

Psychological Safety in Remote Work: Influencing Factors for Information Technology Professionals

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Abstract

The concept of psychological safety (PS) involves different dimensions influenced by context, interpersonal relationships, and the individual experiences of workers. This construct is a critical aspect of remote environments, as it allows team members to take interpersonal risks amid evolving work dynamics impacted by technology and the COVID-19 pandemic. This research analyzes the factors influencing PS, specifically variables related to organizational practices, leadership relationships, interpersonal dynamics, and individual traits. The study adopts a qualitative methodology and a thematic analysis to obtain comprehensive results, incorporating semi-structured interviews with IT project workers operating in remote environments. The findings emphasize the multifaceted nature of PS, with supportive organizational practices, open leadership, effective communication strategies, and a strong sense of collectivism emerging as crucial factors. The influence of organizational diversity strategies outweighs that of individual personality traits, highlighting the need to address this aspect to better understand workers' perceptions of PS.

Keywords: psychological safety, remote work, qualitative research, information technology workers.

Segurança Psicológica no Trabalho Remoto: Fatores Influenciadores para Profissionais de Tecnologia da Informação

Resumo

O conceito de segurança psicológica (SP) envolve diferentes dimensões, sendo influenciada pelo contexto, pelas relações interpessoais e pelas vivências individuais dos trabalhadores. Esse constructo é um aspecto crítico dos ambientes remotos, à medida que permite que os membros da equipe assumam riscos interpessoais em meio às dinâmicas de trabalho em evolução, impactadas pela tecnologia e a pandemia de COVID-19. Essa pesquisa analisa os fatores que influenciam a SP, especificamente, variáveis ligadas a práticas organizacionais, relações de liderança, dinâmicas interpessoais e traços individuais. O estudo adota uma metodologia qualitativa e uma análise temática, buscando obter resultados abrangentes, incorporando entrevistas semiestruturadas com trabalhadores de projetos de TI que operam em ambientes remotos. Os resultados enfatizam a natureza multifacetada da SP, com práticas organizacionais de apoio, liderança aberta, estratégias eficazes de comunicação e um forte senso de coletividade emergindo como fatores cruciais. A influência das estratégias de diversidade organizacional supera a de traços individuais de personalidade, destacando a necessidade de abordar esse aspecto, a fim de melhor compreender as percepções dos trabalhadores acerca da SP.

Palavras-chave: segurança psicológica, trabalho remoto, pesquisa qualitativa, trabalhadores de tecnologia da informação.

Seguridad Psicológica en el Trabajo Remoto: Factores de Influencia para Profesionales de Tecnología de Información

Resumen

El concepto de seguridad psicológica (SP) involucra diferentes dimensiones, siendo influenciado por el contexto, por las relaciones interpersonales y las experiencias individuales de los trabajadores. Este constructo es un aspecto crítico del trabajo remoto, ya que permite a los miembros del equipo asumir riesgos interpersonales en medio de las dinámicas laborales en evolución, impactadas por la tecnología y la pandemia de COVID-19. Esta investigación analiza los factores que influyen en la SP, específicamente en variables relacionadas con prácticas organizacionales, relaciones de liderazgo, dinámicas interpersonales y rasgos individuales. El estudio adopta una metodología cualitativa y un análisis temático para obtener amplios resultados, incorporando entrevistas semiestruturadas con trabajadores de proyectos de TI que operan en entornos remotos. Los resultados enfatizan la naturaleza multifacética de la SP, destacando prácticas organizacionales de apoyo, liderazgo abierto, estrategias de comunicación eficaz y un fuerte sentido de colectividad como factores cruciales. La influencia de las estrategias de diversidad organizacional supera la influencia de rasgos individuales de personalidad, destacando la necesidad de abordar ese aspecto para comprender mejor las percepciones de los trabajadores sobre la SP.

Palabras clave: seguridad psicológica, trabajo remoto, investigación cualitativa, trabajadores de tecnología de la información.

The COVID-19 pandemic brought a new urgency to understand better how remote teams perform, since working from home is no longer a privilege but a necessity (Banjo et al., 2020). Information technology is changing how all interactions are made (Ou et al., 2014), including how employees in contemporary organizations engage, making them less constrained by space and time (Qureshi et al., 2018). Figueiredo et al. (2021) discuss the growing adoption of remote work as a strategy aiming sustainable productivity and competitive advantage in organizations. While acknowledging challenges such as social isolation and extended work hours, their analysis points to significant benefits, including improved work-life balance and enhanced quality of life for workers. This “new normal environment” opens a field to study psychological safety (PS) beyond the physical world.

In this regard, PS is a shared belief held by team members that the team is safe for interpersonal risk-taking (Edmondson, 1999). PS allows employees “to feel safe at work to grow, learn, contribute, and perform effectively in a rapidly changing world” (Edmondson & Lei, 2014, p. 23). PS can be observed in the behaviors and attitudes of members of software teams based on three aspects (Tkalic et al., 2022): 1. Safe to be honest: Teammates share ideas, opinions, and concerns and bring up problems and challenging issues without fear of social penalty. 2. Safe to make mistakes: Teammates perceive it to be fine to make mistakes, not placing blame but rather focusing on learning from constructive feedback. 3. Safe to ask for help: Teammates perceive it is easy to ask others for help. Christensen and Tell (2022) identified seven factors of PS based on the factors proposed by Edmondson (1999): Awareness, identification, asking questions, acknowledging mistakes, learning, challenging the status quo, and voicing concerns or ideas. In addition to behaviors and attitudes, PS has been researched through facilitators, inhibitors, enablers and hinderers (Frazier et al., 2016).

This paper aims to answer the following research question: What factors influence the PS of IT project workers in remote work?

Theoretical Background

PS originates in studies exploring the intricacies of the work environment and team dynamics. Using this perspective, Edgar Schein and Warren Bennis, asserted in 1965 that establishing PS in the workspace was crucial. They emphasized its role in fostering a sense of security, enabling individuals to adapt their behavior effectively amid evolving organizational demands. In 1990, Kahn introduced the concept of PS in a research exploring how the work context can influence individual engagement. PS was found to be associated with predictive social situations that induce such engaging behavior. These specific social interactions are characterized by individuals' trust in and perception of support from their colleagues (Kahn, 1990). By the end of the 1990s, the concept was formalized by Edmondson as a group phenomenon, defining it as “a shared belief that the team is safe for interpersonal risk-taking” (Edmondson, 1999, p. 354). Since then, Edmondson has been a prominent figure in the investigation of this construct, developing extensive academic work and paving the way for the evolution and significance of PS in the modern workplace. Furthermore, this topic has spread to various research areas, such as management, organizational behavior, social psychology, and healthcare management (Edmondson & Lei, 2014; Edmondson & Bransby, 2023).

