Personnel Review

Beyond the office: an examination of remote work, social and job features on individual satisfaction and engagement

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Abstract

Purpose – Remote work transformed work environments of the last decades, disrupting traditional boundaries and fostering a revaluation of work dynamics. This study examines the effects of this phenomenon on individuals, determining which factors enhance employees' satisfaction and engagement.

Design/methodology/approach – We conducted a survey involving 1,879 employees and 262 managers in a company that embraces a hybrid work model.

Findings – Results show that remote work reduces engagement and job satisfaction, while team and leader-related social features positively influence both variables. Notably, job features were significant only for employees. Finally, leader-member exchange alleviates exhaustion's negative effects.

Originality/value – Our model challenges the prevailing positive perspective on remote work and highlights the pivotal role of social exchanges, job characteristics and supervisor relationship.

Keywords Remote work, Social exchanges, Job characteristics, Job satisfaction, Engagement

Paper type Research article

Introduction

In the last decades, the way work is performed and perceived has been deeply transformed. This metamorphosis not only involves businesses and organizations, but it also impacts the very fabric of individuals and their ways of interacting, altering the dynamics of human connection and collaboration. People are redefining their conception of work, and workers are redefining their conception of relationships (Prodanova and Kocarev, 2022). One of the most pervasive changes in work is the fact that job activities can be performed everywhere, opening and blurring the boundaries of traditional spaces (Chayko, 2014). Working remotely has been technically possible for some time, thanks to the rise of Internet and, in the past decade, of tools like video conferencing and cloud sharing (Barrero *et al*., 2023; Cappelli, 2021), but its adoption received a massive boost with the COVID-19 pandemic. Before, many companies were reluctant to embrace this type of arrangement, mainly due to the fear of altering the originations' value chain and to the risk that the daily workload in a virtual team may require

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more time and effort, due to the need for enhanced communication and coordination (Gratton, 2021; Rudolph *et al*., 2021). Lastly, resistances were also related to a threat of social interactions impairment (Baumeister and Leary, 1995; Shapiro *et al*., 2002). Not surprisingly, one of the key debates surrounding remote work is whether it serves as a support or a source of discomfort for employers and employees, leading to what is known as the "telecommuting paradox". The debate between pros and cons dominates this research topic (Dicu *et al*., 2022) and depending on whether we talk about companies or people, we come across different conclusions. The effects of remote work are still inconclusive and contradictory (Blahopoulou *et al*., 2022), often having uneven effects, for example depending on gender and family responsibilities (Hilbrecht *et al*., 2008; Delanoeije *et al*., 2019; Beham *et al*., 2015; Allen *et al*., 2013), age of the employees (Pasko *et al*., 2021; Olsen *et al*., 2023) and features of the firm and of the industry sector (Mayo *et al*., 2009; Pérez *et al*., 2002; Neirotti *et al*., 2013). What is certain is that working from home alters the way employees relate to each other and to the organization (Golden, 2006), changing the way activities are coordinated and social interactions take place. It becomes crucial to investigate the role of this disruption on employees, especially in light of the shift from a profit-centric perspective to a "shared-value" one (Porter and Kramer, 2011). If we strive towards solutions that simultaneously generate value for people, organizations and communities, it is essential to carefully analyse both their positive and negative elements for individuals.

The objective of this study is to investigate how remote work, social and job features are associated with the way employees conceive their job, in terms of engagement and job satisfaction, key aspects shaped by generational shifts and evolving workforce expectations (Pasko *et al*., 2021; Gallup, 2024). Engagement and job satisfaction have always been central topics in research, as they reflect the quality of the relationship between employee and work (Bakker and Leiter, 2010; Illegems and Verbeke, 2004) and they predict key work-related outcomes regarding the dimensions of both workers (e.g. Michalos and Orlando, 2006; Judge and Klinger, 2008; Shuck and Reio, 2014) and companies (e.g. Aziri, 2011; Halbesleben and Wheeler, 2008; Bakker and Demerouti, 2008; Bakker *et al*., 2008). The following are the study's contributions. Firstly, we aim to contribute to the theory by situating remote work within the broader historical evolution of job design. Classic perspectives considered work mainly as a source of productivity (Taylor, 1911), later recognizing its social and motivational dimensions (Mayo, 1949; Herzberg, 1966; Hackman and Oldham, 1975). More recent approaches emphasize multidimensionality, highlighting how jobs create value not only for organizations but also for individuals and communities (Morgeson and Humphrey, 2006; Porter and Kramer, 2011). Remote work is an innovation that has the potential to reshape the modalities in which work is performed and the value is created, and it should therefore be examined and considered carefully. Secondly, we extend the Job Demands–Resources (JD-R) framework by re-examining remote work in the post-pandemic context. While pre-pandemic studies often emphasized its benefits as a resource, our findings show that remote work also entails significant demands, with uneven consequences for satisfaction and engagement. By highlighting this duality, according to the JD-R perspective, we explain why evidence on remote work has shifted compared to earlier studies. Thirdly, we try to extend social exchange theory by emphasizing that the quality of leader–member and team–member exchanges is particularly salient in hybrid work contexts, where reciprocity and mutual support remain essential foundations of positive work outcomes (Blau, 1964; Graen and Uhl-Bien, 1995). Alongside, we aim to contribute to leadership and hierarchy theories by examining the role of supervisors. Our findings show that leader support can buffer some of the negative results of remote work exhaustion, illustrating how hierarchical relationships remain pivotal even when physical distance reduces opportunities for direct interactions. Finally, we compare managers and employees' results. The differences we uncover could offer a more nuanced view of heterogeneous results within organizations. This study is conducted in the context of a hybrid work environment, where employees typically work 3 days remotely. As such, all hypotheses should be understood within this specific organizational setting, which reflects the prevalent

contemporary work arrangements characterized by spatial and temporal flexibility (Bailey and Kurland, 2002; Barrero *et al.*, 2023; Eurofound, 2022). While Hypotheses 1a and 1b explicitly address remote working, the subsequent hypotheses are formulated and tested considering the dynamics of the hybrid work context.

Theoretical background

The content of work has faced a deep metamorphosis in the last century. At the beginning of "900, according to Taylor's Scientific Management theory (1911), work was considered as a set of standardized and repeated tasks to be performed in a certain period of time, to pursue the highest productivity. Some decades later, thanks to the Human Relation Movement, it assumed the shape of a social activity capable of generating satisfaction for people (Mayo, 1949). Later on, the concept enlarged even more, and work became a motivation factor (Herzberg, 1966): an identity element capable of producing meaning (Hackman and Oldham, 1975) and absorbing resources, affecting individuals" psycho-physical well-being (Karasek, 1979). Today, we consider job as a multidimensional concept: an integrated system capable of generating value through technical, social and contextual characteristics (Morgeson and Humphrey, 2006). In short, throughout the years, work outputs have evolved from mere productivity to broader concepts. Productivity remains an important aspect of work, but other elements progressively gained relevance, such as job satisfaction and engagement. This is especially true in light of a "shared-value" perspective (Porter and Kramer, 2011), which stresses the importance of generating value not only for organizations, but also for people and communities. Quality jobs should be enriched rather than simplified and should allow employees to achieve a sense of accomplishment. Any major change or innovation that has the potential to alter how employees conceive their work should consequently be carefully considered and analysed. Accordingly, we focus our investigation on job satisfaction and engagement, as these job aspects represent key features shaped by generational shifts and evolving workforce expectations (Pasko *et al*., 2021; Gallup, 2024). More specifically, job satisfaction and engagement embody two different aspects of employee state, reproducing various arousal and pleasure combinations as outlined in the Circumplex Model of Organizational Well-Being (Bakker and Oerlemans, 2011), with engagement reflecting both high pleasure and arousal, and job satisfaction characterized by high pleasure and low arousal. Job satisfaction and engagement have been extensively discussed in organizational literature as they are strong predictors of outcomes related to both employees and companies (Aziri, 2011; Bakker and Leiter, 2010; Kaliski, 2007), such as job performance (Aziri, 2011; Halbesleben and Wheeler, 2008; Bakker and Demerouti, 2008; Baker *et al*., 2008), loyalty of the employee towards the organization (Vandenberg and Lance, 1992; Suharti and Suliyanto, 2012), turnover intention (Bhatnagar, 2007; Halbesleben and Wheeler, 2008; Alam and Asim, 2019), employee life wellbeing (Michalos and Orlando, 2006; Judge and Klinger, 2008; Shuck and Reio, 2014) and absenteeism (Sweeney and McFarlin, 2002; Steers and Rhodes, 1978; Soane *et al*., 2013). Research has already highlighted related benefits and challenges in remote work contexts (e.g. Aaron, 2018; Solomon and Templer, 1993; Golden, 2006; Golden and Veiga, 2006; Sardeshmukh *et al*., 2012; Gajendran and Harrison, 2007), but findings have often been tied to specific conditions, since before the pandemic, remote work was largely limited to a select group of workers, favouring high-income earners, white-collars or employees of pioneering firms with high investment on information systems and ICT infrastructure (Cappelli, 2021; Sostero *et al*., 2020; Neirotti *et al*., 2013).

