RESEARCH ARTICLE

The effects of being under watch: The impact of electronic monitoring on remote workers' psychological safety

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Abstract

Electronic monitoring emerged as a common practice in the post pandemic telework. Whereas existing research has mainly focused on the effects of this work model on individual performance and well-being, it has overlooked how specific circumstances, such as new control dynamics, can influence employees' behaviors. We cover this gap by investigating the relationship between electronic monitoring in telework – including its clarification by the organization and the access to data by employees – and psychological safety, which is associated with key performance behaviors such as learning, voice and knowledge-sharing. Quantitative data collected through an online survey with 382 hybrid and remote workers were analyzed. Results indicate no statistically significant differences in psychological safety levels between monitored and unmonitored groups. However, additional analyses suggest that how monitoring is implemented can be key to keeping psychological safety levels, resulting in actionable recommendations for managers and organizations to enhance telework implementation.

Introduction

Information and Communication Technologies have turned remote work into a possibility for decades (Bailey & Kurland, 2002). It has gained the world, though, during the Covid-19 pandemic (International Labour Office, 2020a; Manokha, 2020). What came into many organizations as an emergency social distancing measure was actually a jump to a new work model that could have taken longer to be established in other conditions (Aloisi & De Stefano, 2021; Delgado, 2022; International Labour Office, 2020a). Despite a promising beginning, workers and organizations also came across unwanted effects and difficulties (Baert, Lippens, Moens, Weytjens & Sterkens, 2020b; Felstead, Jewson & Walters, 2003; Illegems & Verbeke, 2004; International Labour Office, 2020b). They have raised debates about how to effectively manage remote workforce and stimulated an early return to face-to-face work for some companies, as we would testify in the following years (Christian, 2023; Sevilla, 2023).

Amidst the pandemic, monitoring practices became part of the new normal, not only for those known as front line employees but also for the new teleworkers (Aloisi & De Stefano, 2021). As telework was being consolidated, implementation of monitoring software rose dramatically (Aloisi & De Stefano, 2021; Eurofound, 2020; International Labour Office, 2020b). To what extent these practices

have an influence on employees' attitudes is something still unclear. Hence, if the abrupt adoption of this model in the pandemic did not allow much reflection or preparation, we must now further explore the circumstances and effects related to telework in order to structure its permanent adoption.

Although much attention has been given to the effects of monitoring on trust across literature, the impact of monitoring practices on the psychological safety of employees remains scarcely observed. Psychological safety is known for being positively related to team and organizational learning, voice behavior (Edmondson & Lei, 2014; Newman, Donohue & Eva, 2017), and knowledge-sharing behavior (Hao, Zhang, Shi & Yang, 2022). Also, it has been seen as a connection between trust and outcomes (Chughtai, 2020; Hao et al., 2022; Vaida & Ardelean, 2019).

We want to understand this impact and find out if other monitoring-related practices less addressed by literature – more specifically, the clarification provided about monitoring and the access of employees to the collected data – also shape employees' reactions. Previous research indicates that, despite its legitimate protection purposes (e.g., Abraham et al., 2019; Aloisi & De Stefano, 2021; Yost, Behrend, Howardson, Badger Darrow & Jensen, 2018), electronic monitoring erodes trust (Doğru, 2021; Holland, Cooper & Hecker, 2015; Thiel, Prince & Sahatjian, 2022) and is not connected with improved performance (Ravid, White, Tomczak, Miles & Behrend, 2022; Siegel, König & Lazar, 2022). The way monitoring is implemented can also lead to different outcomes, as suggested by some scholars (Weibel et al., 2015). Yet, importantly, few studies have framed these practices in the context of post-pandemic telework (Delgado, 2022).

This study goes beyond the comparison between work performed from home and on-site work by acknowledging circumstances that may fundamentally alter dynamics and relationships in remote work environments (Aloisi & De Stefano, 2021; Pianese, Errichiello & Cunha, 2022). Specifically, we examine electronic monitoring – an increasingly common feature of contemporary telework – which can shape broader outcomes of this work model by influencing, for example, how safe employees feel to speak up and share knowledge. This is particularly relevant in the current scenario, where collaboration and innovation seem to be under threat (Gibbs, Mengel & Siemroth, 2024) and used as justification for return to office mandates (Gibson, Gilson, Griffith & O'Neill, 2023). The findings presented expand the telework literature by exploring conditions that ensure its effectiveness, aligning with calls from previous studies encouraging scholars to explore technology and control dynamics in virtual work (e.g., Gajendran, Ponnapalli, Wang & Javalagi, 2024; Gohoungodji, N'Dri & Matos, 2022; Pianese et al., 2022). Moreover, we contribute to psychological safety literature by examining conditions that can potentially hinder its development in new work models, adding to extant research that is predominantly focused on factors that contribute to its emergence. From a practical standpoint, our findings offer actionable insights for designing telework policies that support essential organizational behaviors – even in contexts where electronic monitoring is implemented.

We first review key concepts and empirical findings on telework, electronic monitoring, and psychological safety. Next, we describe our methodology – analyzing data from 382 hybrid or fully remote workers, mainly based in Brazil. Our results suggest that monitoring itself does not imply reduced psychological safety, but monitoring-related practices such as the clarification provided to employees are associated with higher psychological safety. We conclude with theoretical and practical implications for managers navigating telework environments.

