

Frequent is better when remote? How digitally mediated interactions with supervisors stimulate work engagement and extra-role performances of remote workers

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Abstract

Frame of the research: This research investigates the influence of frequent interactions between supervisors and employees in remote work settings. Grounded in Relational Cohesion Theory, it explores how these interactions enhance social cohesion, perceived support, work engagement, and extra-role performance during the Covid-19 remote work transition.

Purpose of the paper: Since the outbreak of Covid-19, numerous organizations have increasingly embraced remote working arrangements. In this new normal, it is necessary to understand how organizations may guarantee the attachment of their employees to their job roles. This study argues that an ongoing frequency of interaction between supervisors and their collaborators, within a remote working context, may reinforce the relational and social cohesion within a team, leading its members to perceive more support from both their supervisors and the whole organization.

Design/methodology/approach: A survey has been administered to the 410 employees of an information consulting company that experienced remote working during the pandemic. Data have been analysed using structural equation modelling.

Findings: Results show that a higher frequency of interaction in remote working contexts reinforces internal social cohesion, stimulating extra-role performances, such as creativity, adaptivity, proactivity, and knowledge sharing, through the mediation of social support and work engagement. Implications for both academics and practitioners are discussed.

Practical implications: This research provides valuable insights for organizations navigating remote work. To enhance support and mitigate isolation, frequent interactions between supervisors and employees can foster work engagement and the extra-role performance of remote workers.

Originality of the paper: This study shows how an ongoing frequency of interaction with supervisors within remote working contexts helps employees to remain engaged in their job roles and to exhibit positive behavior/behaviour, mitigating the sense of isolation experienced during the pandemic.

Key words: work engagement; relational cohesion theory; perceived supervisor support; perceived organizational support; performance extra-role; remote working

1. Introduction

The way we work has completely changed since Covid-19 outbreak. Many companies are increasingly adopting digital solutions with the aim of (re-)favouring interactions among workers, who increasingly work remotely (Choudhury, 2020).

The relationship between supervisors and their collaborators is widely recognized as a crucial factor in supporting employees, enhancing their work engagement, and promoting positive behaviours (Boccoli *et al.*, 2023; McGrath *et al.*, 2017; Xanthopoulou *et al.*, 2008). However, only few studies (e.g., Purvanova and Bono, 2009) have delved into this relationship within remote work settings. For instance, Zigurs (2003) showed that the frequency and quality of social interactions between employees and their supervisors often decrease when they work remotely. Consequently, leaders may struggle to effectively stimulate and support their collaborators in these settings.

Remote working may lead individuals to experience psychological and physical isolation (Wang *et al.*, 2021). Psychological isolation refers to the feeling related to the disconnection from others, where individuals perceive that the support and the other social and emotional aspects generated by social interactions are not fulfilled (Golden *et al.*, 2008). Physical isolation concerns the physical separation of workers from their colleagues, collaborators, and supervisors (Bartel *et al.*, 2012).

Literature (e.g., Murthy, 2020) demonstrates that these senses of isolation may affect individuals' mental and physical health, leading them to be less productive and more likely to procrastinate or quit their jobs (Wang *et al.*, 2021; Cigna, 2020). Furthermore, the perception of isolation may lead individuals to perceive less support from their organizations and supervisors, threatening not only the commitment towards their organization but also the level of engagement towards their job roles and, more generally, any positive behaviour associated to work (Wang *et al.*, 2019; Wang *et al.*, 2021).

This research aims to investigate how a continuous interaction between supervisors and their remote collaborators may influence various outcomes, such as perceived supervisor support, perceived organizational support, work engagement, and performance beyond job roles. In doing so, we provide four main contributions.

First, we propose from a micro-sociological perspective that relational cohesion theory (Thye *et al.*, 2022) can explain work engagement and, consequently, extra-role performance. Work engagement, in fact, is a social construct shaped by social interaction, exchange, and recognition (Boccoli *et al.*, 2023), and these three factors can be met by the relationship with supervisors. Our study indicates that regular interaction with supervisors, albeit remotely, relates positively to perceived support.