Remote working

We can define remote working as "a flexible work arrangement whereby workers work in locations, remote from their central offices or production facilities, the worker has no personal contact with co-workers there, but is able to communicate with them using technology" (Di

Martino and Wirth, 1990, p. 530). The primary setting of remote work is home (Gajendran and Harrison, 2007). However, there is not a single, widely accepted definition of "remote work" in the field of agile work research (Martínez-Sánchez *et al*., 2007), nor a unique way to identify it (Bailey and Kurland, 2002; Neirotti *et al*., 2013). Remote work can refer to a full-time arrangement that takes place outside the office's walls or can be conceived as a hybrid form of work, where employees have the possibility of working from home only for a limited number of days. The latter scenario is true for the great majority of the remote-working population (Bailey and Kurland, 2002; Eurofound, 2022) and it is also where research has been focusing recently (Cappelli, 2021). Remote working, however, is implemented according to firms and occupations' characteristics. Indeed, remote work has been more adopted in firms that have highly supportive information systems and platforms, especially those operating across broader geographic areas or with a higher percentage of international employees (Mayo *et al*., 2009). On the other hand, more capital-intensive companies tend to show less interest in the adoption of remote work arrangements (Neirotti *et al*., 2013). However, the scenario is varied as the diffusion of remote working is uneven also within businesses in the same industry (Hansen *et al*., 2023). For what concerns occupations, the ones that are well-suited for remote work are those that greatly rely on information and communication technology and do not suffer a significant decline in quality as a result. In 2018, almost 37% of occupations were potentially suitable for remote working, and no remarkable increase was observed even after the pandemic (Sostero *et al*., 2020), as traditional work arrangements continued to dominate roles requiring face-to-face interaction or specialized equipment, such as retail and healthcare (Barrero *et al*., 2023). On the contrary, its diffusion within the workforce experienced a sudden growth. In the past, remote work was mainly exploited by high-income earners, white-collars, third-level degrees and inhabitants of densely populated metropolitan areas, benefiting from greater access to high-quality Internet service (DeSilver Drew, 2020; Eurofound, 2022; Sostero *et al*., 2020; Barrero *et al*., 2021). Remote work was a hot topic of past decades, but peaks in its adoption regard isolated cases of pioneering companies (Cappelli, 2021) or happened in periods of emergency, for example, after the terrorist attacks of 11th September and Hurricane Katrina (Dicu *et al*., 2022). However, the most dramatic change was faced during the pandemic, reaching rates never seen before. When Covid-19 occurred, most employees had little to no experience working remotely (Wang *et al*., 2021), and firms that never operated forms of hybrid work lacked "the technological infrastructure, policies and practices" to properly undertake it (Pass and Ridgway, 2022, p. 258). However, remote work is no longer an exception, since several firms continue to rely on it, despite the end of the emergency status. Today, the interest on the phenomenon has rapidly increased, considering its shift from a confined to a widespread arrangement (Pass and Ridgway, 2022). Scholars' perspective on remote work has changed after the pandemic. Before 2020, despite acknowledging potential challenges, the prevailing view on remote work saw it as beneficial. For example, it was favourably associated with key organizational factors such as productivity and dedication (e.g. Martin and MacDonnell, 2012; Mártin-Sánchez *et al*., 2007). Individual-level impacts were also positive, with findings indicating benefits for role stress and job satisfaction (e.g. Sardeshmukh *et al*., 2012). In addition, flexible work schedules were presented as a helpful means for striking a balance between work and personal life (e.g. Gajendran and Harrison, 2007). During the pandemic, this aspect has been deeply stressed out (Angelici and Profeta, 2023); however, the latest post-pandemic studies often uncovered some negative results, such as work-home interference, ineffective or more expensive communication and procrastination (e.g. Wang *et al*., 2021; Leroy *et al*., 2021; Biron *et al*., 2023). Moreover, evidence indicates increased time spent in shorter and larger meetings, reduced focus despite the need for higher and continuous attention (Bennet *et al*., 2021), limited direct interactions and boosted fatigue (Nesher Shoshan and Wehrt, 2022). In addition, on one hand, the increase of coordination, collaboration and commuting costs due to remote work (Gibbs *et al*., 2023; DeFilippis *et al*., 2020) could be even higher for the jobs that require high levels of task interdependence. On the other hand, for tasks that can be performed

remotely and autonomously, studies have documented increased feelings of loneliness and isolation (e.g. Wang *et al.*, 2021; Biron *et al.*, 2023), which may negatively affect job performance (Ozcelik and Barsade, 2018). Indeed, the conception of work is imbedded in social relations (Wright and Silard, 2020), however remote work challenges this assumption: while it allows individuals to connect with colleagues across distance and outside conventional working hours, it can also reduce opportunities for the informal and unplanned interactions (Wang *et al.*, 2021), raising questions about the potential experience of loneliness and isolation when the social dimension of work becomes less immediate and tangible. Overall, this shift in perspective mainly comes from a different approach to results interpretation. Previously, research aimed to identify outcomes specific to remote work, whereas today scholars take into account multiple factors, such as the type of work, the level of knowledge and experience with the remote, the quality of relationships and the reference context. As emphasized by Gibbs *et al.* (2023), outcomes vary according to commuting length required, employee characteristics, the presence of children at home and job characteristics. A brief literature's summary is reported in Table 1.

Job satisfaction and engagement

Building on the results of previous research, we explore how remote work, social and job features are linked to job satisfaction and engagement. Job satisfaction is considered as employees' emotional response to different aspects of their work (Vroom and Victor, 1964). It is an "affective response" (Koeske and Koeske, 1993), and thus it can be influenced by one's most recent feelings towards the job. Engagement, on the other hand, is a favourable and satisfying mental state that is characterized by vitality, dedication and absorption (Schaufeli *et al.*, 2006). As Kahn (1990) suggests, a key behavioural indicator of engagement is the simultaneous investment of one's own physical, cognitive and emotional resources into job duties. Engagement involves a deeper emotional and intellectual connection, motivating individuals through their attachment to the workplace elements. As emphasized by Gibbons (2006), this connection suggests a more profound and enduring commitment to the employer, manager, coworkers or the job itself. On the other hand, satisfaction is a pleasurable emotional state resulting from a job appraisal (Locke, 1969). Job satisfaction tends to be more immediate and is typically influenced by specific events or circumstances at work, reflecting an individual's contentment with their current job conditions.

