



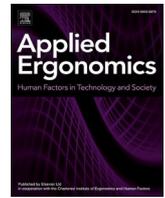
## **Perceptions of activity-based flexible offices among onsite, hybrid and remote workers**

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# Perceptions of activity-based flexible offices among onsite, hybrid and remote workers

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## ABSTRACT

This study compares perceptions of Activity-based Flexible Offices (AFOs) among remote, hybrid, and onsite workers. Cross-sectional survey data was collected from 1263 employees from a public service organisation in autumn 2022. The results revealed significant differences in how these groups perceive the physical work environment. Onsite workers reported the highest satisfaction with task support, while remote workers were least satisfied. Privacy ratings were low across all groups. Remote and hybrid workers commented that they worked from home primarily for tasks requiring concentration and confidentiality. The findings suggest that employees' perceptions of AFOs – including insufficient numbers of enclosed workspaces and meeting rooms – may influence the degree of remote work.

## 1. Introduction

In recent decades, in line with ever increasing digitalisation and technological advancements, remote work has become common among office workers. In the wake of the COVID-19 pandemic, remote work became mandatory for many people rather than just an option. In the European Union, the proportion of remote workers increased from 11 to 48% during the pandemic (Eurofound, 2021; European Commission, 2020). Although remote work has existed for decades, various terms have been used in the literature, including telework, work-from-home, e-work, and hybrid work — all of which refer to work performed outside the employer's premises (Charalampous et al., 2019). The European Foundation for the Improvement of Living and Working Conditions (Eurofound) uses the term telework and defines it as "a work arrangement in which work is performed outside a default place of work, normally the employer's premises, by means of information and communication technologies (ICT)" (Eurofound). The term hybrid work gained prominence during the COVID-19 pandemic and refers to an approach that combines remote work with onsite work (Eurofound, 2023). Adoption of hybrid work models requires rethinking workplace design to accommodate the changes in office occupancy and demands on the physical work environment.

Although restriction have eased, remote work remains widespread. While some organisations have adopted hybrid work arrangements (e.g., Marzban et al., 2023b; Naor et al., 2022), others require a full return to offices (Eurofound, 2024). These changes have prompted a re-evaluation of workplace design to accommodate fluctuating occupancy and diverse work patterns. A promising workplace concept that may support hybrid work is the Activity-based Flexible Office (AFO). AFOs typically provide open, semi-open, and enclosed areas that are tailored for various activities. Instead of having assigned workstations, employees can choose from various workspaces (van Meel, 2020). Open work zones are often larger than quiet and semi-quiet zones with the intention of promoting teamwork and informal interactions among employees, whereas enclosed or quiet rooms are intended to support work requiring concentration and confidentiality (Hoendervanger et al., 2019; Wohlers and Hertel, 2017). Consequently, the effectiveness of AFOs depends not only on their spatial layout but also on how well the physical environment supports different task demands.

Noise and limited acoustic privacy are widely reported as major challenges in AFOs, especially for work that requires concentration or involves confidential information (See reviews by Engelen et al., 2019; Marzban et al., 2023b; Masoudinejad and Veitch, 2023). A typical AFO provides workstations for about 70% of employees (Bergsten et al.,

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2021; Wohlers and Hertel, 2017), based on the expectation that not everyone will be working on site at the same time. In the context of sustained hybrid work, these desk-to-employee ratios are likely to decrease further, which may intensify both the intended advantages of AFOs, such as flexibility and space efficiency, and their potential drawbacks, including increased noise, crowding, and competition for appropriate workspaces.

Research on the effectiveness of AFOs to support different tasks shows mixed results. Several studies show that employees in AFOs report a decline in their productivity after moving to AFOs, often attributed to difficulties supporting focused work, time spent searching for suitable workspaces or colleagues, and having to adapt to activity-based working (See reviews by Engelen et al., 2019; Marzban et al., 2023b; Masoudinejad and Veitch, 2023). Some studies show that employees appreciate increased opportunities for collaboration or interaction with other teams, while others report reduced contact between team members and teamwork, which often affects their productivity (Wohlers and Hertel, 2018). These outcomes are often linked to limited spatial enclosure and the physical dispersion of team members in AFOs (ibid). Importantly, most studies on the consequences of AFOs were conducted prior to COVID-19. Given their mixed results and the shift to hybrid work, it is important to investigate the consequences of AFOs and whether the previous findings still hold.

Research on post-pandemic offices is still in its early stages, with much of the focus on task-related preferences for work location (Mateescu et al., 2024; Rucker et al., 2024; Shao et al., 2021). Studies consistently indicate that employees prefer the office for interactive and collaborative tasks, while remote work is favoured for individual, focused work (Appel-Meulenbroek et al., 2022; Rucker et al., 2024; Shao et al., 2021; Toscano et al., 2024). Few studies suggest that decisions for work location are based on employee perceptions of how well the work environment (either home or office) supports their tasks and productivity (Appel-Meulenbroek et al., 2022; Bergefurt et al., 2024). However, much of the existing research was conducted during the COVID-19 pandemic and is based on employees' speculations about their future work location choices.

