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ORIGINAL RESEARCH ARTICLE

Workplace Bullying in the Open: the Risks Associated with Working in an Open Office

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Abstract

Open office solutions have become increasingly common in contemporary work life, often implemented with the aim of fostering collaboration and efficient use of space. However, open offices have also been associated with increased stress and impaired well-being. This study investigated whether working in an open office is linked to an increased risk of workplace bullying and whether this association varies between different types of open office design. Using a national probability sample of the Swedish workforce ($n = 3{,}307$), we conducted logistic regression analyses, controlling for demographic factors, personality traits, office use, and remote work. Results showed that the risk of workplace bullying was significantly higher among employees working in open offices compared to those in private or smaller shared offices. Importantly, the increased risk was observed only in traditional open offices, not in activity-based open offices. These findings remained after adjusting for personality traits, indicating that the risk is not attributable to individual differences but rather to characteristics of the physical and social environment. Compared to private and smaller shared offices, additional analyses revealed lower job satisfaction among those working in traditional open offices, and higher turnover intention among employees in both traditional and activity-based open offices. Possible explanations include environmental stressors, incompatible role expectations, and limited opportunities to withdraw from social tension. The findings underline the need to incorporate psychosocial considerations into office design and to prioritize early conflict resolution. Particular attention should be given to the risks associated with traditional open offices.

Keywords Workplace mistreatment · Harassment · Open-plan office · Activity-based open office · Turnover intent · Job satsifaction

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There has been considerable controversy surrounding the use of open layouts in office work. Some have argued that such designs are driven purely or primarily by economic interests (Davis et al., 2011; Gerlitz & Hülsbeck, 2023), with little regard for the people working in them, while others point to additional underlying values such as increased spontaneous interaction and improved collaboration (Engelen et al., 2018). However, the majority of research points to negative outcomes for individuals working in these types of environments, including reduced job satisfaction, increased stress, and impaired concentration, as well as poorer health and increased sick leave (Gerlitz & Hülsbeck, 2023; James et al., 2021; Mauss et al., 2023). Following the global pandemic, many employees viewed the opportunity to work from home—at least part of the week—as one of the key takeaways from that experience (Ipsen et al., 2021). Although the shift towards open offices had begun before the pandemic, the widespread adoption of remote work highlighted that many organizations were operating with what was perceived as an unnecessarily large office footprint, with corridors of private or smaller shared offices often left unoccupied. In response, many sought to reduce costs by transitioning to more space-efficient solutions, prompting a further move towards open offices—often with flexible seating and workstations designated for specific tasks—to better align with the new ways of working (Christensen, 2024; Topham, 2023).

While much research has examined aspects such as communication, collaboration, and productivity, as well as consequences for health and well-being in open office environments (e.g., Bodin Danielsson & Theorell, 2024; Gerlitz & Hülsbeck, 2023), one area that has received little or no attention is how the use of different office designs influences the occurrence of negative interpersonal relations between workers, such as the risk of conflict, harassment, and workplace bullying. Previous research has shown that the experience of negative interpersonal relations is associated with many of the same outcomes observed in open office settings, including mental and physical health complaints, job dissatisfaction, and reduced work ability (Nielsen & Einarsen, 2012). Negative social interactions at work can take many forms, ranging from subtle acts of incivility or social exclusion to more systematic and harmful patterns of mistreatment. Workplace bullying—defined as systematic and prolonged exposure to negative behaviours from co-workers and/or supervisors, in which the ability to stop or ward off the treatment gradually diminishes (Einarsen et al., 2020)—represents the most escalated and detrimental end of this spectrum. Workplace bullying is not simply a potential explanatory factor behind reduced well-being in open offices, but an adverse outcome in its own right. In the present study, workplace bullying is examined as a distinct social outcome alongside job satisfaction and turnover intention, thereby extending the focus beyond individual-level effects to include negative social dynamics in open office environments.

The bullying process can broadly be described as consisting of two phases (Einarsen et al., 2020). The first involves being exposed to negative behaviours with some degree of repetition, possibly beginning quite recently. At this stage, at least initially, there is not necessarily a clearly defined target or perpetrator (Vranjes et al., 2022)—for example, an escalated conflict in which both parties may inflict harm on one another. The second phase emerges when one individual finds it difficult to manage the situation, typically in the context of an increasing power imbalance (Rosander &

Nielsen, 2023). Bullying may originate for a number of reasons, such as conflicts that escalate out of hand (dispute-related bullying, Einarsen, 1999), or from poorly managed frustration—for example, when individuals fail to meet others' expectations regarding their work or social conduct (Baillien et al., 2009). According to estimates, up to 15% of workers worldwide are exposed to workplace bullying at any given time (Nielsen et al., 2010). Despite years of research on the potential antecedents of bullying, most studies have either examined individual characteristics of targets and perpetrators (Hershcovis et al., 2007; Nielsen et al., 2017) or focused on psychosocial working conditions (Van den Brande et al., 2016). Few, if any, studies have addressed risk factors related to the organization of the physical work environment, including office concepts.

Despite the lack of previous research on the relationship, there are reasons to believe that the risk of bullying may be higher among employees working in an open office. First, being in an open work environment makes it easier to observe others' shortcomings—whether social or related to performance expectations—and likely also increases the chances of noticing behaviours that one finds irritating or inappropriate. Second, once a person becomes the target of negative treatment, there is no easy way to withdraw from the situation, unlike in a private office where one can close the door and gain temporary relief from the perpetrator(s). As bullying is an escalating process (Rosander & Blomberg, 2019), such opportunities for temporary withdrawal may slow down its progression. Conversely, when individuals are constantly forced to remain in the same environment as their antagonists, the risk increases that coping strategies will break down and give way to feelings of helplessness (Samnani, 2013)—a defining feature of the second phase of bullying (Einarsen et al., 2020), in which detrimental consequences may escalate out of control. By focusing on workplace bullying—a severe and escalated form of negative social interaction—this study extends research on open office environments, which to date has largely concentrated on outcomes such as stress, job satisfaction, and health. No previous studies have examined whether working in an open office is associated with the risk of workplace bullying. Given the widespread use of open-plan offices and the well-documented links between bullying and employee well-being and organizational costs, it is crucial to investigate this relationship. Using a population-based sample, the present study therefore addresses a critical gap in research on the work environment in open offices. In the following sections, we will further elaborate on why we expect open office designs to be a risk factor for workplace bullying, as well as for job dissatisfaction and turnover intent.