Remote working frequency and exhaustion

Days spent working at home and days spent at the office differ in many aspects, given that time and location settings change considerably (Gratton, 2021). Thus, the first defining dimension of remote work is its frequency, meaning the number of days spent working remotely. In addition, the way in which employees manage their personal resources varies between traditional and remote working days. When employees work from home, they save important resources, such as commuting time, but simultaneously, are subjected to additional demands coming from their private domain (Golden *et al.*, 2006). As a result, their pattern of resources' generation and use changes as well. Therefore, the second defining dimension of remote working is exhaustion, intended as the depletion of emotional and mental energy needed to meet job demands (Moore, 2000). Taken together, frequency and exhaustion reflect how remote work simultaneously shapes both the demands and resources available to employees, in line with the Job Demands–Resources framework (Bakker and Demerouti, 2008). Accordingly, we investigated the association of both dimensions with satisfaction and engagement. Literature has repeatedly shown that remote work increases job satisfaction (Solomon and Templer, 1993). Müller and Niessen (2019) attribute higher satisfaction among remote workers to the creation of personal goals, aligning with Locke and Latham's goal-setting theory (2002). Additionally, DuBrin (1991) suggests that the savings in time and money, along with improved accessibility for those with physical limitations, contribute to

Table 1. Literature review

	Differences of organizational and individual results before and after COVID-19			
	Pre-Covid literature		Post-Covid literature	
Organiz. Results	Martin and MacDonnell (2012)	Remote working has been shown to boost output, ensure employee retention, fortify organizational commitment, and enhance performance inside the company	Emanuel and Harrington (2021)	Compared to office workers, remote workers had lower average productivity. This implies that there is a negative selection impact associated with remote work, with more productive employees choosing to work in an office
	Hunton and Norman (2010)	There were no commitment distinctions between regular employees and those who could only work from home	Gibbs *et al.* (2023)	Remote working takes higher communication and coordination costs. This makes, in turn, more difficult the development of human capital
	Gajendran and Harrison (2007)	Remote working has a positive relationship with objectively measured or supervisor-rated work performance	Wang *et al.* (2021)	Contacts in a remote work environment are usually restricted to scheduled activities; unplanned, casual contacts are not possible. As a result, there is less chance of successful communication
	Meyer *et al.* (2001)	Work-from-home program participation among employees had a positive relationship with real operational income, which is a measure of business profit	Biron *et al.* (2023)	Technology-enabled meetings, such as video conferencing, produce less associative thinking and record fewer socio-emotional cues, which may hinder team creativity
	Kurland and Cooper (2002), Wells (2001)	By allowing employees to work remotely, companies can cut costs on office space, leading to substantial savings	Kasperska *et al.* (2024)	Remote workers face fewer opportunities for promotions, raises, and training than on-site employees
Individ. results	Gajendran and Harrison (2007), Sardeshmukh *et al.* (2012)	Remote is also linked to noticeably less work-related stress	Gibbs (2023)	Workers considerably increased their average number of hours worked, while there is a decrease in performance
	Mártin-Sánchez *et al.* (2007)	Remote workers showed the best financial, relational, and innovative performance	Künn *et al.* (2022)	When occupations require high demands and low collaboration, in-person activities are performed better that on-line ones
	Duxbury *et al.* (1992)	Flexibility offered by remote working provides an opportunity for individuals to more easily fulfil their family responsibilities, thereby reducing work-family conflict	Leroy *et al.* (2021)	The rise of non-work interruptions during working time increases emotional fatigue
	Nilles (1994)	Remote working lowers interruptions, breaks, and sick days taken by employees as well as absenteeism rates	Nesher and Werth (2022)	Virtual meetings cause extra time and daily problems, higher demands for self-organization and further meddling in one's personal life

(*continued*)

Table 1. Continued

Differences between job, individual and social features		
Job features	Golden and Veiga (2006)	Remote workers provided with more autonomy are more satisfied with their job
	Gajendran *et al*. (2015)	Remote workers report greater perceived autonomy compared to traditional workers
	Turetken *et al*. (2010)	Task interdependence shows a negative relationship with productivity
	Sardeshmukh *et al*. (2012)	The drawbacks of telework include diminished support and feedback as well as more role uncertainty
	Allen *et al*. (2015)	The pace at which supervisors and employees share information and feedback may be slowed by spatial distance
Individ. Features	Bolino *et al*. (2024)	Less supervision of virtual environment made conscientious workers likely to higher strain and lower satisfaction
	Evans *et al*. (2022)	Due to the isolation of working remotely, those who scored higher on sociability tended to report lower ratings on performance
	O'Neill *et al*. (2009)	Remote makes it harder to give specific feedback. People who have a greater need for achievement might not find this motivating
Social features	Wang *et al*. (2021), Brown and Leite (2023)	Social support is one of the most powerful characteristics of virtual labour, since it has positive consequences in increasing performance and well-being and lowering loneliness
	Feldman and Gainey (1997)	Social isolation as a key challenge for remote workers and employees, linked with lower performance and higher intention to leave
	Morganson *et al*. (2010)	
	Golden *et al*. (2008)	
	Wang *et al*. (2021)	Monitoring during telework helps workers with procrastination and concentration issues

Source(s): Authors' own work

increased satisfaction. The association between remote work and engagement, on the other hand, has not been extensively explored by literature, but we know that the presence of potential distractions at home, such as household chores, family responsibilities or personal devices, can blur the boundaries of the two different domains (Allen *et al*., 2003), reducing overall engagement (Pass and Ridgway, 2022). Therefore, we hypothesize the following:

H1a. The number of days spent in remote working is positively associated with job satisfaction.

H1b. The number of days spent in remote working is negatively associated with engagement.

Employees who work from home experience high job demands, which are conditions that require prolonged mental, emotional or physical exertion and are linked to physical and/or psychological exhaustion (Gajendran *et al*., 2015). According to Jain *et al*. (1996), psychological distress is negatively associated with job satisfaction. People frequently describe exhaustion as an urge to "recharge their batteries", becoming temporarily unable or unwilling to continue satisfying their current obligations or accepting new ones (Biron and Van Veldhoven, 2016). As individuals struggle to find fulfilment and a sense of accomplishment, their level of satisfaction decreases. In addition, previous studies show that the "availability of energetic and affective resources" and emotional regulation have an impact on work engagement (Sonnentag *et al*., 2012, p. 844). When employees face stressors that they cannot

effectively cope with, they tend to limit their level of engagement, to protect their personal resources (Günther *et al*., 2022). Furthermore, exhaustion can result in employees taking more breaks or engaging in relaxation or leisure activities, which we expect to have a negative association with engagement.

H2a. Exhaustion is negatively associated with job satisfaction.

H2b. Exhaustion is negatively associated with engagement.

Social features

One of the most highlighted conceptual themes related to remote work is a potential relational impoverishment at work (Gajendran and Harrison, 2007). The decline in face-to-face communication poses challenges in expressing, maintaining and receiving prompt feedback and emotional cues (Hallowell, 1999; Chayko, 2014). As interpersonal bonds are likely to be altered in a remote work setting, it becomes even more essential to assess their impact on employees' satisfaction and engagement. The social dimension of work helps people meet their needs for affiliation (Gabarro, 1990). Work relationships can be a "source of enrichment, vitality, and learning that helps individuals, groups, and organizations grow, thrive, and flourish" (Ragins and Dutton, 2017, p. 3), providing "an affirming and heady mix of supports and supplies" (Rousseau and Ling, 2017, p. 373). As businesses are consolidating their role of social communities, the importance of relationships grows, especially considering the progressive crumble of traditional forms of aggregation (religious, neighbourhood, local, etc). In the organizational context, the most important relationships are the ones with supervisors and colleagues. Leader-member-exchange (hereafter referred to LMX) and Team-member-exchange (hereafter referred to TMX) represent the most immediate and recurrent form of interaction, playing a pivotal role in shaping workers' outcomes (Xiao *et al*., 2022; Gerstner and Day, 1997; Sousa-Poza and Sousa-Poza, 2000).