In a psychologically safe environment, individuals feel comfortable admitting errors, asking for help, and speaking up with innovative ideas (Edmondson, 2023). Consequently, this interpersonal phenomenon implicates on how a team collaborates, innovates, shares learning and individual insights, and can ultimately enhance corporate goal achievement (Edmondson & Lei, 2014). As the concept evolved, and gained relevance across various fields, it allowed to be examined from different perspectives, including its antecedents, mediators, and specific outcomes. This growing importance reflects its implications for developing critical skills necessary for organizational success, as well as its impact on the overall well-being of employees. Additionally, in the literature, PS is discussed from different levels of analysis, namely: individual, group, and organizational levels (Edmondson & Lei, 2014; Newman et al., 2017).

Factors Influencing Psychological Safety

This section examines the key influences on PS identified in the literature, centering on both group-level and individual antecedents. At the group level, it explores the role of leadership dynamics, organizational practices, and interpersonal relationships. In parallel, it considers individual factors that contribute to the development of PS within the workplace.

Organizational Practices

According to Cruz et al. (2021), the legacy of the COVID-19 pandemic is likely to stimulate discussions on how organizations adapted to the crisis, pointing out the need for the return of governance practices such as compliance, accountability, and responsiveness, which ensure integrity, transparency, and agile responses to economic and social changes. Considering this current scenario, the relationships between organizational context, team dynamics, and leadership have been identified as critical group-level indicators of PS (Edmondson & Lei, 2014). Furthermore, their literature review brought forward studies indicating relationships between PS and outcomes related to organizational learning. Specifically, considering not only organizational outcomes, but also their specific antecedents that may influence this, Carmeli's research, especially in 2007 and in collaboration with Gittell in 2009, delved into the relationship between supportive organizational practices, PS, and learning from failure. Their focus was on the interconnectedness of these factors. In the 2009 study, they tested a model that proposed high-quality relationships within an organization as a precursor to PS, which, in turn, was predicted to influence an individual's ability to learn from failure. In essence, their research highlighted how positive relationships within an organization can contribute to PS, ultimately facilitating a broader culture of learning from mistakes and failures. Lee (2021) centered on the same factor, employing a qualitative approach to analyze responses derived from written narratives in an online survey conducted with participants included in a work-from-home (WFH) model. Thus, employees value organizational and supervisory support, which encompasses providing tangible and intangible resources, transparent communication, and direct engagement with senior management to gain insights into the organization's strategic direction. For example, a sales director in the electricity retailing sector emphasized the need to effectively communicate common objectives to enhance team alignment with the broader organizational goals (Lee, 2021). Finally,

Newman (2017, p. 525) mentions that "supportive organizational practices are positively related to such employee work outcomes as organizational commitment and job performance, as they heighten perceptions of psychological safety."

Leadership Dynamics

The role of leadership in fostering desirable behaviors within organizations, both at individual and group levels, is widely acknowledged, and this connection can often be mediated by PS (Edmondson & Bransby, 2023). Support for the relationship between PS and leadership styles has been established by Frazier et al. (2016), accentuating the role of supervisors in shaping the work environment and their crucial contribution to fostering PS. Through a meta-analysis, the authors identified a robust connection between PS and positive leader relations, incorporating inclusive and transformational leadership. Additionally, Olsen and colleagues (2023) observed a positive correlation between transformational leadership and performance, as well as satisfaction, within virtual teams. Their conclusion suggests that the presence of trust and operational cohesion influences this relationship. Buzás and Faragó (2023) established that leadership openness, particularly in WFH scenarios, contributes to fostering PS by enhancing affective commitment. Furthermore, PS can be mediator in the relationship between authentic leadership and employee willingness to engage in whistleblowing behaviors (Liu et al., 2015). In the context of authentic leadership, Chen and Sriphon (2022) argue that this leadership style places significant value on relationships, cooperation, and interpersonal interactions.

Interpersonal Relationships

Interpersonal relationships are equally essential in cultivating PS. According to Farmer et al. (2014), high-quality team-member exchanges involve openly expressing thoughts, offering timely and constructive input, exchanging resources, supporting one another, and acknowledging each other's contributions. In a broader scope, research highlights the importance of high-quality relationships in promoting PS, which, in turn, facilitates organizational learning and development. As cited by Edmondson & Lei (2014), a study by Carmeli et al. (2009) revealed a noteworthy positive correlation between learning from failure, PS, and high-quality relationships, showcasing an association across each dimension. The authors believe that shared objectives, collective knowledge, and mutual regard characterize a high-quality relationship between employees. Further investigations by Carmeli (2007) and Carmeli & Gittell (2009) also suggest that high-quality relationships establish an environment conducive to PS, thereby facilitating failure-based learning. So, when employees share common goals beyond their roles, understand how their work connects, and display mutual respect, they avoid blaming each other for failures. Finally, Frazier et al. (2016) found that support among peers within the framework of a supportive work environment unveiled a notable impact on team PS. In the healthcare context, Wawersik et al. (2023) view peer support as encompassing the sharing of information and experiences, serving as role models within the group, and promoting mutual learning among peers, thereby enabling speaking up/error reporting. This fosters an environment where individuals can build positive perceptions, exchange knowledge, feel unafraid of mistakes, and draw inspiration from each other's approaches.

Individual Antecedents

In examining the individual level of analysis concerning PS, Frazier et al. (2016), unveil the intricate interconnections within its nomological network. Regarding the antecedents of the construct, the findings show a significant correlation between three personality variables and PS. Namely, proactive personality, emotional stability, and learning orientation emerge as positively and linked factors, underscoring their influential roles in creating PS within interpersonal dynamics. In a recent work, Wawersik and colleagues (2023) delve into the context of healthcare workplaces, shedding light on the critical role of speaking up. They specifically presented how individual perceptions—such as confidence levels, the degree of trust in leadership, and the sense of professional responsibility—play a central purpose in encouraging and facilitating speaking-up behaviors. PS thrives when individuals at all levels embrace openness, share transparently, and accept feedback and failures without blame (Alami et al., 2023). This accentuates the fundamental influence of personal beliefs and attitudes in shaping an open communication culture.