Literature review and hypotheses development

Telework

The term *telecommuting* was coined in the 1970s to describe a work arrangement motivated primarily by transport-related aspects (Bailey & Kurland, 2002). Surprisingly, the model did not gain popularity in its beginning (Bailey & Kurland, 2002; Felstead et al., 2003; Kaplan, Engelsted, Lei & Lockwood, 2017), which was attributed to managerial difficulties (Bailey & Kurland, 2002). Until the first two decades of the 2000s, telecommuting had been adopted in very specific situations, despite

formal telework programs and benefits spread by organizations. It was restricted to highly trustful, self-disciplined employees (Felstead et al., 2003) and in cases necessarily encouraged by managers (Illegems & Verbeke, 2004; Rose & Brown, 2021). In 2020, the mass adoption of remote work during the Covid-19 pandemic has noticeably changed perspectives over this model of work (ILO, 2020b; Rose & Brown, 2021), and there was an implied consensus that it would be a definitive change in the word of labor (Baert et al., 2020b).

In a literature review, Leite, da Cunha Lemos and Aldir Schneider (2019) named *telework* a way of working outside the physical structure of the organization, using Information and Communication Technologies, on a part-time or full-time basis. Literature presents different terminologies to refer to this idea, such as telecommuting, telework, remote work, work from home, without a clear or consensual distinction. In this paper, these names will be used interchangeably.

Benefits of telework include work flexibility (Raišienė, Rapuano, Dőry & Varkulevičiūtė, 2021), autonomy, work–life balance, no need to commute (Manokha, 2020), reduction of job-related stress (Baert et al., 2020b; Illegems & Verbeke, 2004) improved efficiency and work concentration (Baert et al., 2020b), as well as productivity gains (Delgado, 2022; Franken et al., 2021). Despite that, some difficulties have been repeatedly reported by workers: concerns regarding promotion opportunities (Baert et al., 2020b; Illegems & Verbeke, 2004), quality of work equipment and resources (Franken et al., 2021), weakened relationship with direct supervisor (Illegems & Verbeke, 2004), working extra hours (ILO, 2020b), as well as harmed social and professional interaction (ILO, 2020b; Felstead et al., 2003; Raišienė et al., 2021). Recent meta-analysis including post-pandemic studies by Gajendran et al. (2024) found that remote work intensity is associated with both perceived autonomy and isolation. The negative impacts of the latter, however, are outweighed by the positive impacts of autonomy, so that remote work leads to beneficial outcomes such as job satisfaction, organizational commitment, supervisor-rated performance, and reduced turnover intentions.

One point that has been overlooked in the telework literature is the dynamics of control within this work model and how it can impact employees' behaviors. Ideally, this model of work should not be based on time controlling (Moon, 2021) but instead measure performance by outcomes (Aloisi & De Stefano, 2021; International Labour Office, 2020a; International Labour Office, 2020b). Nonetheless, it appears that the switch for telework usually does not represent the necessary switch in hierarchical control relations – instead, it might be worsening controlling and power dynamics (Aloisi & De Stefano, 2021). This is partly due to a constant perception that one should be available on a full-time basis (Manokha, 2020; Sewell & Taskin, 2015) and above any suspicion or accusation (Pianese et al., 2022). Aiming to comply with new control mechanisms, as argued by Cunha, Errichiello and Pianese (2023), teleworkers take the burden of producing a set of electronic representations out of records and traces of interactions to ensure visibility and reachability.

Electronic monitoring

Electronic monitoring refers to 'the continuous gathering, examining, and/or recording of employee work-related data with technological assistance in real time and can be used, inter alia, to monitor worker behaviour, performance, safety, and health' (Abraham et al., 2019, p.658). These activities had been traditionally more suitable for places such as manufacturing and call centers (Sewell & Barker, 2006). Slowly, however, monitoring in workplaces has evolved to a broad and continuous activity in which every task is under watch – by means of, for example, the capture of keystrokes, screens, audio and video recordings (Carroll, 2008; Yost et al., 2018).

There is a wide range of terms used in literature to refer to monitoring. Ravid et al. (2022), who use the term Electronic Performance Monitoring (EPM), proposed a four-category division for this activity based on its purpose: (1) Performance EPM, used to strengthening performance contingencies and reduce unwanted behaviors; (2) Development EPM, to provide feedback, adjustments, and improvements; (3) Administrative and Safety EPM, meant to identify and prevent harm to employees or organizations; (4) Surveillance or Authoritarian EPM, which describes monitoring without

explicit purpose. These functions are all of interest for this paper's purpose, as long as they are made electronically. Henceforth, we will refer to all such activities simply as 'monitoring'.

As telework adoption rose, the use of software designed specifically for monitoring outside traditional offices boomed and became more sophisticated (Aloisi & De Stefano, 2021; Eurofound, 2020; ILO, 2020b; Manokha, 2020). For some authors, this is attributed to managerial challenges brought by aspects such as the lack of visibility of workers (Aloisi & De Stefano, 2021; ILO, 2020b) – an issue commonly reported by both employees and managers (Felstead et al., 2003; Hafermalz, 2020). For workers, whereas real-time visibility in the office could be a source of self-discipline and surveillance by others (Felstead et al., 2003), low visibility in remote work could lead to feeling isolated, fear of being excluded from decision making or from allocation of meaningful work (Sewell & Taskin, 2015), and difficulty to demonstrate honesty, reliability, and productivity (Felstead et al., 2003). Indeed, teleworkers often engage in behaviors to stay visible in ways they would not do in a traditional setting, such as working extra hours (Pianese et al., 2022; Sewell & Taskin, 2015), which also can favor a higher acceptance of electronic monitoring (Felstead et al., 2003).

The impacts of electronic monitoring have been extensively explored by researchers, yet with different approaches and controversial results. Authors such as Carroll (2008) found a relationship with performance improvement, although her meta-analysis was more focused on monitoring as a feedback intervention. Later, Ravid et al. (2022), in meta-analysis including 94 independent samples, found no evidence that monitoring improves performance. Instead, they observed that increased stress is an outcome regardless of how monitoring is conducted. In this line, another recent meta-analysis conducted by Siegel et al. (2022) investigated the effects of electronic monitoring in job satisfaction, stress, performance and counterproductive work behavior, which were also the most addressed variables in previous studies. The fact of being watched slightly decreases job satisfaction among employees, slightly increases stress and CWB, and presents no relationship with performance (Siegel et al., 2022).