In high-quality TMX relationships, colleagues experience strong, cordial and dependable connections among team members, resulting in higher levels of job satisfaction (Beehr and Drexler, 1986; Pollock *et al*., 2000; Banks *et al*., 2014). In addition, high-quality connections with peers can contribute to creating a flourishing work environment (Liao *et al*., 2013), where employees are willing to report errors and demonstrate positive attitudes when interacting with their colleagues (May *et al*., 2004), fostering job engagement (Dollard and Bakker, 2010). Research indicates that engagement is contagious within teams, as team members connect emotionally and thus experience higher levels of involvement and commitment (Schaufeli and Salanova, 2008). For this reason, we expect that:

H3a. Team Member Exchange (TMX) is positively associated with job satisfaction.

H3b. Team Member Exchange (TMX) is positively associated with engagement.

According to Epitropaki and Martin (2005), employees who experience positive social interactions with their supervisors feel provided with care and help. Several studies link positive relationships with supervisors with increased job satisfaction. According to Graen *et al*. (1982), supervisors' support increases employees' potential and their mutual loyalty, contributing to less severe job problems and leading, overall, to higher job satisfaction. Moreover, research has demonstrated that this kind of social support is positively associated with job engagement (Halbesleben, 2010). The higher the quality of LMX, the higher the employees' sense of empowerment (Liden *et al*., 2000), which is positively associated with engagement (Ugwu *et al*., 2014). Therefore, we hypothesize the following:

H4a. Leader-Member Exchange (LMX) is positively associated with job satisfaction.

H4b. Leader-Member Exchange (LMX) is positively associated with engagement.

Job features

In remote work settings, the constraints of place, proximity and time are lost (Angelici and Profeta, 2023), resulting in a profound impact on job characteristics (Morgeson and Humphrey, 2006). Two of these characteristics acquire a relevant role in the remote work scenario: autonomy and interdependence. Several studies show that jobs with higher levels of autonomy are particularly suitable for remote work contexts. Given their improved capacity to manage their time (Angelici and Profeta, 2023), individuals working from home can leverage the advantages of autonomous tasks, dedicating themselves to their job without distractions or tensions typical of the office. On the contrary, task interdependence might become an impediment: working on site facilitates frequent and spontaneous contacts between supervisors and employees, as well as among the employees themselves (Golden, 2006). High levels of interdependence in the workplace also call for increased collaboration, interpersonal communication, and coordination (Allen *et al*., 2015), which are more difficult and expensive in remote arrangements (Gibbs *et al*., 2023; Yang *et al*., 2022). At the same time, interdependence reduces the risk of isolation, as it intensifies interactions among colleagues for coordination purposes. Consequently, we investigate the association between both characteristics and employees' satisfaction and engagement in a remote work setting. Autonomy has taken a central place in motivational approaches to job design (Campion, 1988; Hackman and Oldham, 1975). It was initially conceived as the degree of freedom that individuals hold in performing their work (Hackman and Oldham, 1975), but this definition has expanded to include employees' discretion in scheduling work, making decisions and choosing methods to perform tasks (Breaugh, 1985; Wall *et al*., 1992, 1995). Several studies report a positive association between autonomy and job satisfaction (Humphrey *et al*., 2007; Thompson and Prottas, 2006; Zhao *et al*., 2020). Moreover, autonomy plays a crucial role in predicting job engagement (Hackman and Oldham, 1975; Saks, 2006), since it gives employees discretion over their level of dedication to their work, thus increasing their motivation and involvement:

H5a. Autonomy is positively associated with job satisfaction.

H5b. Autonomy is positively associated with engagement.

Interdependence expresses the degree to which a work depends on others and others depend on it to be completed (Kiggundu, 1983). As such, interdependence reflects the level of "connection" between the works. Research shows that the more interdependence a worker faces, the less freedom he or she has to adapt the job to personal needs and desires (Dierdorff and Jensen, 2018), thus impairing job satisfaction. On the contrary, interdependence enhances employees' engagement. A study conducted among students (Gheorghe *et al*., 2023) shows that when team members participate in constructive interactions and focus on a common objective, they assist, help and share resources with one another. This enhances a state of flow and facilitates full engagement in their activity (Van den Hout *et al*., 2018). Therefore, we hypothesize the following:

H6a. Interdependence is negatively associated with job satisfaction.

H6b. Interdependence is positively associated with engagement.

The role of managers becomes even more crucial if we consider its hierarchical nature. According to Chandler (1962), hierarchy is a fundamental pillar of firms. In-presence organizational models emphasize physical closeness, direct supervision and uniform labour standards (Depickere, 1999). Moreover, according to Okhuysen and Bechky (2009), traditional organizational models facilitate both formal and informal interactions, increasing visibility and familiarity amongst people. Remote work affects the conventional form of hierarchy, altering how employees interact with one another and with superiors (Angelici and Profeta, 2023). Working far away lacks the direct form of control, for which supervisors monitor and intervene when complications occur. In addition, interactions between parts are

usually restricted to scheduled occasions, leaving little room for unplanned and casual conversations. Thus, when workers are required to work beyond the workplace, managers differ from their assessments if the employees had been physically present in the office (Kaplan *et al*., 2018). But when supervisors are leaders, and they are capable of delivering their support to employees, they act as effective controllers and helpers, even in remote work scenarios, which helps contain the detrimental effects of exhaustion (Bentley *et al*., 2016; Sardeshmukh *et al*., 2012; Günther *et al*., 2022). We thus expect that:

H7a. LMX moderates the association between exhaustion and job satisfaction.

H7b. LMX moderates the association between exhaustion and engagement.

All hypotheses are reported in Figure 1.

Methodology

Data and sample

We collected data from 2,141 employees working at a large service industry company, offering remote work options. The data have been collected with an online questionnaire at the end of 2022 in Italy, where the company was based. In Italy– following the prevailing global trend – agile work arrangements have long been in place, but saw a significant rise after the pandemic, with the number of employees working remotely at least once a week growing from 1.3 million in 2019 to 2.5 million by the end of 2023 (Sabbatini, 2023). Since Italian law allows companies and employees to negotiate their own agreements, the national landscape was quite diverse, with some companies offering complete flexibility, others setting specific remote workdays and some not permitting remote work at all. The company in our study encouraged at least 40% office attendance, but it did not impose maximum limits, allowing individuals to work in the office every day if they wished. The choice was left to employees, based on their preferences and needs, leading to a diverse sample with varying approaches to remote work. The employees qualified as ideal candidates for a study on remote work not only because of this flexibility, but also because their tasks were mainly "portable", thus suitable to be completed at a location other than the main office (Duxbury and Neufeld, 1999). In addition, the different nature of teams and activities within the company ensured generalizability. We divided the

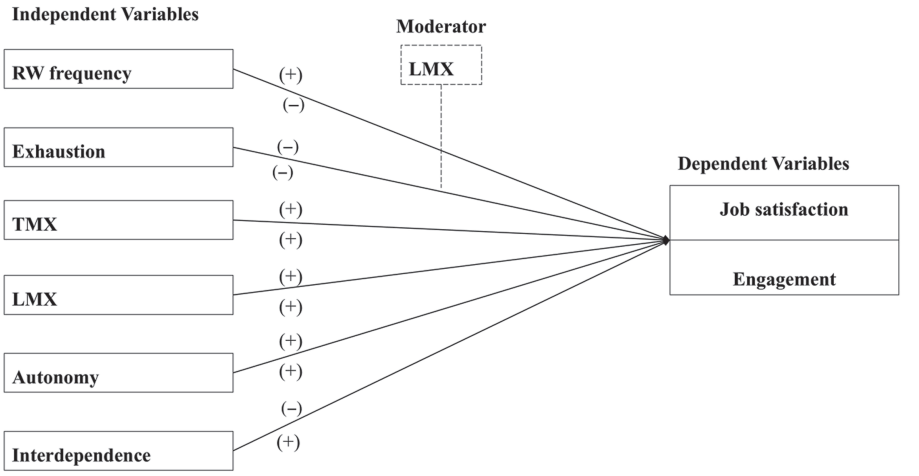

Figure 1. Summary of the hypotheses. Source: authors own work

sample into two groups: managers, head of organizational unit with managerial responsibilities and employees with no direct reports. This division contributes to the results' stability. Only a few studies in the literature did the same thing in the context of remote work. Participation was voluntary, using an internal survey system, with anonymity for employees and optional name inclusion for managers. The final sample included 262 managers and 1,879 employees after filtering out incomplete responses. Employee respondents were almost evenly distributed between males (50.3%) and females (49.7%), while among managers, males represented the majority (70.1%) compared to females (29.9%). In terms of age, the majority of employees were over 50 years old (49.2%), followed by those aged 41–50 (33.9%), 31–40 (15.5%) and lastly the ones with less than 30 years (1.4%). A similar pattern was observed among managers, most of whom were over 50 (61.8%), followed by those aged 41–50 (28.6%) and 31–40 (9.5%). Employees reported predominantly 3 days of remote working (67.5%), followed by 2 days (22.7%), 1 day (3.5%), 5 days (2.9%), 0 days (2.2%) and 4 days (1.3%). Among managers, the most frequent pattern was 2 days (37.8%), then 3 days (35.1%), 1 day (21.4%), 0 days (5.0%) and 5 days (0.8%).