Psychological Safety in Remote Work

The outbreak of the COVID-19 pandemic triggered a profound shift in work methodologies across the globe. Within this rapid and unforeseen paradigm shift, organizations have faced substantial challenges to adapt, particularly concerning work-life balance, ICT communication, human connection and exchange, and the effectiveness of virtual teams (Sokolic, 2022). As a result, this shift in the work environment demands a comprehensive reevaluation of traditional work models and the development of innovative strategies to support and optimize virtual collaboration, in addition to rethinking and adapting the study of PS variables in remote-work scenarios (Lechner & Mortlock, 2022; Sokolic, 2022;). Moreover, factors of this paradigm shift were studied by Lee (2021), addressing socio-emotional resources and their implications for the PS of remote workers during the COVID-19 pandemic. The findings primarily demonstrate the positive significance of job autonomy, as perceived by workers. In contrast, a lack of peer, supervisor, organizational support, and a sense of belonging can cause a fall in worker PS (Lee, 2021). On this note, we can acknowledge the challenges of the flexibilization of work structures, particularly within the framework of remote work. Practices such as micro tasks and fragmented activities have raised concerns regarding the precariousness of labor conditions and the erosion of meaningful ties between employees and organizations (Cruz et al., 2023).

By analyzing PS in virtual teams, from the viewpoint of the theoretical underpinnings described by Edmondson (safe to admit errors, ask for help, and speak up), Lechner and Mortlock (2022) found three enabling practices to create PS: 1. accepting virtual team challenges, 2. connecting as human beings, and 3. discussing the rules of the game. According to the authors, some virtual challenges include how digital presence can affect a sense of security when behaving honestly in meetings and written communication (giving and receiving feedback, spontaneous interactions, making requests and asking questions). This can resonate in how teams collaborate and create PS online, considering the difficulty of seeking help with everyday tasks and the fear of being perceived as incompetent or incapable. Moreover, this can be regulated by levels, that is considering hybrid teams can have periodic face-

to-face interactions while remote teams do not (Sokolic, 2022). In addition to the role of leadership, this can create a strategic function for HR, as it is recommended that there should be an exploration of the norms and rituals that can encourage the team to interact, thereby facilitating the constituent pillars of PS (Lechner & Mortlock, 2022).

Method

This section delineates the methodological approach employed in this study, encompassing details regarding the participants, the instruments utilized for data collection, the procedures implemented during data gathering, ethical considerations, and the data analysis methods.

Given the multifaceted nature of the construct PS, which is influenced by contextual factors, interpersonal dynamics, and individual experiences, a preference for qualitative methods will allow for a deeper investigation. Such an approach provides a more comprehensive understanding of the interconnected factors that shape PS. From that standpoint, capturing the richness and nuances of participant perspectives reveals a large volume of data that carries diverse meanings and symbolisms (Gibbs, 2009).

Participants

For this study, a purposeful sampling (Creswell, 2013) was employed, selecting participants based on their professional profiles, specifically individuals working on IT projects within remote work settings. The interviewees are all Brazilian and self-reported their age and gender as part of the data collection process. This methodological choice allowed for the incorporation of individual identities, enhancing the contextual relevance of the analysis.

Additionally, participants were asked to provide information regarding their professional characteristics, including job title, tenure in their current position, duration of employment with their current organization, and the time spent working remotely. This was done to further contextualize their experiences and contribute to a comprehensive understanding of the factors influencing their professional roles and perspectives.

Instrument

The semi-structured interview protocol was developed based on a thorough review of the literature on factors

influencing PS. This ensured that the interview questions were designed to address key aspects identified in previous research. The protocol consisted of 15 questions, which were organized into four main domains: Organizational Practices, Leadership Relations, Interpersonal Relationships, and Individual Characteristics. Among the 15 questions, some were specifically designed to address PS factors related to remote work environment. The full interview protocol is provided in the appendix.

Data Collection Procedures and Ethical Considerations

Ethical considerations were upheld throughout the interview, ensuring participant confidentiality and voluntary participation. When invited, participants were duly informed of the research objectives and procedures, by receiving the Informed Consent Form.

Data Analysis Procedures

Thematic analysis was adopted to examine the transcribed interviews and validate existing theories while uncovering potential new patterns. This process involved data familiarization, generating initial codes, searching for themes, reviewing, defining, naming, and writing up the findings. First, data preparation for analysis included transcribing the recordings of online interviews. Utilizing a heuristic method, we executed an initial coding phase through careful and reflective reading, establishing familiarity with the data. Subsequently, we derived 'pattern codes' (Miles et al., 2014) through an inductive method, consolidating and designating a condensed number of unprecedented themes (Gibbs, 2009), within categories named by previous theories.

Results and Discussion

In the following section, we delve into the analysis of the individual themes derived from the data, presenting insights and implications. This aims to elucidate the dynamics of leadership relations, organizational practices, interpersonal relationships, and individual characteristics as they relate to the establishment of PS within the participants' organizational and remote work contexts. The analysis will be presented in order of complexity, beginning with a group of themes related to organizational factors and concluding with those referring to individual characteristics.

Table 1

Participants' profiles

Participant ID	Age (years)	Gender	Job Title	Time in the Profession (years)	Time in Company (years)	Time in Remote Work (years)
P1	22	Male	Support and Solution Analyst	2	2	2
P2	25	Female	Full Tech Developer	4	1 and 2/3	4
P3	27	Male	B2B Support Analyst	2 and 1/2	2 and 1/2	2 and 1/2
P4	51	Male	Character Modeler	19	2	2
P5	23	Male	Software Developer	3	2	2
P6	22	Male	Intern	1/2	1/2	1/2
P7	32	Female	Customer Experience Director	15	7	4
P8	29	Female	Software Project Coordinator	5	2	2
P9	30	Male	Software Engineer	5	6	4
P10	25	Male	Front End Developer	6	1	4

Organizational Practices

This theme focuses on the organizational relations as perceived by the interviewees, exploring key subthemes: Employment Benefits, Communication Tools and Online Work Environment, Goal Clarity, Results Dissemination, and Horizontal Construction, and Leader as a Communication Bridge Between the Organization and Employees.