Trust is also a key element in a telework reality (Felstead et al., 2003; ILO, 2020b; Stephens et al., 2020), considered vital for overcoming the challenges associated with lack of visibility (Felstead et al., 2003). While trust fosters autonomy and collaboration, using monitoring software based on a concern with employees' CWB and crime (Alder, Noel & Ambrose, 2006; Aloisi & De Stefano, 2021; Eurofound, 2020) can instead create an atmosphere of mistrust (Alder et al., 2006). Empirical evidence suggests that the adoption of monitoring tools has a negative relationship with trust in management not only for manual employees (Holland et al., 2015) but also for remote workers in the post pandemic reality (Doğru, 2021; Thiel et al., 2022). Yet, research investigating this impact under the new labor settings after mass telework adoption is scarce, and further investigation is necessary.

Another noteworthy aspect of the monitoring's impact has been pointed out by scholars such as Tomczak, Lanzo and Aguinis (2018) and Weibel et al. (2015). They argue that well implemented control systems can be minimally invasive or even enhance trust among employees, whereas poorly implemented ones can lead to a wide range of negative employee reactions. As summarized by Ambrose and Alder (2000, p. 189) 'the technology itself is neutral; it is how the system is designed, implemented and used that affects employee reactions and the systems effectiveness.' Further examining monitoring features can therefore provide detailed and valuable evidence to existing literature on how to shape monitoring practices and their effects in organizational behavior.

Psychological safety

Psychological safety is a concept that gained relevance in the 1990s, being mentioned by authors such as Kahn (1990) in his famous study about engagement and disengagement at work. According to him, psychological safety, together with meaningfulness and availability, is one of the conditions for people to engage – employ their personal selves, cognitively and emotionally – in a workplace. 'Psychological safety was experienced as feeling able to show and employ one's self without fear of negative consequences to self-image, status, or career' (Kahn, 1990, p. 708).

Later, Edmondson (1999) was one who further developed the concept while investigating team learning behavior. She argued that learning, 'an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of actions' (Edmondson, 1999, p. 353) requires exposure and the risk of being judged or punished. Thus, for people to behave as expected to promote learning, it is essential that they feel comfortable, fearless of others' reactions and not under threat. This 'belief that the team is safe for interpersonal risk taking' (Edmondson, 1999, p. 354) was then called psychological safety.

When defining this construct, it is important to distinguish it from trust. Edmondson (2003) asserts that even though they hold many similarities – as far as both involve perceptions of risk and vulnerability – there are important conceptual differences: (1) temporal immediacy – psychological safety is more focused on a short-term risk assessment whereas trust incorporates a wide temporal range; (2) focus on self versus other – psychological safety has an internal focus. It is about me being given credit to speak up. Trust, for its turn, is about me giving credit to others; (3) levels of analysis – trust is more of a dyadic relationship and psychological safety a perception that is usually shared by a team.

Research has shown a strong positive relationship of psychological safety with learning and the behavior of speaking up, also known as voice (Edmondson & Lei, 2014; Newman et al., 2017). Performance has also been examined from multiple perspectives. A recent longitudinal study conducted by Higgins, Dobrow, Weiner and Liu (2020) found that psychological safety is not, on its own, associated with higher performance over time. However, there is evidence from many studies of positive relationship with performance considering three levels of analysis – individual, group, and organizational (e.g., Edmondson & Lei, 2014; Newman et al., 2017).

Electronic monitoring and psychological safety

Psychological safety has greater relevance and value in uncertain scenarios, since it mainly involves engagement in interpersonal risks (Edmondson, 2019; Edmondson & Lei, 2014). In post pandemic workplaces, not only team settings were radically transformed but also widespread uncertainty and fear regarding career perspectives became prevalent (Aloisi & De Stefano, 2021; Baert, Lippens, Moens, Sterkens & Weytjens, 2020a). This hostile environment can change perceptions of psychological safety. Simultaneously, it boosts its value for today's organizations that want to achieve their aims by means of employees' collaboration and learning behaviors.

To date, few studies have framed psychological safety under the new models of work, and there is growing evidence that it functions as an important mechanism – either as a mediator or moderator – leading to outcomes such as performance, well-being, and knowledge-sharing behavior. For instance, Gibson and Gibbs (2006) found that psychological safety mitigates the negative effects of virtuality on innovation, highlighting its foundational role in digitally mediated collaboration. More recently, research conducted by Sjöblom, Juutinen and Mäkikangas (2022) demonstrated that psychological safety acts as moderator in the relationship between self-leadership and well-being in the context of enforced telework. Hao et al. (2022) found that psychological safety mediates the relationship between trust in coworkers and knowledge-sharing behavior. Interestingly, this relationship proved to be stronger in virtual environments.

Recent studies have also identified interventions with the potential of fostering psychological safety in remote settings. Seeber, Fleischmann, Cardon and Aritz (2024) found that psychological safety can be fostered in global virtual teams through two types of interventions; team-based interactions (such as peers reminding each other about deadlines) and digital reminder nudges that enhance role transparency. Lechner and Tobias Mortlock (2022), in turn, examined how virtual teams navigate interpersonal challenges and sustain psychological safety over time. They found that relational practices – such as explicitly checking in on colleagues' well-being, establishing shared team norms, and making time for informal connection – play a crucial role in mitigating the relational

fragmentation often caused by remote work. These contributions highlight practices that enhance psychological safety in remote work; however, less is known about the organizational practices that may undermine it – a gap this study aims to address.