The Open Office—Characteristics and Outcomes

An open office workspace refers to a large, unbounded area where many employees work (Gerlitz & Hülsbeck, 2023), in contrast to private or smaller shared offices enclosed by walls and typically housing one or a few employees (Bodin Danielsson & Bodin, 2008). Open offices vary along several dimensions, such as whether workstations are assigned or shared, or whether specific zones are designated for different tasks—as in activity-based offices (Bodin Danielsson & Bodin, 2008; De Croon et

al., 2005). In the present study, we first distinguish between working in an open office versus not, and second between traditional and activity-based open offices, both compared to private or smaller shared offices.

In an open office, the concept of privacy is central. Drawing on Altman's (1976) privacy framework, four distinct dimensions of work-related privacy are relevant: *distractions*, referring to non-directed stimuli or input from others; *interruptions*, involving directed social stimuli or input from others; *task privacy*, relating to the visual output an individual exposes to others; and *conversation privacy*, concerning the acoustic output available to others (Weber et al., 2021). The perception of privacy in this perspective depends on the fit between desired and actual privacy, as well as on how individuals prioritize different needs in light of the task at hand and personal factors.

Other key characteristics of open offices include noise—such as overhearing irrelevant speech (Jahncke et al., 2011)—and crowding, defined as the psychological perception of insufficient personal space in high-density settings (Ashkanasy et al., 2014; De Croon et al., 2005). Noise can impair cognitive functions essential for effective work (Jahncke et al., 2011), while crowding may trigger emotional reactions and interpersonal tension due to interruptions, distractions, or perceived intrusions (Ashkanasy et al., 2014). Such experiences may affect employee attitudes, behaviour, performance, and well-being (Kazlauskaitė et al., 2022).

For many companies, the physical environment is the second largest expense after personnel costs (McCoy, 2005), making cost-saving solutions attractive. These costs are also easier to quantify than potential losses from reducing personal space in open offices (Seddigh et al., 2015). A common argument for switching to open offices is that they promote interaction and collaboration, offering both reduced costs and improved performance (van der Voordt, 2004). However, this idealized view has been challenged by studies reporting various negative outcomes (Gerlitz & Hülsbeck, 2023).

A robust finding is that the greater the distance between individuals, regardless of office type—such as being on different floors or having to walk to someone's office—the less face-to-face communication occurs (the so-called Allen curve; Allen, 1977). Based on this principle, open offices—with closer proximity between desks—were expected to increase interaction. But more interaction is not always better; ideally, one should interact with the right people, about the right matters, at the right time—something open offices do not guarantee (Bernstein & Waber, 2019). Studies have shown that the "accidental" interaction expected in open offices can be counterproductive (Kim & de Dear, 2013), particularly when employees need uninterrupted time to concentrate, as distractions may lead to both financial losses and a deteriorated social climate. However, counterintuitively, switching to an open office has been shown to reduce face-to-face interaction by as much as 70% compared to wall-bounded spaces (Bernstein & Turban, 2018). This may be due to "fourth-wall norms" (Bernstein & Waber, 2019)—a metaphor from theatre referring to an invisible boundary between actors and audience (Hunt, 1807). In open offices, these norms imply an expectation not to interrupt colleagues unnecessarily, preserving focus. When broken, employees may become more exposed to distractions, social friction, and negative interactions.

Outcomes associated with working in open offices have been the focus of research for many years (De Croon et al., 2005; James et al., 2021; Mauss et al., 2023; Richardson et al., 2017). In a systematic review, James et al. (2021) found that, compared

to private or smaller shared offices, open offices were almost exclusively associated with more negative outcomes related to health, job satisfaction, and productivity. There is also a significantly higher risk of both medically certified sickness absence (Borge et al., 2024) and subsequent disability retirement (Nielsen et al., 2020) among those working in open offices. Turnover intention can be seen as a composite indicator shaped by multiple factors, in which job satisfaction and health are likely to play an important role. While job satisfaction and health outcomes have been studied extensively (Gerlitz & Hülsbeck, 2023), research on turnover intention in the context of open offices remains scarce. In the present study, both turnover intention and job satisfaction are examined as indicators of dissatisfaction that may create conditions conducive to conflict and mistreatment in open office environments. There are also indications that office type is associated with the occurrence of conflict (Ayoko & Härtel, 2003; Bodin Danielsson et al., 2015); however, findings are mixed and studies remain scarce. Consequently, there is a need for further research that can elaborate on how office design relates to negative social interaction at the workplace.

Understanding Negative Outcomes of an Open Office

One factor that may contribute to how conflicts arise and escalate into systematic exposure to workplace bullying in an open office is the reduced level of face-to-face interaction (Bernstein & Turban, 2018). Reduced social interaction may make it more difficult to resolve misunderstandings, thereby increasing the risk of escalation. In relation to workplace bullying, the lower level of interaction may also be perceived by some as social exclusion or isolation—forms of bullying behaviour to which individuals may be subjected (Einarsen et al., 2020). *Affective events theory* (Weiss & Cropanzano, 1996) provides a useful framework for understanding how people respond emotionally to the nature and degree of social interactions with others in the workplace. The theory posits that workplace events—rather than general job conditions—trigger affective reactions, which in turn influence attitudes (such as job satisfaction) and behaviours (such as withdrawal or performance). In the context of an open office, various day-to-day occurrences can be considered affective events. These may include overhearing irrelevant conversations, being interrupted during focused work, experiencing a lack of personal space, or feeling watched by others. If not resolved—for instance through functional face-to-face communication—such events can lead to misunderstandings that provoke emotional reactions including frustration, irritation, or anxiety. According to affective events theory, when these events are frequent or persistent, the resulting affective responses may accumulate over time, leading to negative shifts in employee attitudes and behaviours. Thus, open office features—by increasing the likelihood of affective events—may contribute to reduced well-being, lower job satisfaction, and increased interpersonal tension.