Employment Benefits

Employment benefits, traditionally encompassing aspects such as transportation allowances, healthcare coverage, and retirement plans, have evolved to accommodate the unique demands and challenges of working from home. The proliferation of remote work, accelerated by advancements in communication technology and necessitated by global events such as the COVID-19 pandemic, has prompted organizations to reassess and adapt their benefit structures to meet the evolving needs of their workforce. Additionally, remote work introduces distinctive dynamics of building team relationships, necessitating tailored approaches to employment benefits. Unlike traditional office settings, remote-work environments often lack the tangible support systems provided by physical workplaces, such as onsite amenities and social interactions. Consequently, organizations can offer alternative benefits catering to the specific requirements of remote employees, fostering their well-being, productivity, and engagement. An interviewee provided their leadership perspective regarding this rapid change and how contrasting responses to the shift to remote work can exist among the workers:

So, yeah, there was a bit of everything, right? There were some people who managed to adapt really well, you know? Like they were working in the same environment. And then there were some people that we saw had a certain difficulty in adapting their routine, their schedules, because when you're at home, it's very easy, right? You can answer an email and then get up and go grab a coffee, right? Or go pet the dog or something like that (P8).

P7 brought up the best practices her company used in this context, to support the sudden change to the home office workplace:

So, the decision was made to sell the physical headquarters and distribute the equipment to people's homes. So, even chairs, tables, things that were in the physical headquarters, we managed to send to people's homes to help in the beginning. And, in addition to that, the monthly remote work allowance, it has no limit, every month the person receives this allowance to help with the purchase of equipment or even with the home office environment itself (P7).

Remote or hybrid work flexibility encompasses a spectrum of practices, ranging from asynchronous schedules to location independence. The shift away from physical office presence has prompted a reassessment of how work is organized and carried out. In this context, individuals can tailor their work hours and environments to suit their preferences and needs. From the questions, this emerged as a type of benefit for the interviewees:

Well, for example, we don't have set hours, so our schedule is 100% flexible, we don't clock in. Our workload, theoretically, is based on deliveries. (...) Generally, we work around the same hours precisely because of the collaboration aspect, but occasionally, if I need to start later or finish later, I don't need to inform anyone or anything like that; I can just do it and start at another time (P5).

Communication Tools and Online Work Environment

The proliferation of remote work has promoted a paradigm shift in how organizations facilitate communication and collaboration between dispersed teams. As virtual platforms replace traditional face-to-face interactions, selecting and using appropriate communication tools have become imperative for fostering connectivity, transparency, and productivity in remote work settings. In this regard, one leader said that their primary concern in the shift to remote work was ensuring effective communication due to the absence of physical cues:

Well, I think the first major concern is people's communication. Because in person, you see the person, you see what they are doing. You walk by them, you see them typing on the computer, you see when they went for lunch. In remote, that's no longer there, right? So, in remote, we have two problems. Either the person may never seem available or appear never to be available, or they are available too much all the time (...) (P7).

Moreover, the design and functionality of online work environments play a pivotal role in shaping the work experience. These digital platforms, chosen by the organization or by the team itself, serve as virtual hubs where employees congregate to collaborate on projects, share resources, and engage in day-to-day work activities. As such, the usability, accessibility, and integration capabilities of online work environments, as shown by the participants, significantly impact workflow efficiency and employee engagement in group dialogue:

And Slack also has the hubs (...), so enters into a conversation. (...) it's like a game, between something technical and another, I say something about my personal life, and then you open up that dialogue, right? (...) Sometimes we get distracted and like, we're just talking about personal stuff and like, okay, let's get back to work, you know? It's like that conversation at the office water cooler, where you go to get a cup of coffee, start chatting, you know? (P9).

Goal Clarity, Results Dissemination, and Horizontal Construction

Goal clarity ensures that all organization members are aligned with overarching objectives, facilitating focused efforts, and minimizing ambiguity. Disseminating project results concurrently is fundamental in providing feedback, recognizing achievements, and promoting accountability among team members. Moreover, adopting a horizontal construction approach promotes inclusivity, encourages open dialogue, and empowers individuals at all levels to contribute to decision-making processes:

We already had, in the in-person setup, company-wide project cycles, which basically consist of a 3-month cycle, where all teams receive their strategies from the top and also, obviously, strategies devised from the bottom up as well. (...) Each team receives its strategy, starts working on it for a quarter (...) At the end of the quarter, (...) we call it the big day at the company, which is an event where each team presents its objective, its problem, and what its initiative is to solve it here (...) (P7).

The contrast to this is portrayed in a negative light by P9, revealing a sense of alienation:

But currently, like, we don't have that. In fact, it's kind of a mess. Even the project I'm working on is a bit chaotic. Like, along the way, they lost track of the goals. And then, you know, people just react as things happen. (...) It's very difficult because I'm at the same time from a consulting company. I'm a third party in another one. None of them, I'm very much like that, you know, acquainted? To the point of knowing the goals and stuff (P9).

Leader as a Communication Bridge Between the Organization and Employees

By orchestrating targeted meetings, managers can curate discussions to dissect and contextualize key organization messages, empowering team members with the requisite knowledge and understanding. Therefore, by fostering open dialogue and effective communication, they can better convey the company's values and objectives to the employees through the established trust relationship. In a simplified manner, they can also convey employee feedback on these matters to top management, making them a strong ally for both sides, thus, a communication bridge:

When there's an email that really impacts us, that we obviously have to read, our manager schedules meetings. To pass it on to us. Like she receives the communications and she assesses them. (...) Is this important for the team or not? This is important for the team. I need you all to be aware, I'm going to schedule a meeting. Sometimes it lasts half an hour, just to at least say what was in the email. Then we see if everyone is aware, has any questions... (P2).

Leadership Relations

This section contains an analyzes of the main aspects of leadership relations as identified in the interviews, focusing on three main subthemes: Leadership Openness, Fostering a Positive Work Environment: The Role of Leadership, and Leadership Roles/Responsibilities.