Second, we show that, unlike prior findings, the rate of virtual interactions between supervisors and remote collaborators stayed the same during the pandemic. This could be explained by the need of individuals to keep pre-pandemic levels of interaction as a way of maintaining a sense of normality. Also, during the pandemic, many employees often

communicated with their supervisors through communication channels like video calls, which enabled rich and synchronic communication. These solutions permit the exchange of different levels of communication, resembling face-to-face interaction and including paraverbal language such as tone, speed of the voice, and body language (Daft and Lengel, 1984, 1986; Dennis *et al.*, 2008). In line with relational cohesion theory and affect exchange theory (Thye *et al.*, 2002; Lawler *et al.*, 2008), the adoption of these communication channels, along with a high frequency of interaction with supervisors, may have favoured social and relational cohesion through the exchange of positive emotions among individuals. Third, our research shows that supervisor support influences organizational support within the context of forced remote work. This suggests that supervisors play a crucial role in bridging the social and physical distance between employees and the organization.

Fourth, despite the challenges of remote work, we found that a higher frequency of interaction indirectly influences positive behaviours among employees. The social support offered by supervisors and organizations during the pandemic mitigated isolation and procrastination levels, fostering reciprocity between employees and supervisors. This reciprocal relationship ultimately benefits organizations by encouraging positive actions from employees.

2. Theoretical Background and Hypotheses

2.1 *The frequency of remote interaction between supervisors and peers*

Coherently with relational coordination theory (Gittell, 2000), effective communication among employees increases relationship quality over time (Gittell, 2006). Previous studies highlighted how relational networks between organizational members may help them to share knowledge, information, and resources (Kwon and Adler, 2014; Fuchs and Reichel, 2023).

The ongoing development of digital solutions and the increasing adoption of flexible practices (Kerman *et al.*, 2022) raise the question of how the interactions among the employees of a virtual team may guarantee proper levels of internal cohesion, engagement, and, more generally, positive behaviours. This question may seem relevant, particularly given the scarcity of social interactions in remote work settings (Wang *et al.*, 2020).

In particular, the relationship with a supervisor is considered one of the main factors in an employee's work environment (Van der Heijden *et al.*, 2010). However, social interactions at work are increasingly transitioning from purely physical to predominantly virtual spaces (Wang *et al.*, 2019; Wang *et al.*, 2021). Indeed, limited research has investigated the relationship between supervisors and their peers within a remote work context, highlighting the positive impacts of specific leadership approaches on team performance (Purvanova and Bono, 2009) and a decrease in the frequency and quality of their social interactions (Zigurs, 2003).

Based on relational cohesion theory (Lawler *et al.*, 2008), and consistent with affect exchange theory (Thye *et al.*, 2002), repeated interaction among people promotes social cohesion within the group where they identify by sharing positive emotions. Relational cohesion theory (Lawler *et al.*, 2000) explains how different structural conditions of social interaction may favour a relational unit, becoming an object of awareness and commitment (Lawler and Jeongkoo, 1996). One of the necessary conditions to stimulate relational cohesion is represented by the frequency of interaction among actors. More specifically, the frequency of interaction with the supervisor may reinforce the social cohesion, leading individuals to be more committed to their social groups, experience positive attitudes, and perceive more support from them (Thye *et al.*, 2002).

Perceived Supervisor Support (PSS) is defined as the perception of employees regarding how supervisors care about their wellbeing and value their contributions (Kottke and Sharafinski, 1988). Specifically, PSS is a social exchange, in which employees perceive “the degree to which supervisors value their contributions and care about their wellbeing” (Eisenberger *et al.* 2002).

Applying the relational cohesion theory within work groups, we propose the following hypothesis:

H1. The frequency of interaction between supervisors and peers is positively related to PSS in remote settings.