Regardless of prevailing social norms of privacy and collegial restraint, open office environments tend to generate higher levels of distraction—both visual and auditory—than other workspace configurations, such as private or smaller shared offices (Seddigh et al., 2014). This elevated distraction alone can be a source of frustration and dissatisfaction, which, if not constructively addressed, may escalate into

interpersonal conflict or mistreatment (Baillien et al., 2009). Supporting this view, the *social interactionist perspective* (Tedeschi & Felson, 1994) emphasizes how interpersonal behaviours—particularly aggression and coercion—are shaped by situational and social contexts. Within this framework, aggressive acts are often strategic and goal-directed, aimed at influencing or controlling others. Factors such as increased visibility, power imbalances, and limited opportunities to withdraw from interactions can amplify the likelihood of such behaviours. In open offices, the lack of physical boundaries and the constant presence of others may intensify social pressure, heighten surveillance, and reduce opportunities to avoid negative encounters. These conditions can foster environments where aggressive or exclusionary behaviours—such as bullying—are used to reinforce dominance or retaliate against perceived slights.

The adverse impact of such interpersonal tension in open offices can be further understood through the *conservation of resources theory* (Hobfoll, 1989). The theory posits that individuals strive to obtain, maintain, and protect valuable resources—whether material, cognitive, emotional, or social—and experience stress when these resources are threatened or depleted. Open office settings can undermine several of these resources: control over one's environment, privacy, and opportunities for psychological recovery. Frequent distractions, interruptions, and a sense of constant exposure may cumulatively drain emotional and cognitive reserves, increasing stress and reducing one's capacity to navigate interpersonal challenges. Over time, this erosion of resources can lead not only to reduced well-being and job satisfaction but also to strained relationships and an increased risk of conflict and workplace bullying. Unlike affective events theory, which focuses on how specific incidents trigger emotional responses, and the social interactionist perspective, which emphasizes strategic interpersonal behaviours shaped by social context, the conservation of resources theory highlights a more gradual process, which aligns with perspectives on workplace bullying as an escalating process involving the cumulative erosion of psychological and environmental resources. This distinction is important because it explains why open office environments may not only provoke immediate emotional reactions or social dynamics, but also create long-term vulnerability to stress and conflict through sustained resource loss.

Aim and Hypotheses

Building on the above line of reasoning, the present study aims to investigate whether working in an open office is associated with negative outcomes in terms of job satisfaction, turnover intention, and exposure to workplace bullying. In recent years, activity-based work has been promoted as an approach to open office designs that addresses many of the challenges associated with traditional open office layouts (Wohlers & Hertel, 2017). An activity-based workplace provides a variety of spaces in which work can be carried out. Employees typically have no assigned seats but are expected to move between different areas depending on the nature of their tasks (Masoudinejad & Veitch, 2023). To account for this development in open office layouts, the present study also examines whether the risk of bullying differs between traditional and activity-based open office types.

There are individual differences in how an open office is perceived (Maher & von Hippel, 2005), and there are indications that certain personality traits may be associated with specific aspects of the open office environment, such as sensitivity to distraction (Seddigh et al., 2016), as well as negative outcomes such as sickness absence (Nielsen et al., 2020). Indirectly, personality may influence how privacy is perceived, which in turn may be linked to the characteristics of different office configurations. Overall, more research is needed to understand the role of personality in various office types (Gerlitz & Hülsbeck, 2023). In the present study, we will adjust for personality traits when examining the risks associated with working in an open office.

Previous research has consistently shown that open offices are associated with reduced job satisfaction, increased distractions, and impaired well-being compared to private or shared offices (James et al., 2021; Seddigh et al., 2014). While job satisfaction has been relatively well-studied, less is known about the potential consequences for turnover intention. Nevertheless, turnover intention is often shaped by a combination of different aspects such as job satisfaction, health, and the quality of the psychosocial work environment—factors that may all be negatively affected in an open office environment. Based on this, we expect that individuals working in open offices report lower job satisfaction and higher turnover intention than those in other office settings.

Hypothesis 1 *Working in an open office is associated with lower job satisfaction and higher turnover intention.*

Although no previous studies have directly investigated the risk of workplace bullying in open offices, there are several theoretical reasons to expect that such environments may foster conditions that increase this risk. As discussed earlier, open offices typically offer reduced privacy, constant visibility, and limited opportunity to withdraw—factors that may heighten social tension and reduce individuals' ability to regulate their exposure to potentially negative interactions. From an affective events perspective (Weiss & Cropanzano, 1996), frequent minor stressors—such as interruptions or perceived invasions of space—can accumulate over time, producing negative affect and undermining interpersonal relations. The conservation of resources theory (Hobfoll, 1989) similarly suggests that individuals who are unable to protect key psychological and environmental resources, such as autonomy and control over one's workspace, over time become more vulnerable to stress and conflict. In addition, the social interactionist perspective (Tedeschi & Felson, 1994) highlights that aggression is often strategic and more likely to occur when individuals are exposed and lack control over the social setting—circumstances typical of open office environments.