Measures

All the variables, except the demographics and the number of days of remote working, have been collected with a 4-point Likert scale for survey responses, and the constructs were based on previously validated scales. Job satisfaction reflects the level of satisfaction at work, assessed using 3 items (Kreiner, 2006): "I am satisfied with my job"; "I frequently think of quitting my job" (reverse item); "I am satisfied with the type of tasks performed in my job". Cronbach's alpha was 0.791 for employees and 0.748 for managers. Engagement measures job involvement with 6 items (Schaufeli *et al*., 2006): "I am enthusiastic about my work"; "My job inspires me"; "I feel energized at work"; "When I wake up in the morning, I'm eager to start working"; "I feel happy when I work intensely"; "I am dedicated to my work". Cronbach's alpha was 0.863 for employees and 0.857 for managers. Remote work frequency represents average remote workdays per week, evaluated with 1 item (Gajendran and Harrison, 2007); respondents were asked to answer by typing the number of days spent working remotely on average, where 0 meant the worker spent every day in the office, while 5 meant every day at home. Less than 2.5% of the sample answered 0. Exhaustion captures perceived fatigue after remote work, measured by 4 items (Diestel *et al*., 2015) and respondents were asked to assess the items thinking about their feeling at the end of a typical day spent working from home "I find it difficult to relax"; "I feel tired"; "When I finish work, I show interest in other people" (considered as reversed item); "When I finish work, I need to be left alone for a while". Cronbach's alpha was 0.648 for employees and 0.601 for managers. For what concerns social exchanges, TMX assesses the quality of relationships among team members, using 10 items (Sears *et al*., 1995): "I suggest better working methods to other team members"; "Other team members communicate with me when I do something that makes their work easier"; "I inform other team members when they do something that makes my work easier"; "Team members recognize my potential"; "Other team members understand my problems and needs"; "I am flexible in changing the tasks I perform to facilitate other team members"; "In challenging situations, other team members ask me for help"; "In challenging situations, I spontaneously help other team members"; "I am willing to help complete the work assigned to them"; "Other team members are willing to help me complete the work". Cronbach's alpha was 0.872 for employees and 0.798 for managers. LMX evaluates the quality of supervisor-employee relationships with 6 items (Graen and Uhl-Bien, 1995): "My supervisor is satisfied with the work I do"; "My supervisor understands my needs at work"; "My supervisor listens to me if I have a personal problem"; "My supervisor recognizes my potential"; "Regardless of his/her formal authority, my supervisor uses his/her role to help me solve work-related problems"; "Regardless of his/her formal authority, my supervisor "has my back" in difficult situations". Cronbach's alpha was 0.900 for employees and 0.853 for managers. Autonomy, describing

freedom in scheduling work, is measured with 2 items (Gajendran *et al*., 2015): "I have discretion in deciding where to work"; "I have discretion in defining my work schedule" (Cronbach's alpha was 0.729 for employees and 0.803 for managers) and lastly, interdependence, reflecting reliance on others' work, is assessed using 2 items (Morgeson and Humphrey, 2006): "The job depends on the work of many different people for its completion"; "My job cannot be done unless others do their work" (Cronbach's alpha was 0.669 for employees and 0.606 for managers). We included some control variables to take into account potential rival hypotheses for our findings. We investigated "age"; "gender"; "family members"; the eventual presence of "family member in need of assistance" (e.g. elderly, infants, …); the availability of "domestic helper" (babysitters, domestic workers, …); "superior in office", measuring if they are likely to meet their superior while working inside the office's walls; "activity range" to understand if the kind of tasks performed by the individual could influence the work dynamics in remote settings; "distance from home to the office" (in minutes) and "teams' RW frequency", as the average days per year spent working from home by the team directed by the manager.

Variables description and summary statistics are reported in Tables 2 and 3.

Results

We tested our hypothesis using the OLS Regression Models in SPSS. No significant results appear for H1a for both samples, while H1b is supported: remote work frequency is negatively associated with engagement (H1b: $\beta = -0.076$; $\rho < 0.05$ for employees, $\beta = -0.253$; $\rho < 0.001$ for managers). Exhaustion was proven to have a negative association with job satisfaction (H2a: $\beta = -0.248$; $\rho < 0.001$ for employees, $\beta = -0.202$; $\rho < 0.01$ for managers) and engagement (H2b: $\beta = -0.247$; $\rho < 0.001$ for employees, $\beta = -0.215$; $\rho < 0.001$ for managers). As for social exchange variables, most of the hypotheses were supported. We found a significant positive association between TMX and job satisfaction for employees (H3a: $\beta = 0.102$, $p < 0.001$), but not for managers. On the other hand, evidence supports the positive association of TMX with engagement for both samples (H3b: $\beta = 0.207$, $p < 0.001$ for employees, $\beta = 0.289$, $p < 0.001$ for managers). LMX shows a positive and statistically significant association with all the dependent variables (H4a: $\beta = 0.323$, $p < 0.001$ for employees, $\beta = 0.347$, $p < 0.001$ for managers; H4b: $\beta = 0.274$, $p < 0.001$ for employees, $\beta = 0.207$, $p < 0.001$ for managers). Autonomy is positively associated with job satisfaction for employees (H5a: $\beta = 0.126$, $p < 0.001$), but does not show any significant association for managers. The same results are obtained for the association between autonomy and engagement (H5b: $\beta = 0.117$, $p < 0.001$ for employees). The negative association between interdependence and job satisfaction was supported only for the employee sample (H6a: $\beta = -0.089$, $p < 0.01$), while we found no significant association between interdependence and engagement for both roles. The moderation effect between LMX and exhaustion affects job satisfaction for employees (H7a: $\beta = 0.061$, $p < 0.05$), but not for managers. Vice versa, the effect does not moderate engagement for the employees' sample, but it does for the managers' one (H7b: $\beta = 0.185$, $p < 0.01$). Results are reported in the tables below [report here Tables 4–7].