We draw on Edmondson's (1999, 2019) theory of psychological safety, which emphasizes trust as a necessary precondition for this perception to emerge. When organizational practices such as electronic monitoring are perceived as signals of distrust – particularly in remote settings where opportunities to build trust through informal, face-to-face interactions are limited – they may undermine the necessary conditions for psychological safety to develop. Since prior research has shown that psychological safety can buffer the negative effects of virtuality on innovation (Gibson & Gibbs, 2006), recent work has turned to identifying practices that actively foster psychological safety remote work environments (e.g., Lechner & Tobias Mortlock, 2022; Seeber et al., 2024). The present study seeks to explore whether certain organizational practices – such as electronic monitoring – may have the opposite effect, constraining rather than enabling psychological safety in telework contexts. In this sense, we will first investigate whether remote monitoring practices are associated with lower levels of psychological safety perceived by remote employees.

Hypothesis 1: There is a statistically significant difference in the perceived psychological safety across monitored and unmonitored remote workers.

We expect that the unmonitored group will have higher levels of psychological safety than the monitored one. This would be similar to the effect found on trust by previous research (Doğru, 2021; Holland et al., 2015; Thiel et al., 2022). As trust is a key condition for psychological safety to emerge – and both are positively associated with group learning and development (Edmondson, 2003) – we anticipate that jeopardizing trust will also hamper psychological safety, which we approach here as a broader construct shaped by team dynamics. Psychological safety captures not only the presence of trust but also the individual's willingness to take interpersonal risks in a group setting, such as voicing concerns, asking for help, or acknowledging failure. As such, it offers a richer lens through which to understand how employees experience electronic monitoring in remote work contexts and how this may affect collaboration, learning behaviors, and innovation.

Also, to check the relevance of the perception remote workers hold toward monitoring, the relationship between the perceived appropriateness of the monitoring practices and psychological safety will be verified.

Hypothesis 2: There is a positive relationship between the perceived appropriateness of the monitoring practices and the perceived psychological safety.

We expect that employees who perceive the monitoring practices as more appropriate will experience higher levels of psychological safety. Employees' perceptions about human resources practices can shape attitudes (Nishii et al., 2008) and this can be key in unraveling the impacts of electronic monitoring on employees' risk-taking behaviors.

One of the key aspects in monitoring implementation seems to be the prior notice or clarification provided about monitoring practices (Moon, 2021; Tomczak et al., 2018). Alder et al. (2006) pointed out that silent or covert monitoring may be the most controversial of its aspects. These authors found that advance notice was related to higher post implementation trust in a longitudinal study conducted with employees in the retail and service industry. Ravid et al. (2022) also state that if the companies are transparent toward monitoring, more positive attitudes from employees can be expected.

Together with prior communication of the rules, the access of employees to the data is another factor that can shape the acceptance of monitoring by employees (Abraham et al., 2019). However, Siegel et al. (2022) found in their meta-analysis that feedback from monitoring actually worsened the negative effects of these practices in job satisfaction and stress. So far, this aspect has been less

addressed by scholars and deserves deeper investigation. Ravid et al. (2022) pointed to the impact of the synchronicity of feedback from electronic monitoring as an avenue for further investigation.

To investigate the impact of specific practices, two other analyses will be carried out. First, the clarification about the adoption of monitoring provided by the organization. Second, the access of the employees to the data that has been generated by these practices, as a source of feedback.

Hypothesis 3: There is a statistically significant difference in the perceived psychological safety between those who consider the clarification provided by the organization as appropriate and those who consider it inappropriate.

Hypothesis 4: There is a statistically significant difference in the perceived psychological safety between those who have access to the collected data and those who do not have access.

We anticipate that those who received clear explanations and those with data access will report greater psychological safety. Being aware of the existence and reasoning behind electronic monitoring could shape perceptions about its use and lead to less threatening risk assumptions. Similarly, if employees can see what data is collected about them, this might be seen as less harmful or threatening. Different features and implementation methods are supposed to buffer the negative effects of monitoring, as suggested by Abraham et al. (2019), Ravid et al. (2022), and Weibel et al. (2015).

Method

Procedures

Data were collected by a 29-item online questionnaire, written in Portuguese and powered in Google Forms, from February to May 2023. The instrument was co-owned by a research group investigating telework and shared mainly through social media platforms – specially LinkedIn. An active search for potential respondents was also conducted, and invitations to participate in the study were send to employees of big companies in Brazil and Portugal. All invitations specified the study's purpose, eligibility criteria, completion time, and confidentiality assurances.

Participants first consented to data use and confidentiality, then passed two screening items assessing they were currently employed and performed their tasks using Information and Communication Technologies'. All eligible respondents completed Sociodemographic, Work Model, and Psychological Safety sections; those working hybrid or full-time remotely also answered the Remote Work section, and among these, only those reporting organizational monitoring practices completed the Monitoring section.

Participants

Of 506 respondents, 463 met screening criteria, and 382 were considered valid for our research – only those who said they work in a hybrid (65.2%) or remote work model (34.8%). Participants had the following characteristics: 57.3% were female, 96.9% were Brazilian, 93.7% had at least an undergraduate degree. The average age was 34 years. Regarding work conditions, 86.9% had a permanent work contract, 67.5% work at large organizations (> 500 employees) and 24.1% are in leadership positions. 145 (37.9%) said they are monitored. The average tenure with the same organization was 5.2 years, and the average tenure in the same position was 3.9 years.

Measures

Sociodemographic data, work model, and monitoring practices

Objective questions were designed by the researchers to gather sociodemographic data and details on work model and monitoring practices. Sociodemographics included nationality, age, gender, education level, contract type (autonomous, freelancer, temporary, permanent, intern, other), employer

size (small, medium, large, unknown), tenure in the organization and position (years or months), and leadership status.