2.2 The relationship between the frequency of interaction, PSS, POS, and work engagement

Relational cohesion theory and affective exchange theory explain that the social interaction and the exchange of positive emotions among employees lead not only to internal cohesion within the team but also reinforce the support perceived by both the organization and the supervisor (Lawler *et al.*, 2008; Thye *et al.*, 2002). In line with this perspective, the exchange of different resources (e.g. emotions, knowledge, etc.) is an important form of interaction that gives rise to cohesion and a perception of higher closeness and support from the actor you interact with. At the same time, the interactions with supervisors may strengthen the commitment towards the organization, mitigating the sense of isolation and the reduced perception of support from their organizations that remote workers often face (Wang *et al.*, 2019; Spilker and Breaugh, 2021; Wang *et al.*, 2021).

Perceived Organizational Support (POS) is defined as employees’ feelings about the extent to which organizations value their contributions and care about their wellbeing (Eisenberger *et al.*, 1986).

According to some studies (Eisenberger *et al.*, 2002, 1986), PSS can enhance the level of POS since supervisors can be seen as agents of the organization, who directly convey information from this to the employees. In the current situation, characterised by an increase in remote working, organizations may be perceived as more distant by employees, not only physically but also institutionally, and, thus, less supportive.

As previously discussed, relational cohesion may reinforce the relationship between supervisors and their collaborators, leading the latter to perceive more support from their leaders and, consequently, also from their organizations. Starting from this assumption we propose the following hypothesis:

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H2. PSS is positively related to POS in remote settings.

Furthermore, the support generated by an ongoing frequency of interaction may reinforce the social cohesion of employees within their teams, which could make them feel more engaged in their job roles.

As argued by Boccoli *et al.* (2023), work engagement may be conceptualized as a result of social construction. In this sense, the authors distinguish three essential social conditions at the base of work engagement: social interaction, social exchange, and social recognition. In line with this perspective, frequent interaction with supervisors can help workers feel different emotions, get social support, and have identity recognition, which can make them engaged.

Following these considerations, we expect that POS and PSS fostered by an ongoing frequency of interaction may positively influence work engagement, for instance reducing the sense of isolation due to physical and psychological distance experienced during the pandemic (Wang *et al.*, 2021). Thus, we propose the following hypotheses:

H3. POS is positively related to work engagement in remote settings.

H4. PSS is positively related to work engagement in remote settings.

2.3 Performance extra-role in remote settings

Performance extra-role refers to a series of discretionary behaviours, which are not expected within the employment agreement.

If different studies have investigated the relationship between work engagement and performance extra-role within a traditional working context (Boccoli *et al.*, 2023; Ozyilmaz, 2020; Byrne *et al.*, 2016; Bakker *et al.*, 2012; Rich *et al.* 2010), no one has yet analysed the relationship between the frequency of interaction of supervisors and their collaborators, work engagement and performance extra roles, especially in remote settings.

In this study, we are interested in investigating if ongoing frequency of remote interaction with a supervisor fosters the work engagement of employees and, consequently, their performance extra-role: proactivity, knowledge sharing, creativity, and adaptivity. With proactivity, we intend the self-initiated and future-oriented performance aimed at changing a specific situation (Grant and Ashford, 2008; Eldor and Harpaz, 2016). Knowledge sharing represents the process by which individuals exchange knowledge more or less explicitly, creating a new one shared by the whole organization (Inkpen and Tsang, 2005; Van den Hooff and De Ridder, 2004). Creativity refers to the generation of new, innovative, and useful ideas regarding processes, products, services, and procedures in organizations (Eldor and Harpaz, 2016). Adaptivity concerns the ability of employees

to respond in a constructive way to new and unpredictable work settings (Griffin *et al.*, 2007; Pulakos *et al.*, 2000).

Literature has demonstrated that work engagement plays a crucial role in influencing the performance of employees in their extra-role behaviours (Boccoli *et al.*, 2023). Indeed, studies showed that work engagement positively affects employee performance, including innovative work behaviour, organizational citizenship behaviour, and creativity (Talebzadeh and Karatepe, 2020; Boccoli *et al.*, 2023).

