in our study. As ABOs need to be developed during the process, researchers should also be more aware of this when explaining their findings.

This study also showed that well-being had deteriorated at both the eight-month and 21-month follow-ups. This contradicts previous research results (e.g., Öhrn et al., 2021; Wijk et al., 2020) of no changes in well-being in the long term. Lack of privacy may be one explanation for the decrease in well-being in our study, since as a stress factor, it is negatively associated with well-being (Herbig et al., 2016). The studied office type, with assigned desks, may also explain the decrease, as open offices with no desk-sharing are generally associated negatively with well-being (Bodin Danielsson & Bodin, 2008; Nielsen & Knardahl, 2020). In sum, as the effects on well-being may develop over time (Wohlers & Hertel, 2017), we recommend that future studies have longer

follow-up times. Further, research comparing the effects of assigned and non-assigned desks on performance and well-being in ABOs is needed. As the implementation process may also be associated with satisfaction with the environment (e.g., Sirola et al., 2021) and well-being (Wijk et al., 2020), we also recommend that future studies focus on the process and outcomes.

Strengths and limitations

The strength of this study is that we followed the employees' experiences of the change from private offices to an ABO for at least a year at three different timepoints, which only a few previous studies have done (Bergsten et al., 2021; Haapakangas et al., 2019; Meijer et al., 2009; Öhrn et al., 2021). In addition, our study brings new knowledge on the long-term effects on well-being, which is a sparsely studied area (Engelen et al., 2019). Our research also adds value to the less researched concept of ABOs with assigned work desks. However, caution is needed when generalizing these results to other organizations, as this was a study of one organization with a small sample size, and it made no comparisons between the follow-ups. Future studies should investigate the long-term effects of change, with larger sample sizes and control groups, although dropouts in longitudinal studies make such designs difficult to implement (e.g., Kaarlela-Tuomaala et al., 2019).

Practical implications

Our results suggest that as negative effects may persist even a year after a change, organizations moving to ABOs should continue monitoring user experiences, and take developmental measures already at an early stage if needed. Developing the premises according to the needs of the employees could lead to adaptation over time. When setting goals and making decisions about future office types, the current office type should be one of the starting points. Further, if maintaining assigned desks at ABOs, organizations should carefully consider whether this office type supports their work tasks, as it may not sufficiently facilitate flexible workspace switching. Despite assigned work desks, organizations should find ways to encourage employees to work and use the spaces in a new, meaningful way. They should also consider utilizing well-being professionals as part of the process to ensure better well-being at work.

Conclusion

Our study shows that the benefits generally associated with ABOs are context specific and cannot be generalized without more detailed consideration of office design. The results suggest that moving to an ABO may have long-term negative effects on privacy and perceived office support in terms of individual work and well-being. Organizations should be cautious when considering moving to ABOs with assigned desks, as this may not provide appropriate conditions for individual and concentrative tasks.

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