One exception is the study by Haapakangas et al. (2024) which explored how office experiences serve as push-and-pull factors in remote work preferences after the COVID-19-related restrictions were lifted. Their findings reveal that negative office experiences, such as insufficient quiet spaces, lack of spontaneous collaboration areas, difficulty switching workspaces, and inadequate storage, were associated with employees' preference for remote work. Studies from before the pandemic suggest that workstation choices in AFOs are motivated by a combination of functional requirements, social dynamics, the ability to minimise distractions, and the nature of the tasks (Babapour Chafi et al., 2020; Haapakangas et al., 2023; van den Berg et al., 2020). The interplay between workspace design and employee behaviour is not a new phenomenon, but more research is warranted regarding the new dynamics of hybrid work, specifically how employees perceive and utilise AFOs in an era with higher acceptability of remote work and increased flexibility.

To fill this knowledge gap, our study aims to compare remote, hybrid and onsite workers in a large organisation, in terms of:

- demographic (age, gender, job role) and tasks characteristics (confidentiality and concentration),
- perceptions of the physical work environment in AFOs.

## 2. Materials and methods

This study is a part of a larger project with the overall aim of investigating the consequences of activity-based flexible offices (AFOs) in a public service organisation in West Sweden. This paper presents data from the third and last wave of the study that was collected in 2022, six months after COVID-19 restrictions were lifted (which was three

years after relocation to AFOs. The survey was conducted by the organisation and retrieved for analysis. The project started in 2018 and aimed to fill the research gap on AFOs in public service organisations. The study was reviewed and approved by the Swedish Ethical Review Authority (Ref. No. 768–18).

### 2.1. The study context

The study took place in an organisation responsible for healthcare, culture, and transportation services in one of Sweden's 21 provinces. The organisation served a province with a population of approximately 1.7 million (at the time of data collection in 2022). In total, the organisation had approx. 51,000 employees, of whom 2950 from 15 departments worked in AFOs. The departments carried out a wide range of tasks, including analysing patient data, planning and administration, coordinating with care centres, and delivering digital healthcare services, as well as meeting with external partners, developing visual materials, conducting interviews, managing logistics and providing administrative and customer services across all units (Table 1).

According to the organisation's remote work policy, decisions about the degree of remote work are made by line managers in consultation with their employees, and in consideration of organisational needs and employees' work conditions and tasks.

### 2.2. Activity-based flexible office design

The AFO design generally included an open floor plan divided into three zones, according to van Meel (2020):

- Active zones (55–60% of the floor area) were designed to support collaborative work through open-plan workspaces and meeting rooms.
- Semi-quiet zones (30–35% of the floor area) were intended for individual non-concentrative tasks or collaborative work, also providing open-plan workspaces.
- Quiet zones (5–10% of the floor area) were designated for concentration-demanding tasks, which included enclosed or single-person rooms.

Fig. 1 illustrates representative examples of the standard workspaces within each zone of the AFOs. Overall, the design prioritised open spaces, which accounted for approximately 90–95% of the total floor area. Most employees had non-assigned workstations. The planned occupancy allowed for 50% of employees to share non-assigned workstations, aligning with the 0.4–0.8 sharing ratio, in line with existing definitions, such as van Meel (2020).

To support the intended use of each work zone, codes of conduct were communicated to employees through brochures, emails, and signage placed throughout the workspace.

### 2.3. Data collection and study population

Data collection involved a cross-sectional survey conducted in autumn 2022, approximately two years after the COVID-19 outbreak, and six months after the removal of pandemic-related restrictions in Sweden. The survey, which was carried out over three weeks, using a secure online service, contained anonymous data only. All employees (n = 2950) who worked in AFOs were invited to participate, and out of this group 1521 filled in the survey, resulting in a response rate of 52%. The removal of respondents who reported (1) working less than 8 h per week (n = 59), or (2) working from a third location other than the office or home for more than 20% (n = 199), resulted in a final cohort of 1263 respondents for analysis (Fig. 2).

The survey consisted of questions that had been tested in previous studies and included constructs such as furnishing (Wahlström et al., 2024), privacy and ambient factors (Rolfö et al., 2018), as well as task

**Table 1**

Demographic data and task characteristics. The last two columns display Kruskal–Wallis H test (KWH) and pairwise comparisons across remote, hybrid and onsite workers.

	Remote Workers % (n.)	Hybrid Workers % (n.)	Onsite Workers % (n.)	KWH p-value	Pairwise comparison
	(n = 237)	(n = 682)	(n = 344)		
<b>Gender</b>					
Female	52% (123)	61% (416)	60% (207)	0.49	NA
Male	42% (100)	35% (238)	36% (123)		
Other	6% (14)	4% (28)	4% (14)		
<b>Age</b>					
18-30	1% (3)	4% (27)	8% (27)	0.39	NA
31-40	16% (39)	18% (125)	17% (60)		
41-50	36% (85)	30% (208)	28% (98)		
51-60	27% (63)	33% (225)	33% (114)		
>60	14% (34)	10% (65)	10% (35)		
<b>Managerial position</b>					
Yes	4% (10)	8% (54)	18% (63)	<0.001	Onsite differ from remote and hybrid: Onsite–hybrid, $p < 0.001$ Onsite–remote, $p < 0.001$
No	96% (227)	92% (627)	82% (280)		
<b>Task characteristics: confidential tasks<sup>a</sup></b>					
Yes	51% (120)	44% (302)	55% (189)	0.003	Onsite and hybrid workers differ, $p = 0.003$
No	49% (117)	56% (379)	44% (152)		
<b>Task characteristics: concentration demanding tasks<sup>b</sup></b>					
High	85% (202)	82% (561)	72% (248)	0.017	Onsite workers differ from hybrid and remote workers: Onsite–hybrid, $p < 0.001$ Onsite–remote, $p < 0.001$
Medium	14% (33)	17% (118)	28% (95)		
Low	1% (2)	0% (3)	0% (1)		

<sup>a</sup> Examples of confidential tasks: recruitment and personnel matters, telephone or digital healthcare services involving patient information, sensitive facility or planning documents, and internal case or compliance reviews.