Robustness check

To ensure the reliability and generalizability of our findings, we conducted a comprehensive set of robustness checks. We employed interaction terms within our full regression models to systematically examine potential heterogeneity in our key variables' effects. This methodological approach allows us to formally test how different contextual characteristics might moderate our primary associations while maintaining statistical power and sample integrity. Specifically, we found that there is an interaction effect between autonomy and age in predicting engagement for managers (Coeff. = 0.17; $p < 0.05$), thus suggesting that the effect

Table 2. Variables description

Variables	Description	α empl	α mng	*n.* Items	References	Sample item
Job Satisfaction	Level of job satisfaction	0.791	0.748	3	Kreiner (2006)	I am satisfied with my job
Engagement	Level of job involvement	0.863	0.857	6	Schaufeli *et al*. (2006)	I am enthusiastic about my work
Remote Work frequency	Average days per week spent in Remote work	–	–	1	Gajendran and Harrison (2007)	Average days per week spent in Remote work
Exhaustion	Level of perceived exhaustion after a day spent working remotely	0.648	0.601	4	Diestel *et al*. (2015)	At the end of a day spent working remotely, I find it difficult to relax
Team member exchange	Quality of exchange relationship with team members	0.872	0.798	10	Seers *et al*. (1995)	Team members recognize my potential
Leader member exchange	Quality of exchange relationship with supervisor	0.900	0.853	6	Graen and Uhl-Bien (1995)	My supervisor understands my needs at work
Autonomy	Level of freedom in scheduling work	0.729	0.803	2	Gajendran *et al*. (2015)	I have discretion in defining my work schedule
Interdependence	Level of dependence with others' work	0.699	0.606	2	Morgeson and Humphrey (2006)	The job depends on the work of many different people for its completion

Source(s): Authors' own work

Table 3. Summary statistics (employees and managers)

	n	Mean	Std. Dev	Min	Max
Employees					
Engagement	1,879	3.140	0.517	1.00	4.00
Job Satisfaction	1,879	3.334	0.590	1.00	4.00
Remote Work Frequency	1,879	2.710	0.779	0.00	5.00
Exhaustion	1,879	2.191	0.564	1.00	4.00
TMX	1,879	3.344	0.425	1.60	4.00
LMX	1,879	3.322	0.589	1.00	4.00
Autonomy	1,879	3.335	0.627	1.00	4.00
Interdependence	1,879	2.240	0.714	1.00	4.00
Managers					
Engagement	262	3.390	0.459	1.83	4.00
Job Satisfaction	262	3.525	0.470	2.00	4.00
Remote Work Frequency	262	2.060	0.912	0.00	5.00
Exhaustion	262	2.262	0.529	1.00	3.75
TMX	262	3.592	0.301	2.70	4.00
LMX	262	3.516	0.452	1.83	4.00
Autonomy	262	3.427	0.458	1.00	4.00
Interdependence	262	2.720	0.518	1.33	4.00

Source(s): Authors' own work

Table 4. Correlations (employees)

Employees	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Control															
1. Gender	1														
2. Age	−0.135**	1													
3. Superior in office	0.040	−0.087**	1												
4. Activity Range	0.088**	0.059*	0.065*	1											
5. Family Members	0.033	0.120**	−0.057*	0.016	1										
6. Family Members in Need	0.083**	−0.231**	−0.008	−0.011	0.362**	1									
7. Domestic helper	0.132**	0.000	0.025	0.000	0.206**	0.221**	1								
Independent															
8. Remote Work Frequency	0.107**	−0.109**	−0.005	−0.036	−0.031	0.081**	0.011	1							
9. Exhaustion	0.091**	−0.038	−0.012	0.028	−0.060**	−0.003	−0.003	−0.012	1						
10. TMX	−0.007	−0.001	0.023	0.009	0.027	0.025	0.027	0.019	−0.129**	1					
11. LMX	−0.048	−0.005	0.128**	−0.026	0.033	−0.018	−0.042	−0.016	−0.159**	0.410**	1				
12. Autonomy	−0.076**	0.052	−0.046	0.031	0.004	0.007	0.024	0.016	−0.091**	0.207**	0.193**	1			
13. Interdependence	0.044	−0.024	0.056*	−0.023	−0.057*	−0.028	0.013	0.004	0.113**	0.085**	0.033	0.017	1		
Dependent															
14. Engagement	−0.017	0.034	0.057*	−0.022	0.063**	0.026	0.038	−0.030	−0.324**	0.365**	0.413**	0.198**	0.008	1	
15. Job Satisfaction	−0.015	0.020	0.069*	−0.016	0.107**	0.053*	0.020	0.000	−0.369**	0.291**	0.471**	0.194**	−0.068**	0.688**	1

Note(s): *$p < 0.05$ **$p < 0.01$ ***$p < 0.001$ $n = 1{,}879$
Age (less than 30 years = 1, from 31 to 40 years = 2, from 41 to 50 years = 3, more than 50 years = 4)
Gender (male = 0, female = 1)
Presence of family member in need of assistance (no = 0, yes = 1)
Availability of a domestic helper (no = 0, yes = 1)
Superior's presence inside the office's walls (no = 0, yes = 1)
Activity Range provided by the firm
Source(s): Authors own work

Table 5. Correlations (managers)

Managers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Control																
1. Gender	1															
2. Age	−0.079	1														
3. Superior in Office	0.027	−0.119	1													
4. Distance House-Office	−0.133*	0.074	0.091	1												
5. Team's Remote Work Average	0.034	−0.043	0.049	−0.043	1											
6. Family Members	−0.110	0.061	−0.006	0.038	−0.184**	1										
7. Family Members in Need	−0.085	−0.292**	0.048	−0.068	−0.007	0.318**	1									
8. Domestic Helper	0.201**	0.048	0.056	−0.106	0.029	0.168**	0.147*	1								
Independent																
9. Remote Work Frequency	0.091	−0.009	−0.001	0.159**	0.180**	0.018	0.036	0.035	1							
10. Exhaustion	−0.104	−0.047	−0.029	0.038	0.022	0.067	0.034	−0.006	0.082	1						
11. TMX	0.101	−0.078	0.123	0.036	−0.067	−0.023	0.070	0.124*	0.145*	−0.135*	1					
12. LMX	−0.007	0.034	0.111	−0.025	−0.035	0.113	0.008	0.069	−0.029	−0.110	0.229**	1				
13. Autonomy	−0.022	−0.026	−0.018	0.102	−0.031	−0.013	0.101	−0.006	−0.102	−0.188**	0.087	0.195**	1			
14. Interdependence	−0.071	0.040	0.007	−0.008	0.071	0.008	0.019	−0.025	−0.026	0.221**	−0.111	−0.034	0.029	1		
Dependent																
15. Engagement	0.043	0.017	0.030	0.004	0.184**	0.056	0.023	0.032	−0.226**	−0.308**	0.312**	0.356**	0.200**	−0.079	1	
16. Job Satisfaction	0.069	0.025	0.007	0.024	−0.139*	0.054	−0.021	0.062	−0.042	−0.329**	0.173**	0.387**	0.180**	−0.182**	0.634**	1

Note(s): *$p < 0.05$ **$p < 0.01$ ***$p < 0.001$ $n = 262$
Age (less than 30 years = 1, from 31 to 40 years = 2, from 41 to 50 years = 3, more than 50 years = 4)
Gender (male = 0, female = 1)
Presence of family member in need of assistance (no = 0, yes = 1)
Availability of a domestic helper (no = 0, yes = 1)
Superior's presence inside the office's walls (no = 0, yes = 1)
Activity Range provided by the firm
Distance from home to the office (in minutes)
Teams' Remote working average (average days per year spent working from home by the team directed)
Source(s): Authors' own work

Table 6. Multiple regression results (employees)