Leadership Openness

In virtual settings, leadership openness extends beyond physical presence, requiring intentional actions to bridge digital divides and foster a sense of connection. The provided excerpt unveils the account of a team member who praises their leader's accessibility and readiness to aid, emphasizing the importance of these traits, and more so, concrete actions, in nurturing an environment conducive to collaboration and development:

My leader, he's a very straightforward and accessible person. He's always willing to have a chat if I need a hand, (...). It's not just talk, he actually acts this way. I've had other leaders within this company I'm in today, and more or less, the vibe is always about caring a lot for the team, always willing to participate in meetings and activities for the team's development (...) (P3).

Besides accessibility so that the workers can feel safe to ask for assistance, fostering an openness to listen to different opinions is equally crucial. This approach can also collaborate in knowledge-sharing and reinforces a culture of continuous learning and improvement, where mistakes are viewed as opportunities for growth rather than sources of fear or hesitation. By encouraging team members to openly discuss technical decisions and seek input from them and peers, the leader can foster an environment where learning from mistakes is accepted and embraced as an essential part of the growth process. In such a culture, individuals can feel empowered to take risks, experiment with new ideas, and challenge the status quo. Additionally, in this excerpt, we observe the utilization of a particular tool to achieve this openness:

Round-robin where she goes around the entire table, calling each person one by one, asking if they have anything to say. Like, 'Hey, X, after the whole meeting, do you have anything to add? Anything you want to say?' Usually, there's nothing to say, but there's always the opportunity, and whenever someone speaks up, the manager tries, obviously she stays quiet to listen, but she tries to ask questions about what the person said. (...) (P1).

Opposing the principles of openness and collaborative dialogue, the absence of manager receptivity to divergent viewpoints can diminish the sense of PS within the team, hindering the exchange of ideas and stifling opportunities for a free flow of discussion, impeding the exploration of new concepts and the resolution of possible questions. As we can see in this passage:

I believe it's important for a leader not to have a fragile ego or anything of the sort, (...). I think it's a trait he needs to shed, because if he maintains a stubborn mindset, he begins to suppress opinions. I see it this way: if my opinion is never going to be considered, then there's no point in expressing it. Especially if it's disregarded arbitrarily (P5).

The leader can foster trust and connection by creating a space for open dialogue and vulnerability, enabling team members to feel valued and understood. This authenticity enhances trust and encourages reciprocal openness between team members, creating a supportive ecosystem where everyone feels comfortable sharing their concerns and seeking help when needed. In this context, a leader's passage underscores the significance of vulnerability in leadership:

(...) And it's important to show vulnerability, extremely important. (...) Being able to enter a weekly meeting and say sincerely to my team that I'm not okay, it humanizes me to them. (...) I've experienced that they felt much more comfortable with me. When I said, 'Wow, this week was awful. So, this day is terrible, my head is terrible, everything is bad. I need the weekend to rest, sleep, and

come back on Monday.' They feel it. 'Ah, okay, I'm talking to a person.' (...) (P7).

Fostering a Positive Work Environment: The Role of Leadership

From the experiences shared by the respondents, it becomes evident that fostering an environment where openness is not merely endorsed but also embraced and commended is crucial, transcending individual leader conduct. One way to achieve this is through leading by example; when team members see their leader actively listening, valuing diverse perspectives, and responding constructively to feedback, they are more likely to emulate these behaviors themselves. This sets a tone of openness and creates a kind of norm where everyone feels comfortable expressing their ideas and opinions, as we can see in this response:

I feel that leading by example, is very important, (...) And also assisting, encouraging feedback and conversation between team members. Not humiliating, for example, when someone asks a more basic question (...). I think it's all a matter of creating and showing clearly that the environment is conducive to these questions. (...), it makes people more comfortable, it creates an atmosphere, it shows that well here in this place we can speak a little more calmly that we are not seen as just a number, as a machine (...) (P5).

Additionally, leaders can reinforce a positive work environment through communication and collaboration strategies and performance evaluation. Encouraging regular team meetings, open forums for discussion and feedback exchange can all contribute to a culture of openness and diminish fear. Moreover, recognizing and rewarding openness can further reinforce its importance within the team culture. This could involve acknowledging individuals who speak up with innovative ideas, actively soliciting feedback from team members, or highlighting instances where collaboration and openness led to successful outcomes. In this sense, a leader expresses:

So they need to communicate a lot with each other to learn. What happens when you're at the beginning of your career, is that you're afraid, 'Oh, my question will be silly' (...) So they are always in motion, helping each other out. One responds, the other doesn't even wait for me to respond to that. They help in an open channel. I think that's the main pillar of relationships between people, that they don't feel afraid. (...) It has to be in the company culture that people have to help each other. That has to be in their career review too. One thing that is evaluated in each person's career is their ability to mentor others (P7).

Nonetheless, as some interviewees importantly emphasized, this process can also come independently of the direct influence of the leader; this trust-building can arise organically from the relationship between team members. This also can serve as a protective mechanism from a negative environment or inadequate leadership strategies:

(...) So that's the collaboration atmosphere, like the colleagues I work with, we have a very intimate, almost like friends, relationship. So we end up resolving some things. And well, overcoming these problems. But if we didn't have such a close relationship, I feel like we would indeed be quite affected, you know? So I would say that, today, the leader doesn't assist in this collaboration process (P3).

Leadership Roles/Responsibilities

During the interview, discussions arose regarding how the delineation of leadership roles often becomes a critical aspect of effective team dynamics and project management in virtual settings. The excerpts shed light on the nuances of leadership division, where technical expertise, project management, and organizational oversight are distributed between different individuals or teams. This division offers insights into how leaders navigate in a work market context where the traditional hierarchy may be blurred, and responsibilities are distributed in unique ways. P2 highlighted the importance of leaders being intimately familiar with their team members' work and the project's intricacies:

She knows what I'm working on, she knows the product, like, she's in my day-to-day routine, my manager here, he has no idea what I do. In fact, when it comes to the yearly evaluation part, he has to talk to her. (...) So, when I have meetings with him, it's more about company bureaucracy, you know? (...)but the conversations I have with her are much more open, in terms of how my daily routine is going, , how work is going, how my relationship with colleagues is going. (...)" (P2).

This dynamic accentuates that when team members interact with different leaders for administrative tasks versus technical guidance or feedback, it may create a sense of uncertainty or inconsistency in communication channels. This lack of uniformity could potentially lead to confusion or feelings of insecurity among team members, as they may not know whom to approach with certain concerns or ideas.