<sup>b</sup> Examples of concentration-demanding tasks include analysing patient data, reviewing case files and documentation, preparing reports and plans, and developing visual or written material. Proportion of time spent on concentration demanding tasks is presented.

support (Sirolo et al., 2023). Original formulation of most items focused on the organisational workplace rather than home offices. For example, respondents were asked “How well does the office as a whole support your different tasks?”. A small number of items were adjusted to explicitly capture office experiences, by adding “when you are at the office”. The full set of survey questions used in this study is presented in Appendix A.

The respondents rated their level of satisfaction with each survey question on a seven or five-point bipolar rating scale (e.g. dissatisfied–satisfied, disagree–agree, poor–good). Different response scale formats were used for consistency with the original instruments. The survey also included open-ended questions on office support for different tasks. A total of 186 comments were recorded and analysed to gain deeper insight into aspects of the physical and social work environment that were described as alignments and misalignments with work tasks.

## 2.4. Data analysis

We used IBM SPSS Statistics, version 27 (IBM Corporation) for descriptive statistics and statistical tests. Frequencies were used to present the demographic characteristics of the sample and respondent ratings on AFOs. To describe task characteristics, survey items about the nature and extent to which they involved confidential and concentration demanding tasks were analysed. According to a classification proposed by Rogelberg et al. (2007), tasks performed for more than 24 h per week were considered high-frequency, tasks performed between 5 and 23 h per week were considered medium frequency, and tasks performed for less than 5 h per week were considered low frequency. To compare remote, hybrid and onsite workers in terms of task and demographic characteristics, Kruskal–Wallis and Mann–Whitney tests were used. The significance level was set at  $p < 0.05$ . Additional analyses were conducted to compare perceptions of AFOs across age and gender groups. Full statistical results and pairwise comparisons of different gender and age groups are provided in Appendix B.

To describe perceptions of work environment among remote, hybrid and onsite workers, response categories were collapsed to simplify reporting. The seven-item scales were simplified as ‘negative’ responses (1–2: very dissatisfied and dissatisfied), ‘neutral’ responses (3–5: slightly satisfied, neither satisfied nor dissatisfied, and slightly dissatisfied) and ‘positive’ responses (6–7: very satisfied and satisfied). The five-item scales were simplified to ‘positive’ (1–2: very good and quite good), ‘neutral’ (3: neither good or bad) and ‘negative’ (4–5: very poor and quite poor). In addition, the Kruskal–Wallis test was used, followed by Mann–Whitney pairwise tests to identify group differences. The significance level was set at  $p < 0.05$ . The Kruskal–Wallis and Mann–Whitney tests were performed on the original response scales (with five or seven-items). A comparison of test results and collapsed scales indicated that the collapsing procedure did not alter the overall findings.

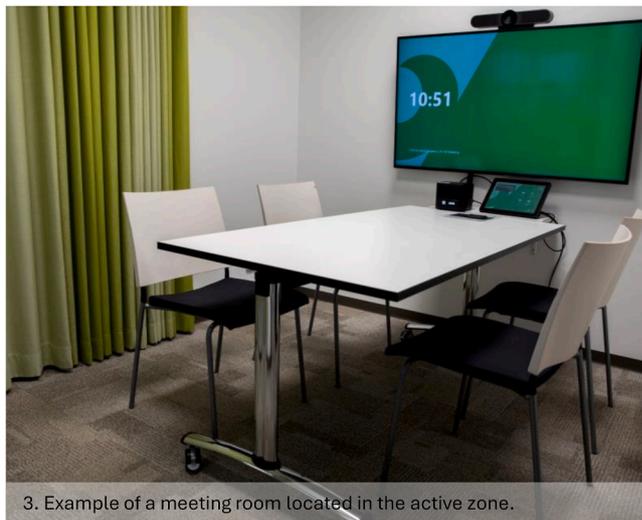
The study also included an analysis of open-ended comments to identify alignments and misalignments between the work environment and employees’ tasks, comparing the different groups. Initially, the comments were categorised into alignment and misalignment. However, most comments reported misalignment; therefore, the code ‘alignment’ was omitted in the reporting. Subsequently, the misalignments were further classified according to the particular factors in the social and physical work environments to which they belonged. For example, the comment “Hybrid teamwork is challenging because the technology doesn’t support it; we simply can’t make it work” was categorised as misalignment and then coded as “workspaces do not support technical needs”. The misalignments were compiled into a table presented in the results section. Quotations were selected to exemplify the misalignments and were marked with a code for identification (e.g. RW-28: Remote Worker, respondent No. 28). The quotations that were chosen to exemplify the findings were translated into English.

## 3. Results

The results are organised in two main sections. Firstly, the sample and task characteristics of remote, hybrid, and onsite workers are compared; secondly, the perceptions of the physical work environment in Activity-based Flexible Offices (AFOs) are compared among these groups.