Regression analysis – employees	Job satisfaction					Engagement				
	Model 1a	Model 2a	Model 3a	Model 4a	Model 5a	Model 1b	Model 2b	Model 3b	Model 4b	Model 5b
Remote work										
Remote Work frequency		−0.052	−0.031	−0.037	−0.041		−0.081**	−0.068*	−0.075*	−0.076*
Exhaustion		−0.340***	−0.272***	−0.249***	−0.248***		−0.329***	−0.253***	−0.247***	−0.247***
Social exchanges										
Team-member exchange			0.107***	0.099**	0.102***			0.224***	0.207***	0.207***
Leader-member exchange			0.348***	0.331***	0.323***			0.291***	0.275***	0.274***
Job characteristics										
Autonomy				0.125***	0.126***				0.117***	0.117***
Interdependence				−0.088**	−0.089**				0.001	0.001
Moderator										
LMX x Exhaustion					0.061*					0.010
Control variables										
Socio-demographics										
Gender	0.008	0.039	0.052	0.054	0.057*	−0.035	−0.002	0.011	0.015	0.016
Age	−0.003	−0.005	0.023	0.017	0.019	0.008	0.004	0.031	0.025	0.025
Office features										
Superior in office	0.022	0.032	0.006	0.015	0.014	0.042	0.051	0.028	0.036	0.036
Activity Range	0.001	0.002	0.004	0.002	0.007	−0.029	−0.028	−0.027	−0.028	−0.027
Family features										
Family Members	0.137***	0.118***	0.109***	0.102***	0.102***	0.102**	0.082*	0.076*	0.074*	0.074*
Family Members in Need	−0.015	0.009	0.047	0.043	0.045	−0.02	0.006	0.038	0.038	0.038
Domestic Helper	0.024	0.028	−0.014	−0.008	−0.008	0.052	0.056	0.014	0.016	0.016
R^2	0.020	0.136	0.293	0.315	0.318	0.017	0.130	0.314	0.326	0.327
ΔR^2		0.116	0.157	0.022	0.003		0.113	0.184	0.012	0.001
ADJUSTED-R^2	0.013	0.128	0.285	0.305	0.308	0.010	0.122	0.306	0.317	0.317

Note(s) $n = 1879$ *$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

Source(s): Authors' own work

Table 7. Multiple regression results (managers)

Regression analysis – managers	Job satisfaction Model 1a	Model 2a	Model 3a	Model 4a	Model 5a	Engagement Model 1b	Model 2b	Model 3b	Model 4b	Model 5b
Remote work										
Remote Work frequency		0.010	0.014	0.025	0.020		−0.224***	−0.254***	−0.242***	−0.253***
Exhaustion		−0.299***	−0.234***	−0.201**	−0.202**		−0.296***	−0.217***	−0.212***	−0.215***
Social exchanges										
Team-Member Exchange			0.062	0.055	0.061			0.278***	0.278***	0.289***
Leader-Member Exchange			0.372***	0.353***	0.347***			0.232***	0.218***	0.207***
Job Characteristics										
Autonomy				0.110	0.114				0.079	0.086
Interdependence				−0.071	−0.075				0.048	0.039
Moderator										
LMX × Exhaustion					0.096					0.185**
Control Variables										
Socio-demographics										
Gender	0.058	0.033	0.036	0.033	0.044	0.061	0.066	0.062	0.066	0.087
Age	0.009	−0.009	−0.008	−0.007	−0.012	0.037	0.023	0.040	0.050	0.039
Office Features										
Superior in Office	0.025	0.006	−0.038	−0.029	−0.030	0.041	0.011	−0.034	−0.029	−0.031
Distance house-office	0.001	0.012	0.014	−0.004	0.006	−0.018	0.045	0.032	0.020	0.038
Team Remote Work Average	−0.117	−0.111	−0.104	−0.104	−0.093	−0.136	−0.097	−0.059	−0.065	−0.044
Family Features										
Family Members	0.088	0.106	0.048	0.053	0.061	0.067	0.094	0.071	0.075	0.090
Family Members in Need	−0.031	−0.047	−0.034	−0.049	−0.053	0.047	0.034	0.021	0.012	0.004
Domestic Helper	0.054	0.048	0.018	0.017	0.018	0.015	0.016	−0.033	−0.033	−0.031
R^2	0.031	0.119	0.261	0.276	0.285	0.035	0.170	0.315	0.322	0.355
ΔR^2		0.088	0.142	0.015	0.009		0.135	0.145	0.007	0.033
ADJUSTED-R^2	0.000	0.079	0.221	0.229	0.235	0.000	0.133	0.277	0.279	0.311

Note(s) $n = 262$ *$p < 0.05$ **$p < 0.01$ ***$p < 0.001$
Source(s): Authors' own work

of autonomy on employee engagement varies across age groups. This pattern may reflect the fact that older employees often have greater work experience, making them more equipped to benefit from job autonomy. They may value autonomy as a signal of recognizing such experience, which reinforces their motivation and engagement. Moreover, we found a positive interaction between Team Member Exchange and Superior in the office (i.e. whether the respondents are likely to meet their superior while working inside the office's walls) in predicting engagement for managers (Coeff. = 0.29; $p < 0.05$), suggesting that strong peer relationships are more strongly associated with higher engagement when there is also accessibility to the superior. Finally, we found that for professionals, the effect of autonomy on job satisfaction is less prominent at high levels of family members with needs (Coeff. = –0.08; $p < 0.05$). This result suggests that individuals with high caregiving demands may not be able to fully leverage their job autonomy – because their flexibility or independence at work could be constrained by competing responsibilities at home. As a result, autonomy no longer translates as clearly into greater satisfaction for this group. In addition, we implemented a Propensity Score Matching (PSM) approach to mitigate potential self-selection into remote work. We defined the treatment group as employees working remotely two or more days per week and the control group as those working none or one day. Matching was based on demographic and contextual covariates (age, gender, number of family members, presence of family members in need of assistance, domestic help, distance from the office, superior presence in the office, activity range and team remote work frequency). Separate analyses for managers and professionals confirmed the pattern observed in our OLS regressions: remote work frequency was not significantly related to job satisfaction in either group, while its negative association with engagement remained. For professionals, this effect was statistically significant ($p < 0.01$), while for managers, the direction of the effect was consistent but not significant, likely due to the smaller matched sample size.

Discussion

Theoretical contributions

We aimed to uncover some insights by highlighting the role of remote work in considering job satisfaction and engagement. The generalizability of our findings is strengthened by the large sample, across which the phenomenon of remote working has spread widely, both horizontally across functions and vertically across hierarchy, highlighting differences between managers and employees' results. Furthermore, collecting data within a single organization allows us to hold key contextual factors – such as organizational culture, and formal remote work policies – constant. This reduces potential confounding effects and enables us to isolate and examine the associations of interest more clearly. While our evidence is situated within a context where a hybrid model is the dominant arrangement, reflecting the most widespread approach to remote work (Barrero *et al.*, 2023), some insights are likely applicable to fully remote workers, despite their relative rarity in our sample. Firstly, we found that the frequency of remote work is negatively associated with employee engagement, a more long-term outcome and that there is no significant association with job satisfaction. A possible explanation could be that, while engagement is a deep, enduring emotional and intellectual connection to workplace elements, driving long-term commitment and motivation (Gibbons, 2006), satisfaction is a short-term, situational emotional state reflecting contentment with current job conditions (Locke, 1969). In light of this, the lack of a positive significant association with job satisfaction could be explained by the complex nature of remote work, which balances both positive – such as the flexibility in managing working life – and negative consequences – such as the sense of isolation. To conclude, given the more transient and fluctuating nature of satisfaction, these opposing influences tend to offset each other, resulting in a neutral overall impact. Furthermore, pre-pandemic studies included samples from a time when remote work was rare and often considered a privilege, making it feel like a benefit (DeSilver Drew, 2020; Sostero *et al.*, 2020). On the other hand, recent research on work-family dynamics suggests emerging