This relationship can be explained by the fact that increasing engagement levels can create a sense of obligation, fostering increased interaction among employees (Naqshbandi *et al.*, 2024). In other words, higher levels of engagement lead workers to feel more committed to their job roles, fulfilling the actions required by those roles and even exhibiting positive behaviours not explicitly outlined in their employment agreements. Even if prior research has indicated that remote employees might exhibit lower performance levels, be less proactive, and tend to procrastinate (Murthy, 2017; Wang *et al.*, 2021; Cigna, 2020), we propose that consistent interaction with supervisors could positively impact their positive behaviours. In line with relational cohesion theory (Lawler *et al.*, 2008), by fostering regular engagement with supervisors, remote employees are likely to display more positive behaviours, thus strengthening their perceived relational cohesion within the group in which they work. This increased cohesion, in turn, is expected to boost their overall level of engagement, which in turn is anticipated to positively influence their performance extra-role. In line with these considerations, we propose the following hypotheses:

H5. Work engagement is positively related to proactivity in remote settings.

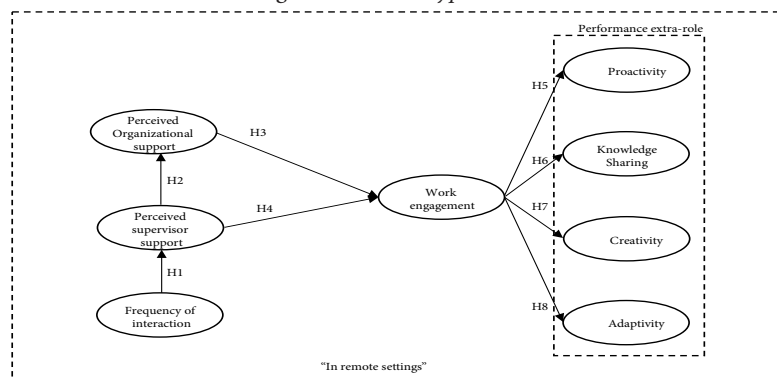
H6. Work engagement is positively related to knowledge sharing in remote settings.

H7. Work engagement is positively related to creativity in remote settings.

H8. Work engagement is positively related to adaptivity in remote settings.

Figure 1 reports the eight hypotheses and the overall model that will be empirically tested.

Fig. 1: Model and hypotheses



Source: Authors' elaboration

3. Method

3.1 Context, participants, and procedure

The research model was tested using data gathered through a survey administrated from November 2020 to December 2020 within an Italian information consulting company that implemented remote working practices during the pandemic associated with Covid-19.

The questionnaire was distributed with the help of the HR department through an e-mail, ensuring employees the anonymity of the gathered data. The questionnaire included demographic questions (e.g., age, gender, work years), questions related to the frequency of use of different communication channels between employees and their supervisors before and during the pandemic (such as face-to-face, video call, call, instant messaging, etc.) and the questions related to the constructs under exam.

The questionnaire required approximately 20 minutes to be completed. A total of 410 respondents out of 1,540 employees filled it in, showing a response rate equal to 27%. The final sample was composed of 127 women (31%) and 283 men (69%), with a mean age of 42 years ($SD = 10.08$). Participants reported average tenure with the organization of 5 years ($SD = 5.35$).

3.2 Measures

Independent variables and mediators

The frequency of interaction was measured with a scale ranging from 1 (Never) to 7 (Many times per day). Participants could specify how often they were used to interacting with their supervisor considering the last month.

Next, the participants were asked to answer questions on a seven-point Likert scale, from 1 (strongly disagree) to 7 (strongly agree).

PSS was measured with the four-item, Italian version scale adapted from the SPOS (Rhoades *et al.*, 2001). A sample item for PSS is “My supervisor cares about my opinions”. All items show good internal consistency (Cronbach’s $\alpha = 0.87$).

POS was measured with four items, Italian version scale adapted from the SPOS (Rhoades *et al.*, 2001). A sample item for POS is “My organization really cares about my well-being”. All items show good internal consistency (Cronbach’s $\alpha = 0.89$).