Psychological Safety Scale

Psychological safety was assessed through the 7-item Team Psychological Safety Scale, developed by Edmondson (1999) and yet the most used by researchers (Edmondson & Lei, 2014), which Portuguese version was used by Gari, Dimas, Lourenço and Rebelo (2020). To preserve the validity and psychometric properties of the original instrument, answers are given on a Likert scale, varying from 1 (*very inaccurate*) to 7 (*very accurate*).

Data analyses

Preliminary analyses

Preliminary analyses were conducted to investigate the appropriateness of the Psychological Safety Scale for the present sample. First, all reverse-coded items (1, 3, and 5) were re-coded prior to analysis so that higher values consistently reflected higher levels of psychological safety. Confirmatory factor analysis was used to check for the validity of the scale's structure and the coefficients Cronbach's alpha and McDonalds' omega were verified to assess reliability. These analyses were run using Jamovi 2.3.21 for Windows.

Regarding the confirmatory factor analysis, considering the characteristics of the variable, the estimation method was Maximum Likelihood (Schermelleh-Engel, Moosbrugger & Müller, 2003). Normality was considered supported when skewness and kurtosis values for the data distribution were in the range −1 to +1 (Muthén & Kaplan, 1985). The parameters considered to evaluate the fit of the model were as follows: Comparative Fit Index > .90 = acceptable, > .95 = excellent (Marsh, Hau & Grayson, 2005); Tucker–Lewis Index/Non-Normed Fit Index > .90 = acceptable, > .95 = excellent (Marsh et al., 2005); Standardized Root Mean Residual < .08 = acceptable (Schermelleh-Engel et al., 2003); and Root Mean Square Error of Approximation < .08 = acceptable, < .05 = satisfactory (Schermelleh-Engel et al., 2003). Scale consistency was deemed acceptable with Cronbach's α > .70 (Nunnally, 1978) and McDonald's ω > .70 – the latter known for providing more accurate estimations of reliability due to its assumptions (McNeish, 2018).

Hypotheses testing analyses

Hypotheses were tested using SPSS 28.0.1.1 (14) for Windows. For Hypothesis 1, homoscedasticity was verified through Levene's Test for Equality of Variances, for which a p value < .05 was considered significant. Normality was again checked through skewness and kurtosis values, considering acceptable if coefficients were close to the range of −1 to +1 (Muthén & Kaplan, 1985). Once assumptions of normality and homoscedasticity were supported for full sample and subsamples, a t-test verified the difference in the psychological safety means across groups, which were based on the answer (yes or no) to the question: 'Does your organization adopt any kind of monitoring software?' A p value < .05 was considered significant and the size effect was considered as follows: ≥ .20 = small, ≥ .50 = medium and ≥ .80 = large (Cohen, 1988).

Hypothesis 2 was verified by linear regression analysis, considering two quantitative scales from the questionnaire. The perceived appropriateness of the monitoring practices was assessed through the question 'How appropriate do you consider the tools adopted for monitoring in your organization?', answered on a 5-point Likert scale. Perceived psychological safety, for its turn, was assessed through the Psychological Safety Scale described in the Measures section of this study. A p value < .05 for the regression analysis was considered significant. Assumptions of normality, homoscedasticity, independence of errors, linearity and outlying values were also assessed according to Schmidt and Finan (2018).

Hypotheses 3 and 4 were analyzed with the same procedure used for Hypothesis 1. For Hypothesis 3, two groups were set based on the question: 'How appropriate do you think was the information

Table 1. Descriptive statistics

Sample	N	Mean	SD	Skewness	Kurtosis
Perceived Appropriateness of Monitoring Practices					
Full Sample	382	3.57	1.41	−0.59	−0.96
Psychological Safety					
Full Sample	382	5.34	0.99	−0.68	3.59
Monitored	145	5.22	0.99	−0.80	4.13
Unmonitored	188	5.42	0.98	−0.75	3.55
Perceive Clarification as Appropriate	72	5.51	0.82	−0.48	−0.20
Perceive Clarification as Inappropriate	43	4.89	1.09	−0.99	1.34
Have Access to Data	45	5.19	0.93	0.13	−0.90
No Access to Data	75	5.19	1.03	−1.13	1.93

provided by the organization about the tools that are used for monitoring?,' which required answers on a 5-point Likert scale. Those who have chosen 1 or 2 were in the 'inappropriate clarification' group, whereas those who have chosen 4 or 5 were in the 'appropriate clarification' group. Those who were neutral (3) were not considered for this test. Additionally, a robustness check for Hypothesis 3 was conducted using a data-driven grouping approach based on the mean and standard deviation of responses, which confirmed the significance and direction of the results. For Hypothesis 4, we classified respondents by their answer to 'How do you access the data that is collected?' Those indicating total or partial access to their own data were coded as having access, while those reporting no access or access only to their team's data were coded as not having personal data access.

Results

Validity and reliability

Descriptive statistics of psychological safety for the full sample and subsamples are provided on Table 1. With regard to the confirmatory factor analysis, initially the 1-factor model showed no fit to data ($\chi^2 = 85.5$, $df = 14$, $p < .001$; Root Mean Square Error of Approximation = .116; Comparative Fit Index = .845; Tucker–Lewis Index = .767; Standardized Root Mean Residual = .0659), despite the statistically significant factor loadings ($p < .001$). To improve the results, modification indices were verified, and residuals of the following items were correlated: 1 and 5, then 3 and 5. Results still showed poor fit to data ($\chi^2 = 38.8$, $df = 12$, $p < .001$; Root Mean Square Error of Approximation = .0765; Comparative Fit Index = .942; Tucker–Lewis Index = .898; Standardized Root Mean Residual = .0445). After another evaluation of the modification indices, residuals of items 1 and 3 were also correlated. Then, the model showed excellent fit to data ($\chi^2 = 21.5$, $df = 11$, $p = .028$; Root Mean Square Error of Approximation = .050; Comparative Fit Index = .977; Tucker–Lewis Index = .956; Standardized Root Mean Residual = .0318).