### 3.1. Demographic and task characteristics

Among the respondents, 19% ( $n = 237$ ) reported a predominantly remote work arrangement, working onsite for only up to 20% of their workweek. More than half of the respondents ( $n = 682$ , 54%) reported a hybrid work arrangement, alternating between remote and onsite work, working 21–60% of their workweek onsite. Twenty-seven % of respondents ( $n = 344$ ) indicated their primary work location as onsite, covering 61–100% of their work week (Table 1). The three groups were



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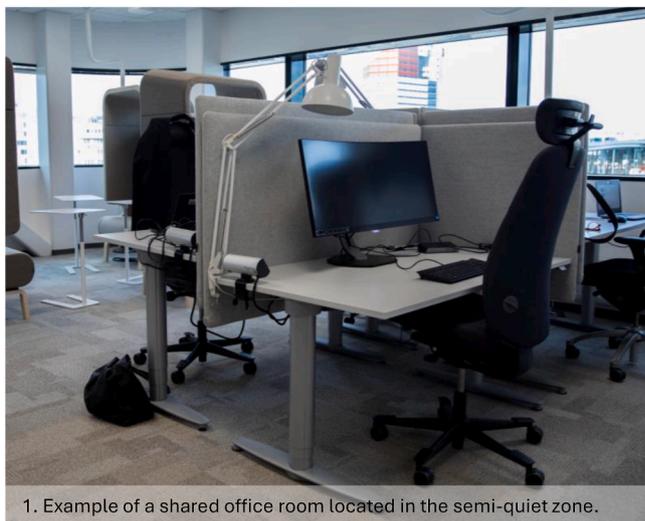


Fig. 1. Examples of the standard workspaces provided by the AFOs.

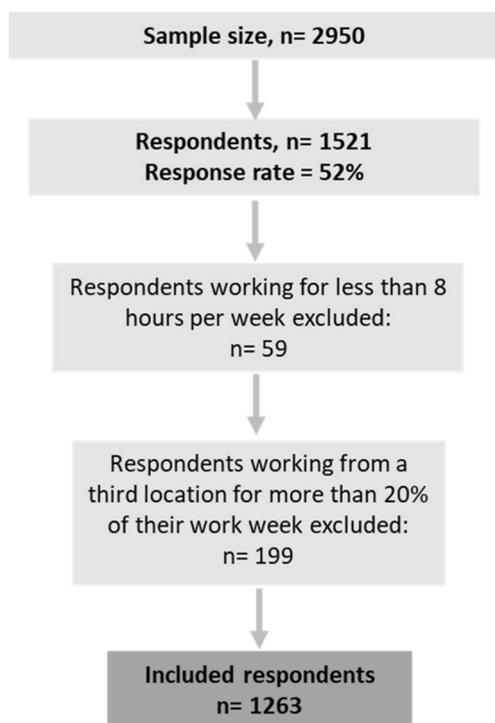


Fig. 2. Exclusion criteria for data analysis.

characterised as remote, hybrid and onsite workers, respectively.

No significant differences were found regarding gender and age distribution among remote, hybrid, and onsite workers. Women comprised the largest demographic across all groups, and the majority of respondents were between 41 and 60 years old (Table 1). A significant difference was found in terms of job role, with a majority of managers working onsite. A higher proportion of onsite workers reported handling confidential tasks (55%) compared to hybrid workers (44%). Conversely, remote and hybrid workers reported spending a larger proportion of their workweek on concentration-demanding tasks (over 80%), compared with onsite workers (Table 1).

Comparisons of perceptions of AFOs across gender groups showed women had a significantly lower ratings on ambient factors and furnishing aspects, as well as privacy aspects. In contrast, no significant differences emerged for task supports between men and women.

Comparisons across different age groups showed that furnishing and ambient factors did not differ significantly. Rating of task support varied by age. The youngest respondents (18–30) reported higher ratings for workplace support for efficient working, individual tasks and hybrid teamwork. Moreover, respondents over 60 had higher ratings for visual privacy than those between 31 and 50. Full statistical results of different gender and age groups are presented in Appendix B.

### 3.2. Perceptions of AFOs and degree of remote work

Perceptions of AFOs varied among remote, hybrid, and onsite workers, with remote workers generally expressing less favourable views compared to their onsite and hybrid counterparts.

#### 3.2.1. Perceptions of furnishing

A Kruskal-Wallis test was performed to examine differences in perceptions of furnishings across remote, hybrid and onsite workers. The test revealed a significant difference in perceptions of workspace adjustability, with remote workers being less positive (54%) compared to hybrid and onsite workers (62% and 68%, respectively), whereas perceptions of work posture and furniture comfort did not differ significantly across the groups. Approximately 70% of respondents in all

the groups perceived work posture to be positive (Table 2).

#### 3.2.2. Perception of ambient factors

No differences regarding perceptions of ambient factors across the remote, hybrid and onsite workers were found. About half of respondents in all groups perceived ambient factors positively (Table 3).

#### 3.2.3. Perception of privacy

Overall, perceptions of privacy were least positive in comparison with other factors, with fewer than 30% positive ratings regardless of remote, hybrid and onsite work (Table 4). The tests revealed significant differences across remote, hybrid and onsite workers in the perceptions of access to secluded spaces, visual privacy, and speech level across remote, hybrid, and onsite workers (Table 4). Onsite workers had more positive perceptions, while remote workers had more negative ratings. No significant difference was found regarding perception of acoustic privacy among the respondents, with over 40% negative ratings.