Because experiences of the work environment may vary depending on how much time is actually spent in the office, we control for whether employees work full-time or part-time in the office. We also control for remote work, as physical absence from the office may reduce both exposure to interpersonal tension and opportunities for mistreatment. Finally, we adjust for personality traits based on the five factor model (agreeableness, conscientiousness, extraversion, openness, and neuroticism; Goldberg, 1999), as these may influence how individuals respond to and interpret social situations in the workplace (Nielsen & Knardahl, 2015; Seddigh et al., 2015).

Hypothesis 2 *The risk of exposure to bullying is higher among employees working in an open office compared to other office types, controlling for extent of office use (part-time vs. full-time), remote work, and personality traits.*

Given the growing use of activity-based designs as an alternative to traditional open-plan layouts, it is also important to examine whether these two types of open offices differ in their association with bullying risk.

Research Question 1 How does the risk of exposure to workplace bullying compare between traditional and activity-based open offices?

Methods

The data used in the present study come from a probability sample of the entire Swedish workforce (excluding individuals under 18 years of age and those working at workplaces with fewer than ten employees). The sampling and data collection were conducted by Statistics Sweden (a governmental agency) over a two-month period in the autumn of 2024. The sampling frame comprised 3,515,048 individuals. Information about the survey, including all details necessary for informed consent, was distributed digitally to all individuals with an active digital mailbox at the time (87%), and by post to the remaining 13%. Three reminders were issued to non-respondents, the second of which was sent by post to all who had not yet replied. A total of 3,307 responses were collected. Once data collection was complete, Statistics Sweden added information from the Swedish National Population Register to the dataset, including variables such as biological sex and age. As the sample was based on national probability sampling, no a priori power analysis was conducted. However, given the sample size and the prevalence of the outcome, the data provide sufficient power to detect moderate effects in logistic regression models. The study was approved by the Swedish Ethical Review Authority (Protocol No. 2023–06603-01).

Participants

As the study focused on individuals who performed office work at least part of the day (70.5%), only this subgroup is described here. Of these participants, 55.0% were women and 45.0% were men. Their mean age was 48.22 years ($SD = 10.82$), and they had worked at their current workplace for an average of 10.57 years ($SD = 9.53$). A clear majority (96.3%) were permanently employed, and 20.7% held a managerial position.

Measures

Workplace bullying was measured using the Negative Acts Questionnaire–Revised (NAQ–R; Einarsen et al., 2009), validated in a Swedish context (Rosander et al., 2024). The scale comprises 22 items describing different negative and unwanted

behaviours that individuals may be subjected to at work. These behaviours are typically perceived as intentional attempts to harm, obstruct, or otherwise negatively affect the individual, and they may be difficult to defend against or stop. Exposure to such behaviours over time, in a systematic manner, may constitute bullying. Responses were given on a five-point frequency scale ranging from *never* to *daily*. Cronbach's alpha (α) was 0.91.

Job satisfaction was measured using four items based on a scale used by Rosander and Nielsen (2025) covering overall satisfaction with one's job, including having stimulating tasks, feeling proud of one's work, and finding it enjoyable to go to work. The items were: "I like my current job", "My work tasks are highly stimulating", "I am very proud of the work I do", and "I enjoy going to work". Responses were given on a seven-point Likert scale. Cronbach's alpha was 0.90.

Turnover intention was assessed using a scale adapted from Sjöberg and Sverke (2000), covering different facets of an employee's intention to leave the organization—ranging from thoughts of wanting to quit to actively searching for other employment opportunities. The items were: "If I were completely free to choose, I would leave this job", "It is likely that I will look for another job within the next 12 months", and "I am actively looking for other jobs". Responses were given on a seven-point Likert scale. Cronbach's alpha was 0.87.

Although job satisfaction and turnover intention were based on or adapted from previously established scales, additional analyses were carried out to evaluate their reliability and validity. Specifically, we assessed composite reliability (CR), average variance extracted (AVE), and discriminant validity (Fornell & Larcker, 1981), in addition to Cronbach's α. Both constructs had CR values above the recommended threshold of 0.70 (for job satisfaction it was 0.88 and for turnover intent it was 0.90), indicating good internal consistency, and AVE values exceeded 0.50 (job satisfaction: 0.70 and turnover intent: 0.71), supporting convergent validity. Cronbach's alpha exceeded 0.80 for both scales. Furthermore, for each construct, the square root of the AVE was higher than its correlations with the other constructs, providing evidence of discriminant validity. Overall, the results indicate that the measures used in this study demonstrate good reliability and construct validity. To address potential common method bias, we conducted a Harman's single-factor test (Podsakoff et al., 2003). The first unrotated factor accounted for 35.3% of the total variance, which is well below the 50% threshold, suggesting that common method bias is unlikely to have significantly influenced the results.

Different Office Types

To categorize participants based on their office use and type of office, we first asked whether they performed office-type tasks and, if so, for how much of the day. Participants who reported doing office work at least part of the day then received a follow-up question regarding the type of office space they had access to. The number of participants for each response option, along with the exact wording of the questions and response alternatives, is presented in Table 1.