It is important to note that items 1, 3 and 5 are the ones that are reversed in the questionnaire. In this respect, literature has already pointed out that negative-worded items often appear as a separate factor, and this is attributed to a method effect rather than a substantive one (Marsh, 1996). Thus, considering that the psychological safety scale is a widely adopted instrument (Edmondson & Lei, 2014) and the construct is conceived as unidimensional, we opted for not taking the two-factor solution and instead correlating residuals to achieve a better model fit – which is in line with prior statistical literature (Marsh, 1996; Merritt, 2011; Schmitt & Stults, 1985). Regarding reliability, the scale had satisfactory results ($\alpha = .675$ and $\omega = .714$). Considering that factor loadings were varied across the items (item 1 = .606; item 2 = .970; item 3 = .546; item 4 = .997; item 5 = .464; item 6 = .616; item

$7 = 1.322$), this is a case where tau-equivalence assumption is violated and Cronbach's alpha under-estimates reliability (Green & Yang, 2008). In this case, Omega provides a more appropriate measure for the consistency of the scale. Therefore, results provided evidence of validity and reliability for the Psychological Safety scale.

Hypotheses testing analyses

As far as the Hypothesis 1 is concerned, the homogeneity of variance assumption was supported, as Levene's test showed no significant difference in the variance of psychological safety scores between monitored and unmonitored employees ($F(1, 331) = 0.06$, $p = .81$). Results of the *t*-test showed no statistically significant difference in the perceived psychological safety between the monitored ($M = 5.21$, SD $= .989$) and the unmonitored group ($M = 5.41$, SD $= .979$), ($t(331) = 1.81$, $p = .070$). Thus, Hypothesis 1 is not supported.

Regarding Hypothesis 2, a preliminary Pearson correlation analysis revealed a moderate positive association between the perceived appropriateness of monitoring practices and psychological safety, $r(143) = .38$, $p < .001$. Results of a simple linear regression showed that the linear relationship between the variables is statistically significant [$F(1,143) = 23.71$, $p < .001$, $R^2 = 14.2$]. The perceived appropriateness of the monitoring practices accounted for 14.2% of explained variability in the perceived psychological safety. The standardized coefficient for the predictor was .377, and the nonstandardized .286, both statistically significant. It can be affirmed that each additional point in the perceived appropriateness of monitoring practices accounts for an increase of .286 in the perceived psychological safety.

To ensure the robustness of findings, control variables were tested. Leadership status did not significantly predict psychological safety ($p = .373$), nor did its inclusion alter the main effect of monitoring appropriateness. In contrast, age emerged as a statistically significant negative predictor ($p = .047$), slightly increasing the model's explanatory power. In the simplified final model including only age as a control, the overall regression remained significant, $F(2,138) = 13.69$, $p < .001$, with $R^2 = .166$. The standardized coefficient for monitoring appropriateness was $\beta = .265$ ($p < .001$), and for age, $\beta = -.017$ ($p = .047$), indicating a small negative association between age and perceived psychological safety.

A hierarchical regression further confirmed that monitoring appropriateness explains a significant amount of additional variance in psychological safety above and beyond age, $\Delta R^2 = .121$, *F*-change $(1,138) = 19.69$, $p < .001$. This final model reflects a medium effect size (Cohen's $f^2 \approx .20$), which is considered both common and practically meaningful in applied psychology (Funder & Ozer, 2019). Although age contributed to the explained variance, the practical impact of the model remained primarily driven by the perception of monitoring appropriateness. The results support the practical importance of clearly communicating and implementing appropriate monitoring practices in shaping employees' psychological safety. Accordingly, Hypothesis 2 is supported.

Concerning the third hypothesis, Levene's test indicated that the assumption of homogeneity of variances was met for psychological safety scores across groups, $F(1, 113) = 1.98$, $p = .16$. Results of the *t*-test showed that there is a statistically significant difference in the perceived psychological safety between those who consider the clarification provided by the organization as appropriate ($M = 5.51$, SD $= .824$) and those who consider it inappropriate ($M = 4.89$, SD $= 1.09$); ($t(113) = 3.43$, $p < .001$). According to the effect size (Cohen's $d = -0.662$) the difference between the group means is medium. Recent empirical benchmarks suggest this value is above average for studies in applied psychology. However, small samples are known for often producing larger effect sizes than subsequent replication studies with larger samples (Funder & Ozer, 2019). We therefore interpret this effect as practically meaningful, so that clear and appropriate explanations about monitoring are suggested to noticeably enhance how safe employees feel to speak up or take interpersonal risks at work. A robustness check using an alternative, data-driven categorization based on the distribution of responses (excluding midpoints and grouping individuals below and above ±0.5 SD from the mean) yielded similar results:

participants who perceived the clarification as appropriate ($M = 5.72$, SD $= .76$) reported significantly higher psychological safety than those who perceived it as inappropriate ($M = 4.65$, SD $= 1.14$); $t(40.86) = 4.06$, $p < .001$. Thus, Hypothesis 3 is supported.

For the fourth hypothesis, Levene's test confirmed the assumption of homogeneity of variances across groups, $F(1, 118) = 0.01$, $p = .92$. Results of the *t*-test showed no statistically significant difference in the perceived psychological safety between the group with access to data ($M = 5.19$, SD $= .931$) and the group with no access to data ($M = 5.19$, SD $= 1.04$); ($t(117) = .044$, $p = .965$). Therefore, Hypothesis 4 is not supported.

Discussion

This research has sought to analyze the impact of electronic monitoring and related practices on psychological safety perceived by remotely monitored workers. Overall, the results provide guidance on this matter with two main conclusions: (1) monitoring itself might not be problematic, but the perception of employees toward it is suggested to be highly relevant as a predictor of psychological safety levels; (2) when adopting monitoring, appropriate clarification about what is going on is crucial to prevent harmful effects on psychological safety.