#### 3.2.4. Perceptions of task support

The Kruskal-Wallis test revealed significant differences regarding how remote, hybrid, and onsite workers perceived task support in the AFOs (Table 5). Concerning how AFOs support individual tasks, 58% of onsite workers had positive responses, while hybrid and remote workers provided fewer positive ratings (46% and 38%, respectively). Respondents' open-ended comments describe in more detail why they perceived that their tasks were not supported (Table 6). According to the respondents, individual, confidential, or concentrated tasks were not supported mainly due to spatial openness and shortage of secluded spaces: *"The office does not consider individuals' varying work needs, but rather assumes that everyone is cast in the same mould in terms of how easily you are disturbed or how sensitive you are to movement and sound"* (HW-52). Remote and hybrid workers mentioned that they worked from home for tasks that needed concentration and privacy, for online meetings and phone calls, and for not having to switch workstations that was time-consuming.

In terms of AFOs' support for onsite teamwork, onsite workers reported significantly more positive ratings (54%) compared to remote and hybrid workers (40% and 45%, respectively). The respondents commented that the number of meeting rooms was insufficient and that workspaces did not support side-by-side and spontaneous teamwork without interruption: *"There is a lack of workspaces where two or three people can collaborate without anyone getting annoyed and where you each have your own big screen"* (HW-91). Regarding hybrid teamwork, a smaller proportion of remote workers had positive ratings (29%) compared to hybrid and onsite workers (38% and 46%, respectively). Respondents mentioned difficulties with technical equipment in workspaces, especially meeting rooms. Respondents working primarily onsite also commented on similar issues in AFOs, including disturbances, a limited number of secluded spaces, and an insufficient number of meeting rooms.

Moreover, remote or hybrid workers expressed feelings of anonymity and a lack of belonging, attributing these sentiments to difficulty finding colleagues when they worked at the workplaces: *"You constantly have to search for your coworkers [...]. Or you have to arrange when and where to meet. It's time-consuming and complicated. [...] The point of having a workplace is lost. You might as well be in Grand Central Station. There are strangers everywhere!"* (RW-21). Remote workers also cited other factors like distributed teams, proximity to other organisations, and commute time as reasons for choosing remote work.

## 4. Discussion

The aim of this study was to compare perceptions of Activity-based Flexible Offices (AFOs) across remote, hybrid and onsite workers in a public service organisation. The three groups consisted of: onsite workers who reported working remotely one day a week or less; hybrid

**Table 2**

Perceptions of furnishings among remote, hybrid, and onsite workers. The results are presented with descriptive statistics dividing the responses into positive, neutral and negative ratings. The last two columns display Kruskal-Wallis H test (KWH) and pairwise comparisons across the three groups.

Furnishing	Perceptions	Remote workers	Hybrid workers	Onsite workers	KWH <i>p</i> -value	Pairwise comparisons
		% (n.) (n = 237)	% (n.) (n = 682)	% (n.) (n = 344)		
Adjustability	Positive	54% (129)	62% (423)	68% (233)	<b>0.005</b>	Remote differs from onsite and hybrid workers: Remote-hybrid, <i>p</i> = 0.023 Remote- onsite, <i>p</i> = 0.01
	Neutral	25% (59)	23% (155)	19% (67)		
	Negative	18% (42)	13% (90)	12% (41)		
Furniture comfort	Positive	30% (70)	39% (264)	40% (136)	0.271	NA
	Neutral	50% (119)	46% (311)	48% (165)		
	Negative	14% (33)	12% (81)	10% (33)		
Work posture	Positive	69% (164)	72% (491)	74% (253)	0.147	NA
	Neutral	17% (40)	19% (128)	18% (63)		
	Negative	9% (22)	7% (50)	6% (22)		

**Table 3**

Perceptions of ambient factors among remote, hybrid, and onsite workers. The results are presented with descriptive statistics dividing the responses into positive, neutral and negative ratings. The last column display Kruskal-Wallis H test (KWH) across the three groups regarding perceptions of ambient factors.

Ambient factors	Perceptions	Remote workers	Hybrid workers	Onsite workers	KWH <i>p</i> -value
		% (n.) (n = 237)	% (n.) (n = 682)	% (n.) (n = 344)	
Temperature	Positive	51% (120)	51% (345)	45% (156)	0.106
	Neutral	39% (93)	42% (286)	47% (160)	
	Negative	5% (13)	7% (49)	8% (27)	
Airflow	Positive	49% (115)	51% (346)	51% (177)	0.990
	Neutral	38% (91)	38% (258)	39% (133)	
	Negative	5% (13)	7% (49)	6% (19)	
Visual comfort	Positive	47% (112)	52% (353)	52% (179)	0.549
	Neutral	41% (96)	40% (273)	40% (137)	
	Negative	8% (19)	5% (33)	5% (17)	
Lighting	Positive	57% (136)	62% (422)	63% (215)	0.754
	Neutral	34% (81)	33% (226)	31% (106)	
	Negative	5% (13)	4% (28)	6% (21)	

workers with 2–3 days of remote work per week; and remote workers with 4–5 days of remote work per week.

Overall, onsite workers rated task support and privacy more positively in comparison with remote and hybrid workers. One possible

**Table 4**

Perceptions of privacy among remote, hybrid, and onsite workers. The results are presented with descriptive statistics dividing the responses into positive, neutral and negative ratings. The last two columns display Kruskal-Wallis H test (KWH) and pairwise comparisons across the three groups regarding perceptions of privacy.