Table 1 Number and Percentage of Participants by Response Option for Office Space

Questions and response options	*n*	%	Total %
Do you do office work?			
–No	975	29.5%	29.5%
–Yes, part of the day	835	25.3%	25.3%
–Yes, all or most of the day	1496	45.2%	45.2%
Do you have access to an office space provided by your employer?			
–No	45	1.9%	1.4%
–Yes, I have a private office	607	26.1%	18.4%
–Yes, a small enclosed room that I share with other colleagues	677	29.1%	20.5%
–Yes, an open office shared with other colleagues	695	29.9%	21.0%
–Yes, an activity-based open office where we move between different workstations depending on the task	304	13.1%	9.2%

Note. The first percentage column refers to the proportion of participants who answered the specific question and selected each respective response option. The second percentage (Total %) indicates the proportion of all 3,307 survey respondents who selected each response option

Control Variables

To account for factors that may influence the assessment of bullying risk, sex, age, managerial position, extent of office use, remote work, and personality traits were controlled for. Although findings are not entirely consistent, sex and age have been suggested to be systematically related to workplace bullying (Rosander et al., 2020; Salin, 2021). There are also indications that holding a managerial position may be related to the occurrence of bullying, although findings in this area are similarly mixed (Rosander, 2025). As shown in Table 2, there were significant differences in the distribution of sex and managerial position across the two office types, with fewer women and fewer managers working in open offices. Those working in an open office were also younger ($M = 46.78$ years, $SD = 11.05$) than those who did not ($M = 49.26$ years, $SD = 10.51$), $t(2326) = 5.51$, $p < .001$. Information on sex and age was obtained from the Swedish population register, whereas managerial position was assessed through a direct survey question: "Do you hold a managerial position?" (yes/no). The question assessing the extent of office use is presented in Table 2, which also shows significant differences, with fewer employees working part-time in an open office. Remote work was assessed using a direct survey question: "Do you work from home at least part of the time?" (yes/no). A significantly higher proportion of employees in open offices reported working from home at least to some extent.

We also adjusted for personality traits, as there are indications that these may influence how different aspects of an open office—such as noise and crowding—are perceived (Seddigh et al., 2016). Personality was measured using the 20-item version of the International Personality Item Pool (IPIP; Goldberg, 1999), known as the

Table 2 Number and percentage for different categories of participants (control variables) and significant differences comparing two types of office solutions

Variables	Open office	Not open office	Statistics	
	n (%)	*n* (%)	$\chi^2(1)$	*p*
Sex				
Men	495 (47.2%)	554 (52.8%)	14.25	<0.001
Women	504 (39.4%)	775 (60.6%)		
Managerial position				
Yes	176 (36.6%)	305 (63.4%)	10.06	0.002
No	823 (44.6%)	1021 (55.4%)		
Office use				
Part time	171 (20.5%)	663 (79.5%)	226.38	<0.001
Full time	828 (55.4%)	666 (44.6%)		
Remote work				
Yes	785 (55.4%)	633 (44.6%)	233.27	<0.001
No	210 (23.2%)	695 (76.8%)		

Mini-IPIP (Donnellan et al., 2006), which captures agreeableness (α = 0.74), conscientiousness (α = 0.73), extraversion (α = 0.80), openness (α = 0.65), and neuroticism (α = 0.77), with four items per trait. The instruction was "How well do the following statements apply to you?", and responses were given on a seven-point Likert scale.

Statistical Analyses

All statistical analyses were conducted using Stata 19.5. Logistic regression was used to test the hypotheses concerning risk, with results presented as odds ratios and 95% confidence intervals. To enhance the representativeness of the data, population weights were computed by Statistics Sweden in accordance with the calibration approach outlined by Särndal and Lundström (2005). The auxiliary variables included in the calibration model were sex, age, marital status, country of birth, income, educational level, employment sector, and workplace size. These weights were derived using data from Sweden's comprehensive total population register and were applied when estimating bullying prevalence and in all odds ratio calculations. To test for differences in bullying prevalence across office types while accounting for sampling weights and design effects, we conducted a design-adjusted cross-tabulation using Stata's *svy: tabulate* procedure. The resulting test statistic is reported as an *F*-value, as the procedure converts the Pearson χ^2 into an *F*-test to appropriately reflect the complex survey design. The F-test is based on design-based degrees of freedom derived from survey-adjusted estimation.

The logistic regression analyses were conducted in two steps; first, all control variables mentioned above were included in the analyses; second, only the variables that were significant were retained in the final models, in line with the recommendations by Cohen et al. (2003). Sex and managerial position were not significant in any of the regression analyses, and among the personality traits, conscientiousness and openness were also non-significant across these analyses. Consequently, these four variables were excluded from the models presented in the results section.

To test the robustness of the findings, a sensitivity analysis was conducted including self-reported job characteristics (workload, job autonomy, hostile work climate, and interdependence) as covariates in the logistic regression models. These factors were selected because previous research has identified job demands, autonomy, and social climate as important predictors of workplace bullying (see e.g., Li et al., 2019). The results of this analysis are presented in the Supplementary Material.

Results

In Table 3, means, standard deviations, and intercorrelations for the study variables are presented. Notably, there was a small but significant negative correlation between age and exposure to bullying behaviours ($r = -.11$), reinforcing the importance of adjusting for age—particularly given that employees working in open offices were significantly younger, as noted previously. Regarding personality traits, only neuroticism showed a significant, although moderate, correlation with bullying ($r = .28$). However, as previously argued, personality was included as a control variable due to the potential for it to indirectly influence the risk of bullying through how the open office environment is perceived.

Working in an open office was associated with lower job satisfaction ($M = 5.37$, $SD = 1.17$) compared to those not working in such an environment ($M = 5.59$, $SD = 1.05$), $t(2323) = 4.58$, $p < .001$, $d = 0.19$. However, this difference was only found among those working in a traditional open office—not in an activity-based open office, $F(2, 2277) = 14.05$, $p < .001$, $\eta^2 = 0.01$. Working in an open office was also associated with higher turnover intention (M = 2.75, SD = 1.77) compared to other office types ($M = 2.43$, $SD = 1.65$), $t(2324) = -4.41$, $p < .001$, $d = 0.18$. In this case, the difference from wall-bounded offices was observed for both traditional and activity-based open offices, $F(2, 2278) = 12.39$, $p < .001$, $\eta^2 = 0.01$. Thus, Hypothesis 1 was supported.