Additionally, leaders may struggle with balancing their managerial duties alongside the demands of providing individualized support and feedback to team members. They can become overburdened with their responsibilities, potentially hindering their availability or responsiveness to team members' needs. This imbalance in leadership availability and engagement could erode PS by fostering a perception of neglect or disinterest among team members, thereby inhibiting open communication and collaboration:

Yeah, I believe that made it difficult, not for her, it was more us avoiding talking to her because she ended up becoming too overloaded because she had to take care of her own things, work, organize what each one had to do and also she kept receiving feedback from each of us (...). We tried to resolve things between ourselves and the interns and, as a last resort, if we absolutely didn't know how to do it, then we would tell her (P6).

As expressed by one leader, maintaining active listening and emotional awareness within such a vast team context can seem almost insurmountable. The sheer scale of responsibility causes a necessity to delegate or divide some of their tasks, which essentially can create a disconnect from individual team

members' sentiments.

(...) when I had such a large team, I noticed how challenging it is to try to have active listening leadership in such a huge team (...). Then you have to have more supervisors below to take care of people in smaller scopes, and it becomes harder to understand people's feelings. So, what I can say about this is, it's exhausting. (...) Because I might be emotionally exhausted some days, but I still need to think about what people are feeling within my team. I need to look at all channels, If you see their reactions, I need to understand if they are okay, and I need to have my camera always on, looking at their faces (P7).

Interpersonal Relationships

This section discusses the main aspects of interpersonal relationships, as described by the interviewees, with four subthemes: Online Isolation, Type of Communication, Team Variables: Time on the Team, and Sense of Collectivity.

Online Isolation

In remote work, the laborers interviewed often find themselves balancing between connectivity and online isolation. The decentralized nature of this model can exacerbate feelings of isolation, as spontaneous interactions and shared moments become sporadic occurrences rather than daily rituals. In this context, the absence of physical proximity diminishes opportunities for casual encounters and shared activities. Therefore, transitioning from a structured environment of in-person collaboration to a virtual landscape can reveal difficulties, such as autonomy, which can emerge as a double-edged sword. While liberating in its ability to foster independence, it also serves as a barrier to interpersonal connections, depending on the organizational culture and perceived individual factors. In this sense, participants highlighted:

It is nice to be extremely autonomous, but also, like, it ends up limiting even more the contact with people and such. So, there are days when I don't talk to anyone. So sometimes it's good and sometimes it's not." (P10).

On the contrary, P10 perceived: "I work very closely with a colleague who has been here for almost 10 years, I think. So, there are many times when I reach a point of doubt, I even send him a message with the question, but he says, 'Oh, do you have 5 minutes to join a quick call?' We hop on a call and he manages to explain everything to me (...) We've never had any issues, I think quite the opposite, it's a product that has been working for a remote team for many, many years, and I think that's why the team is very prepared and knows how to work well in this way (...). I've never seen any challenges arise that would require us to meet in person. (...) (P2).

More so, despite advancements in technology facilitating communication, the incessant nature of remote work can blur the boundaries between work and personal life. Perpetual connectivity, while conducive to productivity, also leaves less time for organic interactions and informal conversation in the digital workplace. As expressed by P7:

It's much more related to people's time than to them not communicating. I think they communicate, but remote work brings that point where you're working all the time. (...) Because teams are always very busy, especially when you have an interdependent project with another team, it requires intervention, often from leadership. (...) Because sometimes they can't achieve that direct autonomy between them due to lack of time (P7).

Type of Communication

Digital workers navigate many platforms and tools to bridge the gap between physical distances, yet the nuances of remote communication present unique challenges and opportunities for fostering meaningful connections. One worker reflects on the prevalence of messaging as a primary mode of communication, noting the convenience it offers but also commenting its limitations in conveying tone and context:

There's communication, there's a tool, there are channels, there's a team that trusts each other. However, written communication is terrible. (...), you don't hear tone of voice. (...) People often misinterpret how others speak to them all the time. This is something in remote work that is a challenge, and I don't imagine there is an easy way to solve it, except to encourage people to have that contact, like we're having here now, talking to each other face to face (P7).

As we can see, the absence of auditory cues and facial expressions inherent in written communication can lead to misinterpretations and misunderstandings.

Furthermore, the transition to remote work has redefined traditional notions of collaboration, with video calls emerging as a vital conduit for fostering intimacy and facilitating real-time dialogue. The spontaneity of face-to-face interactions is replicated through impromptu video calls, providing opportunities for informal exchanges, and fostering a sense of belonging within remote teams. As expressed by one of the participants:

At the beginning, I was very shy to speak, but after about 6 months, during meetings with my colleagues, they started inviting me to join video calls instead of just texting. It helped me a lot to integrate into the team, and now I'm fully part of it. I don't feel shy anymore to unmute myself and make any comments during team meetings. (...) It's a total game-changer. I believe that if it were only through messaging, without this culture of 'Let's quickly talk via video or message,' it would be much harder to build these bonds. (...) (P2).

Besides this, the absence of informal gatherings, such as lunchtime conversations and coffee breaks, deprives individuals of opportunities for casual interactions and relationships-building. The organic flow of ideas and the exchange of personal anecdotes that characterize in-person interactions are often relegated to the limits of structured meetings and formal communication channels. On this issue, one participant highlighted:

(...) for me, the only downside that really gets to me about not working in person is the lack of that thing we're talking about, which is like lunchtime. (...) which was the time when we, like, exchanged ideas and, vented about life. And like, created that bond of friendship (P9).

However, some teams have managed to build such moments, even in this more structured environment, depending on the establishment of an intrinsic informality in the interpersonal relationships:

(...) We have our daily meeting, so we usually discuss something outside the topic, always there, in the end, we give our updates, and then we quickly bring up something else or start a conversation, and we spend the whole day talking. (...) So, we have quite a friendly relationship (P5).

Team Variables - Time on the Team

Due to the dynamics of the time spent in the team, individuals often find themselves immersed in interpersonal relationships characterized by varying degrees of familiarity and longevity, shaping the dynamics of trust, cohesion, and communication within remote settings. One interviewee shared their experience of joining a well-established team, where long-standing relationships and shared experiences contributed to a strong sense of intimacy and trust. So, even individuals who joined after this construction could sense that:

Yeah, I entered with everything already well-established. It's like, most of the people I work with on a daily basis, they've been here for 6, 7, 10 years (...) So, despite it being remote, the team is very close-knit. (...) And I came into it with everyone speaking very openly, sharing their thoughts (P2).