Privacy	Perceptions	Remote workers	Hybrid workers	Onsite workers	KWH <i>p</i> -value	Pairwise comparisons
		% (n.) (n = 237)	% (n.) (n = 682)	% (n.) (n = 344)		
Access to secluded spaces	Positive	20% (48)	21% (146)	27% (94)	<b>0.027</b>	Onsite workers differ from hybrid and remote workers: Onsite-hybrid, <i>p</i> = 0.015 Onsite-remote, <i>p</i> = 0.026
	Neutral	52% (124)	54% (368)	52% (180)		
	Negative	27% (63)	24% (164)	19% (67)		
Visual privacy	Positive	19% (44)	24% (166)	31% (105)	<b>0.001</b>	Remote workers differ from onsite and hybrid workers: Remote-hybrid, <i>p</i> = 0.015 Remote-onsite, <i>p</i> = 0.026
	Neutral	48% (114)	52% (354)	49% (168)		
	Negative	29% (68)	20% (139)	18% (63)		
Acoustic privacy	Positive	14% (32)	15% (101)	19% (67)	0.053	NA
	Neutral	43% (103)	51% (346)	48% (165)		
	Negative	40% (95)	33% (227)	31% (106)		
Speech level	Positive	23% (54)	25% (172)	29% (99)	<b>0.030</b>	Remote and onsite workers differ, <i>p</i> = 0.009
	Neutral	49% (116)	53% (364)	53% (181)		
	Positive	20% (48)	21% (146)	27% (94)		

explanation is that onsite workers reported that they performed concentration demanding tasks less frequently compared to remote and hybrid workers. However, it is important to note that satisfaction with privacy was low across all measured factors, irrespective of which group the employees belonged to. These findings align with previous workplace studies performed pre-COVID showing that satisfaction with privacy was generally around 30% (Forooraghi et al., 2023; Rolfö, 2018). A recent study examining employee perceptions of offices after COVID-19 found that satisfaction with visual and acoustic privacy was about 25% in ten high-performance workplaces (Marzban et al., 2023a). Moreover, women's lower satisfaction with privacy in our study is in line with Bodin Danielsson and Theorell (2019) who found that women were generally less satisfied than men with supportive facilities such as meeting spaces.

Taken together, these patterns suggest that privacy remains a persistent and widespread challenge in AFOs (see reviews by Marzban et al., 2023b; Masoudinejad and Veitch, 2023), even with increased remote work after COVID-19. One contributing factor to the low privacy satisfaction could be 'occupancy peaks' – i.e. timepoints when many employees are present onsite simultaneously, leading to crowding and potentially frustrating situations where it is difficult to find suitable workspaces. This challenge might particularly affect remote and hybrid workers, who are more likely to encounter these peaks, whereas onsite workers also experience low occupancy throughout the week. Future research should investigate how occupancy fluctuations in AFOs, and open-plan offices affect perceptions of privacy.

The study highlights that remote work can serve as a strategy to mitigate the shortcomings of a suboptimal office environment, including issues such as noise and lack of secluded spaces (Appel-Meulenbroek et al., 2022; Haapakangas et al., 2024; Toscano et al., 2024). The quality of home workspaces has been increasingly recognised as remote work becomes more common, with workers reporting that their home

**Table 5**

Perceptions of task support among remote, hybrid, and onsite workers. The results are presented with descriptive statistics dividing the responses into positive, neutral and negative ratings. The last two columns display Kruskal-Wallis H test (KWH) and pairwise comparisons across the three groups regarding perceptions of task support.

Task support	Perceptions	Remote workers	Hybrid workers	Onsite workers	KWH p-value	Pairwise comparisons
		% (n.) (n = 237)	% (n.) (n = 682)	% (n.) (n = 344)		
Supports efficient working	Positive	28% (66)	38% (261)	50% (171)	<b>&lt;0.001</b>	All comparisons significant: Remote-hybrid, $p < 0.001$ Remote-onsite, $p < 0.001$ Hybrid-onsite, $p < 0.001$
	Neutral	43% (101)	48% (327)	42% (143)		
	Negative	27% (64)	13% (88)	7% (25)		
Supports individual tasks	Positive	38% (90)	46% (313)	58% (201)	<b>&lt;0.001</b>	All comparisons significant: Remote-hybrid, $p = 0.003$ Remote-onsite, $p < 0.001$ Hybrid-onsite, $p < 0.001$
	Neutral	39% (92)	40% (275)	31% (106)		
	Negative	21% (50)	12% (84)	9% (32)		
Supports onsite teamwork	Positive	40% (94)	45% (306)	54% (185)	<b>0.002</b>	Onsite workers differ from hybrid and remote workers Onsite-hybrid, $p = 0.001$ Onsite-remote, $p = 0.021$
	Neutral	45% (107)	44% (299)	35% (120)		
	Negative	11% (26)	10% (65)	9% (30)		
Supports hybrid teamwork	Positive	29% (69)	38% (258)	46% (158)	<b>&lt;0.001</b>	Remote workers differ from hybrid and onsite workers: Remote-hybrid, $p < 0.001$ Remote-onsite, $p < 0.001$
	Neutral	45% (106)	46% (316)	40% (136)		
	Negative	16% (37)	11% (77)	8% (28)		

environments better support a range of tasks, particularly those requiring concentration and confidentiality (Leesman, 2022; Nakrosiene et al., 2019). However, employees who opt predominantly for remote work to escape the negative aspects of the office environment may not fully benefit from increased flexibility and autonomy associated with remote work (Borge et al., 2023). This could also amplify challenges like social isolation and ergonomic risks (Figueiredo et al., 2024), instead of benefitting from a mix of remote and onsite work in a hybrid era. To attract remote workers back to the office, organisations may need to provide environments that match or even surpass the comfort and functionality of home workspaces.