Despite the existent difference between monitored and unmonitored groups regarding psychological safety levels, it was not statistically significant. This find contradicts expectations and differs from the effect found on trust in previous studies, which can reinforce distinctions between both constructs. One possible explanation is that the sample size was not enough to prove the effect, since only 145 out of 382 people were classified as monitored. However, this result can also be an indication that workers in fact do not mind being monitored. Actually, they might even want or feel that they need to be seen by the organization. In this sense, the prevalent fear and job uncertainty in the post pandemic reality might have played a role. Hafermalz (2020) named fear of exile a source of anxiety and existential concern for remote workers. According to her, being away from the center of organizational life had a logic of expulsion, in the face of which the need for recognition and exposure was raised. Therefore, the question was not about the mere expectancy of being observed, but instead voluntarily 'visibilizing' practices as a response to the fear of exile. This threat, as the author adds, is intensified in a scenario of labor precarity and recession, which matches the reality of the world of work today.

Hypothesis 2 highlights an interesting point in showing a positive relationship between the perceived appropriateness of monitoring practices and the level of psychological safety. The existence of monitoring itself did not prove to be relevant. On the other hand, it can be the employees' judgments about it that will predict if the environment will be considered safe enough to take interpersonal risks. Since employees' perceptions are likely to be based (at least, in part) on how monitoring is conducted, we could conclude that these practices should not be deployed carelessly. Instead, efforts need to be put into guaranteeing transparency and a reasonable justification toward what is being adopted.

The paradox presented by Sewell and Barker (2006) enlightens how employees' perceptions and reactions can be shaped. They point out organizational surveillance's dual character: it can either be coercive – a tool of domination used by managers to forcibly direct activities of employees who, in turn, are seen as lazy and deviant – or an instrument of care – based on an implicit contract that guarantee that everyone fulfills their obligations, therefore protecting interests of all. Likewise, employees can either see monitoring as a sign of distrust or, on the contrary, a sense of collective protection can take place. The latter seems to be a suitable atmosphere for psychological safety to emerge.

As expected, and in line with the latter hypothesis, Hypothesis 3 showed that those provided with appropriate clarification about monitoring had higher psychological safety levels. Trying to secretly spy on employees is harsh because it can invoke what Rousseau (1989) denominated

psychological contract violation. That would mean breaking an implicit contract with set behavioral expectations within an employee–employer relationship. It generates feelings of betrayal, mistrust and, as suggested, can also threaten psychological safety. Conversely, disclosure about monitoring practices can reinforce perceptions of fair treatment and transparency toward the organization.

The speech of protecting employees' interests regarding health and security was highlighted by authors such as Aloisi and De Stefano (2021). According to them, however, it results in a disguised dynamic of subjection. In this respect, we must assume that communication is only one part of the company's position regarding monitoring. It must be accompanied by a justifiable and coherent attitude toward collecting and using data. In our sample, since monitoring is a recent and frequently undisclosed occurrence, some employees that do not feel fully aware of it might have preferred to declare themselves unmonitored. It should be noted that our focus in this research was to capture perceptions rather than facts. Nevertheless, this also implies some disguised – and perhaps of the most perverse ways of – monitoring might have been out of the spotlight. To analyze the whole picture that composes an employee's perception of appropriateness, further research is essential.

The lack of a significant difference in psychological safety between monitored and unmonitored workers (Hypothesis 1) and our conclusion that monitoring should be implemented with care (Hypotheses 2 and 3) may seem paradoxical at first glance. If monitoring, as a binary condition, does not impact on psychological safety, one might assume that how it is implemented would also be irrelevant. However, further analysis of the monitored sample suggests a more nuanced reality: within this group, psychological safety levels differed significantly depending on whether the monitoring was perceived as appropriate and whether clear communication was provided. In this respect, it is helpful to distinguish three layers of electronic monitoring: (1) its mere presence (*what*); (2) its purpose or rationale (*why*), as investigated by previous research (see Ravid et al., 2022); and (3) its implementation features (*how*). In other words, our study suggests that it is not the mere presence of monitoring that shapes employee experience (*what*), but rather the way it is interpreted and implemented (*how*).

Hypothesis 4, as opposed to expectations, was not significant. We expected that having access to collected data as a source of feedback could reduce the perception of monitoring as something harmful and risky, therefore allowing higher levels of psychological safety. First, because it could raise a sense of participation and transparency in monitoring. Second, because it could enhance its role as a tool for improving performance. Conversely, access to data did not prove to be relevant.

Previous investigations already indicated that the effects of assessing the data were controversial. Some studies that portrayed feedback from monitoring as a source of feedback reported beneficial effects on performance (e.g., Carroll, 2008; Ko & Baek, 2024). Other studies, however, found detrimental effects. It might be the case that for some people it constantly reinforces that fact that they are being monitored, therefore eliciting negative feelings such as anxiety, stress, and fear. Moreover, employees might simply not feel that the data provided is useful (Siegel et al., 2022). Possible explanations also include stress from a depersonalization of the workplace and reduced interaction with supervisors, as suggested by Alder and Ambrose (2005). Regarding the effect on psychological safety levels, the results are also not conclusive and reinforce the idea of a dual character of monitoring technologies, as argued by many scholars (e.g., Abraham et al., 2019; Aloisi & De Stefano, 2021; Carroll, 2008). This could also be attributed to the small sample size – only 45 workers reported having access to data – and a lack of distinction between the different ways this information can be presented to employees (e.g. constructively, associated with performance targets, presented by the supervisor). Further research should strive for larger samples and provide a more nuanced view of the access to data to unravel its effects on psychological safety.