Under the premise of quality time within the team, challenges may arise when entering a team, whether joining an established one or a new team, in a remote work environment. Against the backdrop of evolving team dynamics, the journey towards cohesion and trust unfolds, marked by moments of adjustment, adaptation, and ultimately, acceptance:

(...) one of the challenges we have is precisely integrating these new people, because I understand that when we're forming a team, where nobody knows each other, the bond is gradually being created and it's very difficult. For example, I faced some backlash, when I first joined the company, because, personalities clash, people don't always get along. And there was a process like, people got used to it (P5).

Sense of Collectivity

"I think there's something very interesting about the company, it's like a machine. But it's made up of people, right?" (P4). The web of connections between employees weaves the fabric of a company, breathing life into its machinery. The symbiosis between team members emerges as a fundamental aspect, molding the landscape of collaboration, productivity, worker well-being, and, also, preventing turnover. This cohesion can be rooted in transparent communication, mutual support, and a shared sense of purpose. As the team is confronted with day-to-day challenges and uncertainties, their collective unity

becomes a catalyst tool, fostering resilience and a safe space for communication:

Well, because sometimes something bothers me, but doesn't bother my colleague. And we usually don't suppress those emotions, so we have an open environment where we embrace the insecurities, the fears, the frustrations, instead of suppressing them. (...) So this trust we have, I think that's also very important, because, anyway, it ends up empowering us, you know? Like, well, I can count on them and they can count on me. If we're going to fight, we'll fight together. And I know, they won't fire us (...) (P5).

For instance, this group strength and mutual support can help build a sense of protection, so that workers feel they can escalate ideas and demands in organizations, even those who face challenges without an open culture:

(...) So then we would build ideas together there, by consensus, because they were good, and then we could all approach and ask if it was a good idea for our boss. Sometimes, he would accept it, and other times he wouldn't, but individually it was very difficult to have that conversation with him (P6).

Furthermore, collective unity in team members serves as a positive factor in the workplace, helping employer retention:

Towards the end of the year, I was reconsidering (...) and I was actually thinking of leaving the company and one of the things that actually made me stay was precisely because of my colleagues because I think we have a team that works very well. And I know it's not easy to find that (...) (P5).

Individual Characteristics

This section discusses the main aspects of individual characteristics in the workplace as discussed by the interviewees, focusing on three central subthemes: Diversity, Individual Personality, and Mental Health.

Diversity

From the interviews, we observed that two of the drivers of homogeneity in IT recruitment is the prevalence of unconscious and conscious bias in the hiring process. Recruiters and managers may gravitate towards candidates who resemble existing team members or fit a certain perceived cultural "norm" within the organization. Additionally, the emphasis on technical proficiency and specific skill sets in IT recruitment can inadvertently exclude candidates from diverse backgrounds who may possess alternative, yet equally valuable talents, perspectives, and problem-solving approaches. This tendency can perpetuate a cycle of homogeneity, limiting innovation, and hindering an PS environment where individuals can thrive, regardless of their differences in opinion, perspective, or identity. As expressed by one of the participants:

I don't think my company is one of the best in terms of diversity, but I've been in companies that excel in this regard, and comparing them, I feel like people would feel much more comfortable addressing certain issues and giving their opinions if they were in a more diverse environment (P10).

However, when organizational diversity-driven actions occur successfully, workers perpetuate this logic, making the atmosphere even safer for individual differences and opinions:

(...) So, I had colleagues who thought very differently from me, but we could work very well together, despite all the differences. Political and, well, everything.(...) I even think that an organization as a whole that advocates for diversity, it only has, only has to gain (P5).

In this sense, leaders play a relevant role in recognizing these differences and adapting their approach accordingly. They can understand the value of diversity and actively seek to accommodate and leverage each individual's unique strengths and perspectives, and empowering their team members: *"Personality traits pose distinct challenges for leadership. I must navigate each individual differently, almost transforming myself to meet their needs. I cannot be the same leader for everyone; it's simply not feasible" (P7) .*

By acknowledging and addressing the complexities of homogeneity and diversity, organizations can cultivate a workplace where everyone feels valued and capable of contributing their unique point of view, thereby introducing a more nuanced perspective that transcends an individualistic view of the PS climate.

Individual Personality

A worker's personality and, consequently, individual perception can present challenges in understanding the sense of PS within the team. While extroverted team members may find it easier to express themselves in group settings, introverted individuals may struggle to assert themselves. As one of the interviewees articulated:

But it's not so much about lack of opportunity or freedom, it's more because in our team there are a lot of shy people, and I consider myself one of those people. (...) So for someone to take action, (...) to speak in front of everyone is kind of problematic for most people. There are some people who are completely extroverted and the life of the party, so they speak 100% (P1).

While individual personalities undoubtedly influence interactions within a team, some argue that the collective sense of PS within a group often supersedes individual perspectives and personalities. One such advocate for this viewpoint:

(...) I didn't emphasize it because I know I'm an extroverted person, but I have colleagues who aren't and even they help and contribute in this collaborative space. (...) So, sometimes, we need to ask, 'Hey, what do you think, John?' and such, but still, I believe I feel psychologically safer more because of this support network we have among ourselves than just because I'm an extroverted person (...) (P5).

Another interviewee echoes a similar sentiment: *"If the team is good overall, if everyone respects each other, I think it's more of a common issue and not individual. So no, the personal characteristics of someone wouldn't influence negatively or positively on that" (P2).*

Mental Health

Mental health issues can stem from various sources, including workplace dynamics and personal life events, both of which can significantly impact an individual's job performance, engagement, and general well-being. The transition to remote work exacerbates these issues, as individuals grapple with feelings of isolation and the blurring of work-life boundaries. That is why mental health issues can cause work disengagement, where employees become disconnected from their work tasks, daily team discussions, and responsibilities. This disengagement can manifest in various ways, such as decreased productivity, absenteeism, lack of motivation, or apathy towards work-related activities.