Table 3 Means, standard deviations, and intercorrelations for the study variables

	M	SD	1.	2.	3.	4.	5.	6.	7.
1. Age	48.22	10.82	–						
2. Agreeableness	5.58	0.88	.02^{ns}	–					
3. Extraversion	4.27	1.18	.04^{ns}	0.35	–				
4. Neuroticism	3.22	1.07	−0.20	−0.15	−0.25	–			
5. Job satisfaction	5.47	1.11	0.16	0.19	0.25	−0.35	–		
6. Turnover intent	2.57	1.71	−0.18	−0.09	−0.13	0.30	−0.71	–	
7. Bullying	1.22	0.30	−0.11	−.01^{ns}	−.03^{ns}	0.28	−0.41	0.49	–
8. Open office	0.43	0.50	−0.11	−.03^{ns}	−.01^{ns}	.02^{ns}	−0.09	0.09	−.01^{ns}

All correlations significant $p < .001$ except where indicated. ^{ns} Not significant. Bullying is the mean score of the Negative Acts Questionnaire–Revised. Open office: 0 = not working in an open office, 1 = working in an open office

First, to assess the risk of bullying among those performing office work compared to those who did not, we compared all participants who reported engaging in any type of office work ($n = 2{,}331$) with those who reported no such duties ($n = 975$). In line with previous research from the same population, bullying was operationalized as having a summarized score of 35 or higher on the NAQ–R (Rosander et al., 2024). In total, 12.8% met this criterion (indicating close to 450,000 employees in Sweden being exposed to bullying). A significant difference in reported exposure to bullying was found, $F(2, 6574) = 4.75$, $p = .009$, Cramér's $V = 0.04$. The prevalence was highest among those not doing office work (15.5%), followed by those in open offices (12.5%), and lowest in private or small shared offices (10.5%). Controlling for age, agreeableness, extraversion, and neuroticism, a logistic regression analysis showed that the risk of bullying was significantly higher for those not doing office work compared to those who did (base), $OR = 1.35$, $p = .022$. However, this was fully attenuated in the sensitivity analysis (OR = 0.99, $p = .948$), see Supplementary Material.

Testing Hypothesis 2, a logistic regression analysis—controlling for age, extent of office use, remote work, and personality traits (agreeableness, extraversion, and neuroticism)—showed a higher risk of exposure to bullying among those working in an open office ($OR = 1.54$, $p = .012$), compared to those doing office work in other office types (i.e., private or smaller shared wall-bounded offices). The results are presented in Table 4, Model 1. Hypothesis 2 was supported.

To investigate Research Question 1, the same logistic regression analysis was conducted, but with the focal predictor split into traditional and activity-based open offices. The results are presented in Table 4, Model 2, and showed a significantly higher risk of bullying only in traditional open offices ($OR = 1.67$, $p = .006$), whereas no increased risk was found for activity-based open offices. All risk estimates are depicted in Fig. 1.

The results for Hypothesis 2 and Research Question 1 remained robust when the sensitivity analysis including self-reported job characteristics was performed (see Supplementary Material). The association between open office and bullying risk remained significant and of similar, slightly higher, magnitude.

Table 4 Logistic regression predicting the risk of bullying for open office (Model 1), and traditional and activity-based open offices (Model 2), compared to working in other office types

	Model 1			Model 2		
	OR	95% CI	*p*	OR	95% CI	*p*
Not open office	1	base		1	base	
Open office	1.54	[1.10, 2.15]	0.012			
Traditional				1.67	[1.16, 2.41]	0.006
Activity-based				1.28	[0.75, 2.19]	0.361
Office use	1.42	[0.99, 2.03]	0.059	1.46	[1.02, 2.11]	0.040
Remote work	1.47	[1.04, 2.08]	0.029	1.36	[0.96, 1.93]	0.084
Age	0.98	[0.97, 1.00]	0.054	0.98	[0.96, 1.00]	0.060
Agreeableness	0.81	[0.67, 0.99]	0.044	0.81	[0.66, 0.99]	0.039
Extraversion	1.20	[1.03, 1.40]	0.017	1.23	[1.06, 1.44]	0.008
Neuroticism	1.78	[1.54, 2.06]	<0.001	1.81	[1.56, 2.11]	<0.001

Office use: full-time work is the reference category. Remote work: working from home at least part of the time is the reference category

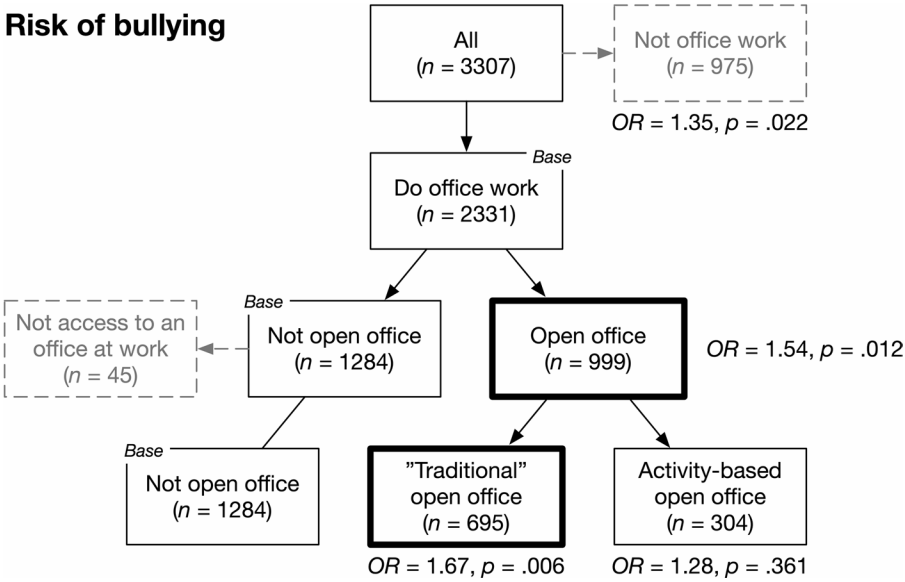

Fig. 1 Overview of the risk of bullying in different office types. Note. Adjusted for office use, remote work, age, agreeableness, extraversion, and neuroticism. Not open office refers to private or smaller shared offices