Work engagement was measured with the nine-item version of the Utrecht Work Engagement scale (UWES; Schaufeli *et al.*, 2002). The UWES assesses the three dimensions of work engagement: vigour, dedication and absorption. Sample items include the following: “At my work, I feel I am bursting with energy”. All items show good internal consistency (Cronbach’s $\alpha = 0.94$).

Dependant variables: extra-role performance

The participants were asked to answer questions on a seven-point Likert scale, from 1 (very little) to 5 (great deal).

Proactivity was measured with the three-item, Italian version of proactivity scale developed by Griffin *et al.*'s (2007). Sample items include the following: "Made changes to the way his/her core tasks are done". All items show good internal consistency (Cronbach's alpha = 0.76).

Knowledge sharing was measured with the three-item, Italian version of proactivity scale developed by Van den Hooff and Hendrix's (2004). Sample items include the following: "Regularly informs colleagues of what s/he is working on". All items show good internal consistency (Cronbach's alpha = 0.84).

Creativity was measured with six item, Italian version scale adapted and developed by Zhou and George's (2001). Sample items include the following: "Being an inspiring source for creative ideas." All items show good internal consistency (Cronbach's alpha = 0.88).

Adaptivity was measured with the three-item, Italian version of adaptivity scale developed by Griffin *et al.*'s (2007). Sample items include the following: "Successfully adapted changes in his/her core tasks.". All items show good internal consistency (Cronbach's alpha = 0.84).

Control variables

In line with other studies, three socio-demographic variables - age, gender, and years of work in the organization - have been included in the model as control variables (Breevaart *et al.*, 2014). Previous studies have demonstrated that age may have a direct effect on work engagement. This relationship could be observed even within a remote working context (Breevaart *et al.*, 2014).

3.3 Statistical analysis

Firstly, descriptive statistics were used to show a general overview of the constructs considered as well as the frequency of interaction and of the communication channel used by employees before and during pandemic.

Secondly, in order to evaluate the reliability and validity of constructs in our measurement models, we assessed Cronbach's alpha, Average Variance Extracted (AVE), and Composite Reliability (CR).

Thirdly, Structural Equation Modelling (SEM) was used to test the hypotheses and the relationships between the various constructs. SEM, which combines factor and regression analyses among one or more dependent and independent variables (Muthén and Muthén, 1998-2015), is one of the most effective techniques used to test mediation models.

Additionally, the Comparative Fix Index (CFI; Bentler, 1990), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990) are reported in order to test the model fit. The CFI is considered the best approximation of the population value for a single model, with values greater than or equal to 0.90 considered indicative of a good fit (Medsker *et al.*, 1994). The SRMR is a standardized summary of the average covariance residuals. A favourable value is less than 0.10 (Kline, 1998). The RMSEA is a measure of the average standardized residual per degree of freedom. A favourable value is less than or equal to 0.08, and values less than or equal to 0.10

are considered “fair” (Browne and Cudeck, 1989). All the analyses were performed in Stata 14.

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4. Results

4.1 Descriptive statistics

Table 1 presents means, standard deviations, and correlations of the variables. The empirical analyses indicated that demographic variables (age, gender, work years) were not significantly correlated with the variables investigated in this study. Frequency of interaction between supervisor and collaborator related positively to PSS, POS, and work engagement. Results show also that high levels of work engagement coincide with higher levels of PSS and POS.

Also, results show that work engagement is positively related to performance extra-role, especially to proactivity and knowledge sharing.