The results also reveal that a relatively higher portion of managers are working onsite, something that most likely affects their perception of the work environment. This finding is in line with the study by Smite et al. (2023), who found that managers prefer to spend more days at the office than do other employees. This preference can be attributed to a need for direct oversight and frequent in-person interactions, which are facilitated by being onsite. However, research on managers' work conditions in AFOs is limited. Understanding the work environment of managers is particularly important in the post-COVID-19 era, as hybrid work may change team dynamics and managers have to balance leading teams split between remote and onsite work locations. Future studies should therefore explore how managers perceive the physical work environment in AFOs.

One theme that emerged from analysis of the free-text comments was the feeling of anonymity among hybrid and remote workers, which is also in line with other studies showing challenges regarding social relationships in AFOs due to dispersed locations (Forooraghi et al., 2023; Haapakangas et al., 2019; Wohlers and Hertel, 2018). Feeling of isolation is a major concern for remote workers, with studies indicating that remote workers experience greater professional isolation compared to onsite workers (Cooper and Kurland, 2002). This isolation can negatively impact job satisfaction (Morganson et al., 2010) and performance (Golden et al., 2008). Future research should investigate how amount of remote work influences perceptions of the social work environment, teamwork, and productivity in hybrid organisations.

The ratings of ambient factors and furnishings were generally positive among the participants, regardless of whether they were remote, hybrid or onsite workers. The satisfaction ratings for ambient factors such as lighting, temperature, and airflow were comparable to those of high-performance workplaces studied by Marzban et al. (2023a). Satisfaction with furniture adjustability was around 35% in high-performance workplaces, whereas in this study, hybrid and onsite workers reported 60% satisfaction. Comparisons across gender groups showed that women reported lower ratings than men on several ambient

factors and furnishings, including temperature, which is consistent with previous studies that show lower thermal comfort in office environments among women (Choi et al., 2010; Parkinson et al., 2021). Overall, the results indicated a generally acceptable ambient environment and furnishings in the AFOs. However, satisfaction with these factors did not necessarily influence employees' decisions to work onsite.

#### 4.1. Methodological considerations

One of the strengths of this case study lies in providing knowledge about employees' perceptions of AFOs, particularly across groups of remote, hybrid and onsite workers, after the COVID-19 pandemic. This is an area that is often not clearly addressed in studies about hybrid work arrangements (Charalampous et al., 2019). By comparing these groups, the study provides valuable insights into mechanisms that may influence employees' amount of remote work.

It may be argued that onsite workers' positive ratings of the workplace are not entirely reliable due to a concept known as 'place attachment'. Place attachment refers to an emotional bond formed by individuals with a particular environment, which is reinforced through repeated interactions and familiarity with the setting (Inalhan and Finch, 2004). This attachment can influence how individuals assess their work environment. The concept of place attachment suggests that onsite workers may develop a stronger emotional connection to their workplace, and a sense of identity which can make them more likely to view the workplace more positively compared to remote or hybrid workers. Onsite workers may also have developed strategies to deal with the shortcomings of the AFO over time. On the other hand, it can also be argued that remote workers' perceptions may be less reliable due to their limited onsite presence. However, according to Canter (Canter, 1977, p. 17), perception is actively shaped by mental images of past experiences and knowledge of the world. For instance, remote workers have likely experienced noise in various settings, such as previous workplaces, public spaces, or personal environments. These experiences allow them to form valid perceptions of issues such as noise and privacy, despite their limited onsite presence. Moreover, our results were in line with previous research about challenges in AFOs (see reviews by Marzban et al., 2023b; Masoudinejad and Veitch, 2023). Therefore, the perspectives of employees with different degrees of remote work are equally valuable for understanding how flexible workplaces function in hybrid organisations.

This is a case study conducted in a public organisation in Sweden with flexible offices; therefore, it may have limited transferability. Future research should address how different office types such as traditional cellular or open plan offices are perceived in the hybrid era.

**Table 6**

Reported misalignment between AFOs and respondents' needs and activities. A total of 186 comments were collected. The table shows the type of misalignment, the number of respondents who mentioned each type of misalignment, and excerpts from their comments. The respondents' identification number and degree of remote work is presented with the comments: remote workers (RW), hybrid workers (HW), and onsite workers (OW).