Discussion

The aim of the study was to examine whether working in an open office is associated with negative outcomes—specifically, workplace bullying, job dissatisfaction, and turnover intention—compared to other office types. We also explored whether these risks differ between traditional and activity-based open office designs. The study contributes new insights by showing that working in an open office is associated with an increased risk of workplace bullying (Hypothesis 2). However, this elevated risk was evident only in traditional open offices, not in activity-based ones (Research Question 1). Furthermore, consistent with previous research, working in an open office was associated with lower job satisfaction. Examining a related outcome, and providing new evidence on an understudied area (Appel-Meulenbroek et al., 2018), we also found that turnover intention was higher among employees in open offices (Hypothesis 1). Turnover intention was elevated in both traditional and activity-based open offices compared to wall-bounded offices, whereas job satisfaction was lower only in traditional open offices.

The Risk of Bullying in an Open Office

The main result of the study was the increased risk of workplace bullying among employees working in an open office. There are many features of open offices that may jointly create conditions conducive to bullying. The close proximity of co-workers challenges the concept of privacy (Weber et al., 2021), and factors such as elevated noise levels (Jahncke et al., 2011) and perceived crowding (Ashkanasy et al., 2014)

may further contribute to affective reactions among employees. According to affective events theory (Weiss & Cropanzano, 1996), such reactions may accumulate creating a shift in attitude and behaviours. Trying to fulfil one's tasks and responsibilities in such an environment may lead to frustration. If not handled constructively, such frustration may be displaced onto others through various aggressive behaviours, including bullying (Baillien et al., 2009). This dynamic may also be understood in terms of conservation of resources theory (Hobfoll, 1989). The persistent demands of the open office environment can gradually erode personal resources, lowering individuals' capacity to cope constructively with frustration and making them increasingly vulnerable to negative social dynamics over time. Frustration may also be expressed in more passive ways, such as withdrawal from social interaction (Baillien et al., 2009). Behaviours that deviate from implicit norms about how one is expected to engage socially at work—such as being distant, quiet, or emotionally unavailable—may themselves trigger negative responses from others, thereby increasing the risk of becoming a target of workplace bullying. By demonstrating that workplace bullying is linked to the physical office environment itself, independent of individual personality and job characteristics, the present study makes an important contribution to the literature on open offices by extending the focus beyond individual well-being to include negative social dynamics. It identifies specific office designs as contextual risk factors for bullying, an area largely unaddressed in previous research and critical for theory development on the role of physical environments in workplace mistreatment.

The close proximity of co-workers in an open office might suggest that misunderstandings and interpersonal tension would be easier to resolve. However, the level of face-to-face interaction is in fact dramatically lower in open offices (Bernstein & Turban, 2018), which means that disruptions, misinterpretations, and frustrations often go unaddressed. This creates fertile ground for the emergence of negative behaviours. Misunderstandings and the broader social dynamics of open offices may also give rise to a misplaced urge to control others—particularly those perceived as violating unspoken social norms. When managed constructively, such tensions can be resolved in mature ways. Yet, the group processes that emerge in response to the ambient stressors of any work environment may instead intensify conflict (De Dreu & Gelfand, 2008). In such cases, individuals may attempt to correct or retaliate against colleagues they perceive as disruptive, through various forms of aggressive behaviour. This is consistent with the social interactionist perspective (Tedeschi & Felson, 1994), which views aggression as a reaction to perceived injustice or provocation. In many cases, workplace bullying emerges from a conflict that has escalated out of control (Einarsen, 1999).

An interesting aspect of working life in general—and of open office environments in particular—is that people perceive and react to different stimuli in different ways (Maher & von Hippel, 2005). There are indications that such differences may depend on certain personality traits, such as extraversion and neuroticism (Seddigh et al., 2016). This could help explain why some individuals respond differently to the disruptive aspects of an open office, and how such responses shape the way frustration is managed—potentially contributing to the emergence of workplace bullying. However, in the present study, personality traits were controlled for, meaning that the increased risk of bullying associated with open offices is independent

of individual personality. This indicates that the risk is rooted in the open office concept itself, rather than in individual characteristics. Thus, reducing the risk of workplace bullying should not involve selecting individuals who are best suited to open office environments, but rather changing the conditions inherent to the office concept itself.

In the present study, we examined two types of open office concepts, and the increased risk of workplace bullying was only observed in one of them—namely, the traditional open office—when compared to wall-bounded office types. No such increased risk was found in the activity-based open office. One possible reason for the lower risk in wall-bounded offices, beyond the reduced level of distraction and disturbances, may be the opportunity to temporarily remove oneself from one's tormentors. As our results showed, having a door to one's office does not make one immune to bullying—approximately 10% of employees in other office types still reported being exposed. However, not being forced to remain in the constant presence of one's bullies may slow down the bullying process and allow for moments of respite. This may also help explain the difference in risk between traditional and activity-based open offices. In activity-based offices, there may be more opportunities to step away or relocate, which could prevent employees from being on the receiving end of negative treatment at all times. Furthermore, not being constantly perceived as the source of irritating or disruptive behaviours by others may reduce ambient frustration levels and, in turn, prevent conflicts and the escalation towards bullying.

The results also showed differences in job satisfaction and turnover intention, with employees in open offices reporting lower satisfaction and higher intention to leave. These differences may themselves contribute to grievances and dissatisfaction with the work environment more broadly, which may manifest either as negative behaviours directed at others, or as expressions of discontent that others eventually tire of. Such ongoing frustration can gradually drain emotional and cognitive resources, increasing stress and making it more difficult to manage interpersonal situations (Hobfoll, 1989). The cumulative erosion of these resources over time can undermine employees' ability to stay engaged and socially attuned, creating a sustained vulnerability to interpersonal strain and conflict that may ultimately escalate into workplace bullying.