Tab. 1: Means, standard deviations and inter-correlations

	Mean	SD	FI	PSS	POS	WE	Pr
Frequency of interaction	5.39	1.91					
Perceived Supervisor Support (PSS)	5.44	0.93	0.3150**				
Perceived Organizational Support (POS)	5.20	1.19	0.3471**	0.5348**			
Work Engagement (WE)	5.38	1.16	0.3291**	0.3799**	0.5580**		
Proactivity (Pr)	3.94	0.59	0.0774	0.1228	0.1663	0.3060**	(.76) *
Knowledge Sharing	4.28	0.63	0.2146**	0.1995	0.2794**	0.3491**	0.2935**
Creativity	3.78	0.69	0.1147	0.1565**	0.1403	0.1912**	0.5452**
Adaptivity	4.08	0.59	0.1590	0.1361	0.1592	0.2691**	0.4387**
Gender	1.30	0.46	0.0595	-0.0188	-0.0037	0.0603	-0.0584
Age	41.18	10.15	-0.0580	-0.1118	-0.0277	0.1030	-0.0267
Work years	5.34	5.34	-0.0452	0.0094	-0.0616	0.0145	-0.0730

	KS	Cr	Ad	Gender	Age	Work years
Knowledge Sharing (KS)						
Creativity (Cr)	0.3081**					
Adaptivity (Ad)	0.2798**	0.4613**				
Gender	0.1388	-0.0869	-0.0034	1.000		
Age	0.0424	-0.0671	-0.0507	-0.1847**	1.000	
Work years	0.0127	0.0457	-0.0801	-0.0640	0.2844**	1.000

Note. ** = Significant at $p < 0.05$

Source: Authors' elaboration

Table 2 presents the Composite Reliability (CR), Average Variance Extracted (AVE), and Cronbach's α values of the analysed constructs. All constructs exhibit an AVE exceeding 0.5, confirming convergent validity. Additionally, the CR values for all constructs surpass the 0.7 threshold, indicating satisfactory consistency among factors. To assess discriminant validity, we followed Fornell and Larcker's (1981) approach, ensuring that

the AVE of each latent variable exceeds the squared correlation with any other construct. Results confirm that each latent variable shares more common variance with its respective items than with items from other constructs in the model. Moreover, all Cronbach's α values exceed the 0.7 threshold, affirming the internal consistency of the constructs (Kim *et al.*, 2016).

Tab. 2: Average Variance Extracted, Composite Reliability and Cronbach alpha

Constructs	AVE	CR	α
Perceived Supervisor Support (PSS)	0.67	0.89	0.87
Perceived Organizational Support (POS)	0.66	0.88	0.89
Work Engagement (WE)	0.62	0.94	0.94
Proactivity (Pr)	0.51	0.75	0.76
Knowledge Sharing	0.56	0.84	0.84
Creativity	0.56	0.88	0.88
Adaptivity	0.64	0.84	0.84

Note. ** = Average Variance Extracted (AVE), Composite Reliability (CR) and Cronbach alpha (α)

Source: Authors' elaboration

Table 3 shows that, before and during the pandemic, the frequency of interaction with the supervisor has not significantly changed. Before the pandemic, 57% of employees used to interact with their supervisor at least 2 or 3 times per week. During the pandemic, the situation has remained similar with more than half of employees (52%) affirming to interact with their supervisor at least 2/3 times a week.

Tab. 3: Frequency of interaction between collaborators and their supervisors pre and during the pandemic

Frequency of interaction	Pre-pandemic		During pandemic	
	Respondents	Percentage	Respondents	Percentage
Never	6	1.56%	6	1.53%
Rarely	38	9.90%	30	7.65%
1 time per month	28	7.29%	34	8.67%
2/3 times a month	47	12.24%	60	15.31%
Once a week	48	12.50%	59	15.05%
2/3 times per week	79	20.57%	89	22.70%
1 time per day	49	12.76%	31	7.91%
Many times per day	89	23.18%	83	21.17%
Total	384*	100%	392**	100%

* Pre pandemic, N = 384 employees

** During pandemic, N = 392 employees

Source: Authors' elaboration

As depicted in Table 4, before the pandemic emails, face-to-face meetings and phone calls were the most common communication channels used by employees to interact with their supervisors (respectively

with a use of 47%, 37%, and 30% very frequently or systematically). Emails, video calls, and phone calls were the communication channels mostly used by employees to interact with their supervisors during the pandemic (respectively with a use of 49%, 45% and 35% very frequently or systematically).