For example, recently, the issues that happened here in Porto Alegre, the matter of the rain (...). All of that affected me quite a bit, so there were days when I worked less (...) it left me frustrated, because of the whole thing of, well, not being able to deliver (...). And I knew it depended on me, but I just couldn't manage it, there was nothing I could do. (...) Whether you want it or not, you need some time to adapt, and there's no way you can just, I don't know, at 9 in the morning, go there and forget everything that happened and now, voila, I'm a machine again (P5).

Given that statement, organizational culture and leadership practices can reinforce these stressors, diminishing individual views of PS by perpetuating worker competition, high delivery expectations, and lack of overall flexibility. Employees may feel compelled to prioritize work over their well-being to meet organizational expectations, possibly leading to various mental health issues.

The company's responsibility limit can be determined by its ability to implement policies and programs that promote employee mental health, as well as the availability of resources and support. One participant highlighted:

So, it's very complex, because I believe that, you know, we have to operate as a company, providing treatment for the person. Give them the time, not force them to work when they're in no condition to work, all of that needs to be done. But there has to be reciprocity. It's like 'help me to help you.' In other words, the person has to seek treatment, they really have to want to improve, they have to want to get better (P7).

Reflecting on the institutional dynamics, one participant delves into the intricacies of organizational responsibility and the boundaries of its influence: *"So there's this institutional thing, (...) It's everything and it's nothing. It's an abstract thing. That is made up of a bunch of people (...). But then there's a sphere that's not of the institution. It's a limit, right? Of this kind of artificial relationship established by a company" (P4).*

Discussion

Based on what has been found in the thematic analyses of this research, organizational practices, leadership relations, interpersonal relationships, and individual characteristics can significantly influence IT project remote workers' perceptions of PS.

More specifically, through the previous discussions about factors of PS, enablers, and inhibitors, participants accentuated challenges related to the adaptation to communication tools and the overall online work environment and how this affects their relationships in the workplace. From this perspective, supportive organizational practices are pivotal in fostering PS by promoting a culture of learning and innovation and enhancing team cohesion in remote work settings (Carmeli, 2007; Liu, 2015). Building upon Lee's (2021) findings, the significance of organizational and supervisory support becomes pronounced in the responses, especially concerning adapting benefit standards for workers, reflecting a flexible approach, and utilizing transparent communication tools. Furthermore, the results went beyond what was shown in the existing literature, offering fresh perspectives on the unique and contemporaneous dynamics of PS in remote work arrangements, considering, for instance, the complexities of integrating new team members remotely. This featured various team interactions and emphasized the importance of fostering a sense of belonging within the organization. Also, by providing renewed, tangible, and intangible employee benefits, organizations can assist in their worker's general well-being and team cohesion among remote work environments, aiding in the building of group PS.

While prior studies have demonstrated the significance of transformational leadership in fostering PS (Frazier et al., 2016; Olsen et al., 2023), the responses underlined the relevance of leadership openness in remote work settings. This resonates with the findings of Buzás and Faragó (2023), who identified a link between leadership openness and increased affective commitment, particularly in WFH contexts. Furthermore, the importance of open-minded leadership in fostering a positive and PS work environment is noteworthy, aligning with the principles of authentic leadership discussed by Chen and Sriphon (2022). As articulated by the respondents, the emphasis on openness and collaborative dialogue shows the fundamental role of leadership in creating a culture where diverse perspectives are valued and feedback is actively encouraged. By prioritizing socioemotional factors, relationships, and cooperation (Chen & Sriphon, 2022), the findings accent the responsibility of leaders in recognizing and rewarding openness, reinforcing its relevance within the team culture.

However, it is essential to recognize that trust-building and collaboration can also emerge organically among team members, independent of direct leadership influence. This showcased the complex interplay between leadership dynamics and team interactions, influencing the team and individual sense of PS. The literature provides a theoretical framework that elucidates the mechanisms through which high-quality relationships contribute to PS within teams (Carmeli, 2007; Carmeli & Gittel, 2009; Farmer et al., 2014). This aligns with the thematic analysis results, accentuating the significance of mutual respect, shared objectives, and peer support in creating an environment conducive to voicing opinions, learning from failures, and effective collaboration (Frazier et al., 2016; Wawersik et al., 2023). Additionally, the workers manage a fine equilibrium between connectivity and isolation, where the decentralized and flexible nature of virtual collaboration

reveals the interaction between autonomy, interdependence, communication, and relational bonds (Cruz et al., 2023; Lechner & Mortlock, 2022; Lee, 2021). Therefore, team dynamics shaped by varying degrees of familiarity and tenure, paint a portrait of trust and cohesion as emergent phenomena of collective experience. In this sense, interpersonal connections lie in the essence of collectivism, where transparent, spontaneous and informal communication, and mutual support serve as PS pillars, nurturing resilience and fortitude amidst the uncertainties of remote work.

In addition, the literature delves into the individual level of analysis concerning PS, revealing significant correlations between personality variables and the construct (Frazier et al., 2016; Wawersik et al., 2023). Within this paradigm, in these thematic analyses, exploring individual characteristics, particularly diversity, unveils critical dimensions influencing PS within IT teams. From this perspective, a leader's role in recognizing and accommodating differences emerges as paramount, with the acknowledgment that navigating individual personalities poses unique challenges for the team and individual PS. Furthermore, mental health issues, exacerbated by remote work dynamics, underscore the need for organizational support and flexibility.

Conclusion

While acknowledging the natural emergence of trust and collaboration between team members, and consequently PS, it's crucial to recognize the organization implication in creating conducive environments. Flexibility, particularly in adapting to the evolving dynamics of remote work, is key. This involves not only understanding the complexities of trust-building but also cultivating a culture prioritizing transparency, support, and inclusivity. Organizations can focus on clear communication channels, collaboration opportunities, and support mechanisms to enhance this cohesion. Leaders are pivotal in setting the tone for PS, prioritizing relationship-building and open dialogue. Ongoing HR training in socioemotional skills, online tools, and diversity can equip managers to better navigate remote team dynamics effectively.

Limitations include the small sample size and qualitative nature of the study, impacting generalizability and potential bias. Despite these limitations, the research offers valuable insights into remote work PS, with implications for organizational, HR and leadership practices. For future research, there is a need to further explore the collective aspect of PS antecedents in remote work environments. This could involve investigating how collective-driven organizational and communication practices, team dynamics, and leadership approaches could contribute to a sense of trust and cohesion.

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