The fact that the analyzed sample is primarily Brazilian yells an examination of cultural aspects when generalizing this study's results. According to Hofstede's cultural dimensions (Hofstede, Hilal, Malvezzi, Tanure & Vinken, 2010), Brazilian culture is highly hierarchical and structured, overall

marked by high Power Distance – which speaks about the acceptance of inequalities in power distribution – and Uncertainty Avoidance – which indicates the need for rules and legal systems to guide life. These aspects would point toward higher acceptance of electronic monitoring as part of the organizational system, especially if enforced by higher management, which would hinder a generalization of results. However, a recent study conducted by Schwambach, López, Sott, Carvalho Tedesco and Molz (2022), comparing the acceptance of wearable monitoring technologies at work, found very similar acceptance levels between Brazilian and European samples of industry workers. This may suggest that demographic characteristics – such as the level of education or employment sector – can exert a stronger influence than the national culture in certain work contexts. Still, our findings should be generalized with caution and further studies are necessary to replicate this study in other populations.

This research adds to literature first by building evidence about the impacts of electronic monitoring in the post pandemic telework context, where different work dynamics take place – not only there was an widespread adoption of this resource, which started to ubiquitously track employees in domestic spaces (Aloisi & De Stefano, 2021; Manokha, 2020), but it also became a replacement of the managerial gaze given the lack of visibility in the office (Pianese et al., 2022). In this context, electronic monitoring might be accepted by employees as a managerial tool, as long as it is carefully implemented by organizations. Second, by expanding research on monitoring-related aspects that have not been explored in past research and that can help to compose a comprehensive framework of monitoring impacts. Finally, it helps to unpack the dynamics of psychological safety in new work models, unraveling its antecedents at the organizational level, also shedding light on its distinction from trust. We therefore go beyond effects of monitoring on dyadic relationships – whether of individuals and managers or individuals and organizations – to explore behavior within teams that can speak about valuable organizational outcomes such as collaboration and idea sharing.

Regarding practical implications, this research brings feasible prospects to organizations. Guaranteeing transparent communication and clear justification for collecting and using employees' data constitutes relevant goals, at least in what concerns psychological safety. First, to keep the use of data consistent and fair from employees' perspectives, organizations should build and make available internal policies and rules describing which data will be collected, for what purposes, who will have access and for how long the data will be retained. Ideally, employees' input would be considered for the design of monitoring systems (through advisory committees or surveys, for example) to help identify acceptable boundaries and perceptions of fairness. Second, organizations must ensure that extensive disclosure of this policy will occur before monitoring practices are implemented, and this can be done by both detailed informative texts on regular communication channels and interactive sessions. It would be important to provide space for doubts (Q&A sessions) and suggestions to address any concerns from employees. Third, individual consent could be obtained through a warning button on computers that require active acknowledgement of monitoring activities upon system login, for example. Fourth, it would also be important to ensure ongoing alignment between the policy and practice by conducting regular audits and feedback gathering from employees – preventing any misuse or unintended consequences of monitoring. Finally, another important line of action involves training managers to interpret and communicate monitoring data in a constructive and ethical manner, fostering a team climate that supports psychological safety.

Limitations and future research

This study has several limitations regarding sampling, design and measures. Despite a high response rate, only 145 participants indicated they were monitored. Of this group, 72 perceived the clarification given by the organization as appropriate (vs. 43 who perceived it as inappropriate) and only 45 reported having access to data from monitoring. This might have affected the results and effect sizes, as well as prevented possibilities of some intra-group analyses, such as identifying potential distinct effects of each of the monitoring features. Moreover, this study used a non-probabilistic, convenience

sample, primarily composed of hybrid or remote professionals working in Brazil, recruited through LinkedIn. Similar sampling strategies are common in organizational research, and prior studies suggest that professionally oriented convenience samples can still yield valid insights (Mullinix, Leeper, Druckman & Freese, 2015). Nonetheless, it limits the generalizability of our findings. Future research should consider probability-based or stratified sampling methods to enhance external validity and replicate findings across broader populations.

Even though we can draw suggestions from a theoretical basis, as a cross-sectional study relying entirely on self-reports, our findings cannot establish causality and remain vulnerable to uncontrolled biases and subjectivities. We must note that in the psychological safety scale, reverse-coded items showed lower loadings and required residual correlations to improve model fit. This issue, often linked to method effects rather than construct validity, may reflect occasional respondent fatigue or cognitive strain in a minority of cases (Marsh, 1996). Still, we kept the original item structure to maintain consistency with the validated scale. Moreover, the remote work and monitoring measures present limitations. First, although the kind of monitoring of interest for this study was specified in the questionnaire, there is no control over what is exactly monitored across the respondents. Second, while some recent studies have been adopting the idea of remote work intensity, remote work adoption was here considered as a binary variable. Different instruments could be used to replicate our findings in future studies.

This research contributes to theory and delivers actionable guidance for managers. Nonetheless, further research is necessary to build on the present findings. One path of future investigation can concentrate on the aspects that compose perceptions of workers toward monitoring, considering organizational and individual variables. The first aspect to be further analyzed in combination with our findings could be the perceived purpose of monitoring, which was not captured in the present study. Despite being largely explored by previous research, there is no consistent evidence regarding the effects of monitoring purpose on employees' performance, attitudes, or stress (Ravid et al., 2022). One possible reason is that employees form their own assumptions about the purpose of monitoring, regardless of what is communicated. Future research could therefore aim to disentangle the communicated versus perceived purpose of monitoring and examine how these interpretations influence employee responses. Second, the different features that compose monitoring software deserve deeper investigation, since they are being developed in varied levels of invasiveness. Finally, the access to collected data remains a controversial aspect that can be key to making monitoring a beneficial resource for organizations and workers alike – researchers could therefore examine when and how providing such access contributes positively to employee outcomes.

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