The frequency of use of instant messaging and shared documents during and pre-pandemic periods remains unchanged (respectively with a use of 32% and 30% very frequently or systematically).

Tab. 4: Frequency of use of communication channels between collaborators and their supervisors pre and during the pandemic

Pre-Pandemic	Face-to-face		Video call		Phone call		Shared document		Instant messaging		Blog, forum		Email		Fax	
	Re	Perc	Re	Perc	Re	Perc	Re	Perc	Re	Perc	Re	Perc	Re	Perc	Re	Perc
Never	17	4.3	129	32.9	14	3.65	49	12.4	36	9.1	256	65.0	1	0.3	297	75.2
Very rarely	39	9.9	88	22.4	33	8.4	61	15.5	47	11.9	66	16.8	16	4.1	46	11.7
Rarely	31	7.9	54	13.8	39	9.9	48	12.2	56	14.1	35	8.9	14	3.6	21	5.3
Sometimes	73	18.6	71	18.1	94	23.9	90	22.8	92	23.2	18	4.6	52	13.3	16	4.1
Frequently	87	22.1	25	6.4	95	24.1	67	17.0	73	18.4	10	2.5	123	31.4	5	1.3
Very frequently	73	18.6	19	4.9	75	19.0	45	11.4	64	16.2	6	1.5	104	26.5	5	1.3
Systematically	73	18.6	6	1.5%	44	11.2	34	8.6	28	7.1	3	0.8	82	20.9	5	1.3
During Pandemic	Face-to-face		Video call		Phone call		Shared document		Instant messaging		Blog, forum		Email		Fax	
	Re	Perc	Re	Perc	Re	Perc	Re	Perc	Re	Perc	Re	Perc	Re	Perc	Re	Perc
Never	195	49.1	17	4.3	21	5.3	60	15.1	38	9.6	261	66.2	3	0.8	335	84.4
Very rarely	115	28.9	25	6.3	31	7.9	42	10.6	38	9.6	57	14.5	13	3.2	31	7.8
Rarely	41	10.3	27	6.8	28	7.1	32	8.0	34	8.6	27	6.9	25	6.3	13	3.3
Sometimes	24	6.1	64	16.1	80	20.3	62	15.6	80	20.2	21	5.3	41	10.4	8	2.0
Frequently	15	3.8	85	21.4	97	24.6	83	20.9	79	19.9	13	3.3	121	30.6	4	1.0
Very frequently	3	0.8	89	22.4	79	20.0	65	16.3	73	18.4	11	2.8	94	23.7	4	1.0
Systematically	4	1.0	90	22.7	59	14.9	54	13.6	55	13.9	4	1.0	99	25.0	2	0.5

Source: Authors' elaboration

4.2 Common method variance

With the purpose of avoiding ambiguity in the questionnaire, questions have been designed to be specific and simple with the help of the HR department of the company (Podsakoff *et al.*, 2012). First, we used the Harman single-factor test method, running an exploratory factor analysis of the measurement items of all variables.

The maximum unrotated factor variance interpretation rate was equal to 31.59%, which was less than 50%, indicating that the common method bias of the sample data was not severe (Podsakoff *et al.*, 2003).

Second, we used the Unmeasured Latent Method Construct (ULMC) approach to test common method bias (Richardson *et al.*, 2009). We defined two models. Model 1 includes all the constructs considered in this study. Model 2 adds a latent variable named "CMB" on which all items of the four variables were loaded. The results reveal that there was no significant difference in the model fit between Model 1 (χ^2 (469, N = 410) = 957.910, $p < 0.001$; TLI = 0.93, CFI = 0.94 and RMSEA = 0.05) and Model 2 (χ^2 (467, N = 410) = 935.855, $p < 0.001$; TLI = 0.93, CFI = 0.94 and RMSEA = 0.05). Thus, no serious common method bias exists in our study.