challenges, such as technology-induced stress, difficulty maintaining work-home boundaries, and increased work-family conflict (Vaziri *et al*., 2020). In this phase, positive and negative effects may balance out. Future research should further explore these dynamics. On the other hand, the role of remote work is more pronounced for engagement, given its deeper emotional and intellectual connection. This difference suggests that while monitoring employee satisfaction is undoubtedly important, organizations should focus more intently on tracking engagement, which seems a more critical and long-term measure. Engagement, strongly connected to a sense of community within the workplace, has been declining significantly in recent times (Gallup, 2024), becoming a pressing key issue. For remote work exhaustion, our findings align with existing literature, confirming its association with individual outcomes (Sonnentag *et al*., 2012; DeCroon *et al*., 2003; Jain *et al*., 1996; Kompier, 1988). Our study delves into the association between Team-Member Exchange and individual outcomes. All the hypotheses regarding TMX and individual outcomes were confirmed for the employees, indicating a significant and positive association with job satisfaction and engagement. For managers, the association with job satisfaction was not supported. This is consistent with other studies (e.g. Lee and Way, 2010) that show that social dimensions play a less relevant role for managers than employees. The results of the present study also confirm a positive association between LMX and job satisfaction and engagement. These findings align with previous research and have been proven to be true for both roles, contributing to the existing literature on the topic (e.g. Graen *et al*., 1982; Halbesleben, 2010). We found that job features play an important role for employees, but not for managers. Consistent with our hypothesis, autonomy shows a positive association with employees' job satisfaction. In addition, it is positively associated with employees' job engagement, since it empowers individuals (Saks, 2006; Hackman and Oldham, 1975). For what concerns the role of interdependence, this job characteristic negatively affects only job satisfaction. As expected in our hypothesis, interdependence is negatively associated with job satisfaction. This negative association could be exacerbated by the context of remote work, considering the increased difficulties in communicating and coordinating with colleagues, hitting more hybrid models, because of their inherently mixed nature, which requires greater foresight and coordination between employees at home and those at the office (Barrero *et al*., 2023). For managers, the lack of statistically significant associations for both autonomy and interdependence is noteworthy. A possible explanation lies in the fact that managers act more as facilitators of team's tasks, rather than performing them directly. Thus, as managers are more focused on managing and creating favourable conditions for their unit, the impact of autonomy and interdependence on their satisfaction and engagement appears limited. Our results revealed that leader support mitigates the link between remote work exhaustion and engagement for managers, while it impacts the association between exhaustion and satisfaction for employees. In addition, in this case, it is important to highlight the different nature of engagement and satisfaction. The divergent moderating effect that resulted from our study can be explained by considering the knowledge gap that exists between the managers and employees (Sánchez-Vidal *et al*., 2012). According to Olhig *et al*. (2020), employees are less aware of objective prioritization and often lack the necessary knowledge to interpret dynamics. This leads them to perceive problem solutions as immediate, resulting in an increase in their job satisfaction. Conversely, managers usually display a higher level of awareness. As a result, the support they receive from supervisors limits the adverse consequences of exhaustion on engagement. Managers often bear the burden of overseeing teams, making critical decisions and ensuring smooth operations. Supervisors' support represents an additional resource for managers that can help them cope with stressful situations, reducing the negative role played by exhaustion on engagement. In both cases, the role of supervisors emerges as fundamental in alleviating the role of exhaustion, proving that leader-member relationships should be fostered and protected, with frequent liaison points between the parties. This aspect becomes even more critical for fully remote employees, who may experience increased isolation, challenges in maintaining connections

(Yang *et al*., 2022; Gibbs *et al*., 2023) and that may be less visible to management than their counterparts at the office (Cappelli, 2021).

Practical implications

Our insights could help organizations shape their remote work policies. They include equipping employees with dedicated tools, setting clear workday boundaries, and encouraging breaks for mental separation. Initiatives like "no-email hours" and digital disconnection guidelines can help employees switch off after work. To ensure continuous interactions, organizations should transition from form-driven communications to conversations, with regular, meaningful check-ins that go beyond superficial updates and are crucial to prevent remote employees from feeling isolated or neglected. Leaders should pay particular attention to employees they see less often, such as those working mostly remotely, as well as to new hires and younger workers, who are particularly at risk of social isolation due to not yet having established strong social networks. These employees may struggle more to build relationships, acquire tacit knowledge and develop a sense of belonging. Additionally, an enterprise must work on all its leaders, including not only executives or human resources, but focusing as well on middle management, as their influence is pivotal in shaping day-to-day employees' experiences. Practical measures include fostering training activities and awareness on remote working and people management, while tracking employees' perceptions on the topic. Insights should involve techniques and instruments on how to hold together teams and people, also while working remotely, such as virtual team-building activities, digital collaboration tools, clear communication protocols and mentorship programs. Managers, on the other hand, should view their role in remote work not only as a mechanism for control (Cascio, 2000) but as an opportunity to foster collaboration, ensure frequent interactions and support learning. Practical steps include organizing knowledge-sharing sessions and addressing exhaustion by offering mental health resources, training to recognize signs of burnout, and implementing recovery days. However, the greatest challenge is re-design jobs, combining their features with remote working settings. As said previously, the costs of coordination and commuting related to remote work could explode because of work characterized by low autonomy and high interdependence. Redesign could, for example, consist of redefining roles to enhance autonomy and introducing asynchronous communication practices.

Policy implications

At a policy level, corporate welfare measures should be addressed to balance out working life at home, reducing exhaustion during working days. In this sense, mental health support, childcare assistance and home office allowances could be helpful. Beyond organizational practices, the discussion around remote work opens up important reflections on broader societal dimensions, particularly in terms of equity, well-being and the socio-economic conditions that may shape how individuals experience and adapt to new work arrangements. Not all employees start from the same position – differences in educational background, digital literacy, access to dedicated workspaces or family responsibilities can influence the extent to which remote work is sustainable or effective. These reflections raise questions not only about individual well-being but also about broader organizational and community-level implications. Given the central role of organizations in local economies and communities, the way remote work is structured and supported may have indirect implications for social cohesion and collective resilience. Further studies could examine how structural factors, such as socio-economic status or education, intersect with remote work policies and practices. This would contribute to a more nuanced understanding of how remote work affects different segments of the workforce, and how organizations might develop more inclusive, context-sensitive approaches.

Limitations and future research

This study has limitations worth noting because, capturing all remote work's facets in a single analysis is particularly challenging, and thus further exploration is needed. We agree that understanding the influence of varying remote work policies across organizations is both theoretically and practically important. Building on our findings, we encourage future research to adopt multi-organizational or cross-industry designs to investigate how different types of remote work policies *(mandatory, voluntary, with fixed on-site requirements, . . .)* may alleviate unintended consequences while maximizing the benefits of remote work. Furthermore, we did not include in our analysis broader social, cultural, and environmental factors within the same organization. Future research should adopt multilevel approaches to explore lateral social exchange interactions and their effects on individual outcomes and group results. Moreover, longitudinal studies could be useful to establish causality in observed connections between variables, considering the nuanced aspects of remote work. Although our study relies on self-reported, cross-sectional data, several features of the research design mitigate the potential concern of common method variance, consistent with recent methodological evidence (Bozionelos and Simmering, 2022; Fuller *et al.*, 2016). First, we collected data anonymously, reducing evaluation apprehension and social desirability effects. Second, we employed previously validated multi-item scales with satisfactory to high reliability, which minimizes random error and the possibility of systematic inflation. Third, our conceptual model includes theoretically distinct constructs drawn from social, job-related, and individual domains, which further decreases the likelihood that a single perceptual or affective tendency could account for the observed associations. Nonetheless, we acknowledge that reliance on a single-source design may still introduce unobserved common tendencies in responses. Future studies could further address this limitation through temporal or source separation of measures, inclusion of marker variables, or experimental and longitudinal designs. Additionally, future research could complement traditional regression approaches with methods that capture necessity logic. For instance, Necessary Condition Analysis (Dul, 2016) can identify whether certain factors – such as autonomy or leader–member exchange – represent prerequisites for satisfaction or engagement rather than mere contributors. Integrating this "necessary but not sufficient" perspective would provide a more comprehensive understanding of hybrid work dynamics. Finally, our research could suffer from a self-selection into remote work, such that employees decide to work remotely for different reasons that pertain to their social environment and individual characteristics not related to the work environment. In order to run this further check, we implemented a Propensity Score Matching (PSM) approach and, in addition, we performed regression analyses with days of remote work as the dependent variable and contextual (having a place to work at home and having family members to take care of) and demographic variables (age and gender) as independent variables. Managers' results were not statistically significant, whereas employees showed statistically significant associations. In light of these further analyses, we encourage future research to provide a deeper understanding of the factors that may influence individuals in their choice to adopt the remote work opportunities offered by the company. As such companies could also better design organizational policies to effectively deploy remote work initiatives.

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