In an open office—and particularly in a traditional open office—it is likely that employees with a wide range of roles and tasks share the same physical space. This increases the risk of incompatible expectations, as for example, what supports and is important to one person's work may disrupt another's. Such conditions may give rise to role conflict, with clashing expectations—a well-established antecedent of workplace bullying according to the work environment hypothesis (Einarsen et al., 1994; Salin & Hoel, 2020). The near-constant visibility of open offices may heighten sensitivity to perceived norm violations and amplify irritation when others behave in ways that interfere with one's own work. In addition, having limited control over one's physical and social environment may further increase vulnerability to frustration and negative social dynamics.

Practical Implications and Future Directions

There are several practical implications arising from the findings of the study. First, it is important to recognize that there is, in fact, an increased risk of bullying in open offices. This underscores the need for early interventions that address disagreements and interpersonal tension—taking into account environmental aspects inherent to open offices, such as lack of privacy and elevated noise levels. One important strategy could be to foster a strong conflict management climate, where employees trust that interpersonal issues will be handled fairly and effectively (Einarsen et al., 2018). Such trust is shaped by both formal procedures and the expectation that managers have the capacity and willingness to intervene. A positive conflict management climate has been shown to significantly reduce the risk of workplace bullying (Blomberg et al., 2025), and based on our findings, fostering such a climate could be especially important in open office environments. However, this mechanism was not tested in the present study and should be examined in future research.

When designing an open office, it may be important to allow access to secluded areas or to provide the opportunity to temporarily withdraw from a conflictual situation. As noted above, this is one aspect that distinguishes traditional open offices from activity-based offices. Whether this feature alone explains the lower risk of bullying in activity-based settings cannot be determined with certainty based on our results, but it is likely to play a role. One possible avenue to reduce the risk of bullying would therefore be to give employees in traditional open offices access to alternative work areas where they can temporarily relocate. This could be tested in a field experiment by comparing employees who get such access to those who remain at their designated workstations throughout the day.

Furthermore, to prevent role conflict and incompatible expectations among colleagues, employees with similar tasks and similar needs regarding distraction, interruptions, task privacy, and conversational privacy could be located near one another. However, in general, the focus should be on the work environment and the nature of the tasks, rather than on the individual employee. As our results showed, the risk of bullying is evident regardless of the personality of the individual.

Ultimately, it is the responsibility of employers and organizational decision-makers to ensure that office environments support both task performance and social well-being. Open office solutions should not be implemented solely for economic or symbolic reasons, but evaluated based on their impact on interpersonal dynamics and psychological safety. Integrating psychosocial expertize into office design and organizational routines is essential for preventing conflict and reducing the risk of bullying in modern workplaces.

Strengths and Limitations

A key strength of the present study is that it is based on a national probability sample of the Swedish workforce. Another important strength is the use of calibrated population weights based on Statistics Sweden's total population register. These weights account for unequal probabilities of selection, nonresponse, and demographic devi-

ations, thereby enhancing the representativeness of the findings at the population level. Moreover, the relatively high denominator degrees of freedom observed in design-adjusted tests suggest that the weighting procedure did not result in substantial variance inflation or loss of statistical precision. This supports the generalizability of the findings to the broader population of office workers in Sweden.

A strength of the study is that we tested the robustness of the findings by including self-reported job characteristics (workload, job autonomy, hostile work climate, and interdependence) as covariates in a sensitivity analysis. The results were consistent with the main analyses, indicating that the observed association between open-plan office and bullying risk was not explained by these job characteristics. Interestingly, the initially observed difference in bullying risk between employees performing office work and those that do not was fully attenuated when these variables were added, suggesting that the elevated risk among employees in non-office work is explained by differences in job demands and social climate rather than by the type of work setting per se.

The cross-sectional design of the study is suitable given the primary aim: to examine risk levels and prevalence associated with specific work contexts. However, several limitations should be noted. The data are based on self-reports and may be subject to social desirability bias and common method bias (Podsakoff & Organ, 1986). That said, considering the sensitive nature of the topic—workplace bullying—such bias is more likely to result in underreporting than in inflated prevalence or risk estimates. In addition, a post hoc Harman's single-factor test was conducted, showing that only 35% of the variance was accounted for by the first factor, indicating that common method bias is unlikely to explain the observed associations.

It should also be noted that the effect sizes for the analyses addressing Hypothesis 1 were small. This is common in occupational health research where complex psychosocial factors interact, and even small effects can be meaningful at the population level when they concern risk factors present across large organizational settings.

Finally, it should be noted that turnover intention may be driven by factors unrelated to the physical work environment, such as the prospect of a better salary or new challenges. However, as such factors are likely to apply across all office types, observed differences are probably attributable to specific characteristics of the open office setting.

Conclusions

The present study showed that working in an open office is associated with an increased risk of workplace bullying, particularly in traditional open offices. No such elevated risk was found in activity-based open offices, suggesting that specific features of the office environment—rather than openness per se—contribute to this risk. Importantly, the association remained when controlling for individual personality traits, indicating that the elevated risk is not attributable to personal predispositions. A combination of environmental stressors, incompatible role expectations, and limited opportunities to withdraw may create conditions in which interpersonal tensions escalate into bullying. These findings highlight the need to consider psychosocial consequences when designing office environments and to prioritize organizational procedures for early conflict resolution.

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Author contributions Michael Rosander: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing. Morten Birkeland Nielsen: Conceptualization, Writing – review & editing.

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Declarations

Ethics approval The study was approved by the Swedish Ethical Review Authority (Protocol No. 2023-06603-01).

Consent to participate Informed consent was obtained from all individual participants included in the study.

Competing interests We have no relevant financial or non-financial interests to disclose.

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