Reported misalignments	n	Excerpt from free-text comments
Spatial openness hinders individual, confidential, and concentrated work	30	There are often more interruptions in the office than at home, but you still need to meet your colleagues face to face (RW-25). A lack of spatial enclosure at workstations makes it difficult to work on confidential tasks or take phone calls without being disturbed by others' eyes and ears (OW-8).
More efficient to work from home for certain tasks that need privacy and concentration	19	I choose to work primarily from home and via online platforms because the environment and the design of the workspaces hamper me in my work (RW-2). When working on concentrative tasks, [I am] most efficient at home (HW-96).
Switching workstations takes time	7	Since I have a lot of online meetings, ranging from 10 min to 8 h per day, the office is not a good place. It's easier to work from home when you don't have to switch rooms/places every time someone contacts you (RW-26). A fair amount of time is spent switching workstations depending on the task, such as needing to take an online meeting/phone call, check in with a colleague, or find a quiet space (HW-12).
Number of meeting rooms does not meet the demand	35	There are too few rooms for individual conversations; they get booked quickly and you don't want to disturb other people. The rooms intended for four people are often occupied by one person (RW-20). In the 'New Normal' there is a lack of rooms for online meetings, which have become significantly more frequent since the pandemic (OW-26).
Workspaces do not support side-by-side and spontaneous teamwork without disturbances	17	I often feel that I have to speak quietly and limit the conversation since I'm near open spaces. (HW-67).
Workspaces do not support technical needs	32	There should be better hybrid options, e.g., camera on the whiteboard/digital whiteboard, etc (HW-35). Cables and IT equipment work poorly. You never know if you'll be able to connect or not, for example, my computer doesn't support USB-C, and docking stations are missing in some places. It's complicated to connect to Teams meetings in the conference rooms. It feels much more comfortable and secure to work from home if you have online meetings, because you can trust the technology (HW-75).
Feelings of anonymity and a lack of belonging due to challenges in locating colleagues in physically dispersed teams	21	Alone with a bunch of people I don't know, but without my colleagues—when I could have been more efficient at home and interacted with my colleagues online! (HW-97)
Other reasons e.g., distributed teams, proximity to other organisations, commute time, etc.	5	The facilities are wonderful, but the commute takes far too much time (RW-14).

In addition, the data were collected six months after the COVID-19 restrictions were lifted in Sweden, during a period when remote work policies were more relaxed. The timing of our data collection may represent an adaptation phase for both employers and employees after

almost two years of fully remote work.

#### 4.2. Practical implications

The study highlights the necessity of creating workplaces that accommodate the different tasks and meet the varying needs of employees, particularly in hybrid work environments. In large organisations, however, implementing such approaches is often constrained by, for instance, budget, time pressure and conflicting stakeholder needs (Babapour Chafi et al., 2022; Bergsten et al., 2022; Masoudinejad and Veitch, 2023; Öhrn et al., 2021). These constraints often drive organisations toward standardised rather than tailored solutions which in practice can limit how well workspaces support the diverse needs of employees' tasks (Forooraghi et al., 2025).

Concentration demanding tasks increase the need for privacy and access to secluded spaces. At the same time, the prevailing trend of prioritising open workspaces primarily for communication and collaboration over secluded spaces often fails to meet these needs (Appel-Meulenbroek et al., 2022; Bergefurt et al., 2024). Privacy is particularly challenging to provide in AFOs, as it competes with goals related to density, flexibility, and cost efficiency.

Organisations wishing to benefit from hybrid work arrangements should therefore ensure adequate social and technical support for their employees (Bentley et al., 2016) while recognising that workplace design and workplace policies are interdependent. For example, an increased demand for onsite presence by employers or space reduction may reduce the availability of workspaces, increase crowding in AFOs, and intensify competition for quiet spaces, thereby undermining the productivity gains that hybrid work is intended to achieve.

Drawing on our findings, organisations should approach workplace development as an iterative process. Post-occupancy evaluations provide a structured means for identifying misalignments between workspaces and tasks and for addressing these through incremental changes over time (Krogh et al., 2024; Parkinson et al., 2023; Zimmerman and Martin, 2001). This process can be strengthened by drawing on participatory methods from ergonomics (Rivilis et al., 2008; Wacnik et al., 2025) to involve employees in identifying task requirements and prioritising adjustments. In addition, organisational policies such as scheduled onsite work rotations and investments in satellite offices or coworking spaces can contribute to optimising office space without compromising employee well-being.

Additionally, workplace policies should address the potential risks of mandatory onsite attendance by ensuring employees have access to ergonomic work environments both in the office and remotely. For employees who lack suitable home workspaces, alternative solutions can be considered. "Third places" (Oldenburg, 1989), such as coworking spaces can offer a viable option, allowing individuals to work independently while maintaining social interaction (Mariotti and Tagliaro, 2024). Such initiatives promote near-working by reducing traffic, pollution, and long commutes in major cities (Mariotti and Tagliaro, 2024). In this sense, the future of work may require organisations to make use of a wider network of work locations.

#### 5. Conclusions

This study provides insights into remote, hybrid, and onsite workers' perceptions of Activity-based Flexible Offices (AFOs) in a hybrid organisation. While the ambient environment and furnishings were generally well-received across all groups, onsite workers reported higher satisfaction with task support when compared to hybrid and remote workers. However, satisfaction with privacy was low across all groups. We conclude that privacy issues in AFOs remain a challenge despite the amount of remote work. Insufficient number of enclosed workspaces and meeting rooms in AFOs may influence employees' degree of remote work. To address these challenges, organisations need to pay greater attention to providing workspaces that accommodate employees'

various tasks and adopt evidence-based workplace design policies.

### CRedit authorship contribution statement

**Melina Forooraghi:** Writing – review & editing, Writing – original draft, Software, Methodology, Formal analysis, Conceptualization. **Ingibjörg H. Jonsdottir:** Writing – review & editing, Supervision, Conceptualization. **Maral Babapour Chafi:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Conceptualization.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.apergo.2026.104760>.

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