4.3 Confirmatory factor analysis

We considered seven nested models with various numbers of factors. The fit indexes of the models are presented in Table 5 and confirm that the seven factors model is the one with the better/ best fit (for all the indexes). Thus, it is the best approach as the measurement part of our model. The factor loadings of all items were significant at $p < 0.01$.

Tab. 5: Results of the confirmatory factor analysis

Model	CFI	TLI	RAMSEA	SRMR	χ^2	df	Difference
1 factor	0.457	0.421	0.157	0.157	4993.627	495	
2 factors	0.643	0.619	0.127	0.102	3450.810	494	1542.817*
3 factors	0.785	0.767	0.099	0.90	2269.553	487	1181.257*
4 factors	0.834	0.819	0.088	0.94	1861.840	484	407.713*
5 factors	0.842	0.826	0.086	0.93	1790.953	480	70.887*
6 factors	0.879	0.866	0.075	0.86	1476.563	475	314.389*
7 factors	0.941	0.934	0.053	0.63	957.910	469	518.653*

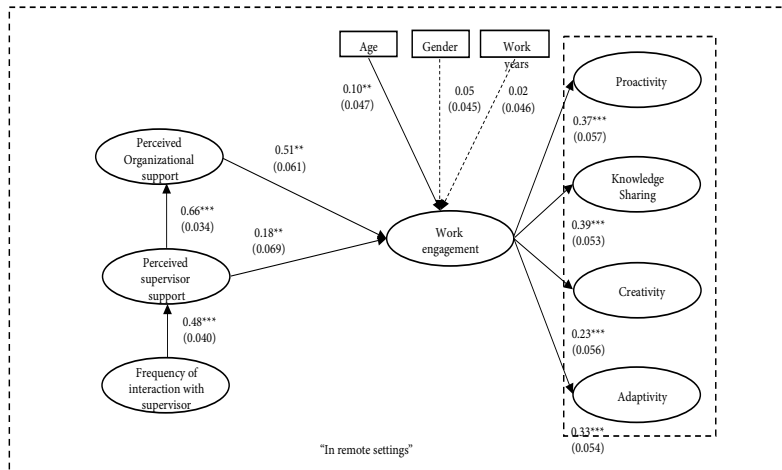
Note: CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Squared Residual; Difference = difference in chi-square between the consecutive models; * = Significant at $p < 0.01$

Source: Authors' elaboration

4.4 Hypotheses testing - Path analysis

Figure 2 shows the structural model of the relationship between the various constructs. The hypothesized model showed a good fit to the data ($\chi^2(601) = 1100.096$, CFI = 0.939, SRMR = 0.051 and RMSEA = 0.048).

Fig. 2: SEM results of the hypothesized model



Notes: Standardized coefficients are reported, with standard errors in the parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: Authors' elaboration

Results indicate that the frequency of interaction is significantly and positively related to PSS ($\beta = 0.48, p < 0.01$). Moreover, PSS relates positively POS ($\beta = 0.66, p < 0.01$) and work engagement ($\beta = 0.18, p < 0.05$) while POS relates work engagement more than PSS ($\beta = 0.51, p < 0.01$).

Work engagement relates positively to proactivity ($\beta = 0.37, p < 0.01$), knowledge sharing ($\beta = 0.39, p < 0.01$), creativity ($\beta = 0.23, p < 0.01$) and to adaptivity ($\beta = 0.33, p < 0.01$).

As for the control variables, age has a significant effect on work engagement ($\beta = 0.10, p < 0.05$), whereas gender and work years have an insignificant one ($\beta = 0.05, \beta = 0.02$).

Table 6 shows the significance of the indirect effects of: (i) the frequency of interaction on POS through PSS; (ii) the frequency of interaction on work engagement through PSS; (iii) POS on performance extra role (proactivity, knowledge sharing, creativity, and adaptivity) through work engagement. These results suggest that PSS partially mediates the relationships between the frequency of interaction and POS and work engagement. Furthermore, results suggest that the relationship between POS and respectively proactivity, knowledge sharing, creativity, and adaptivity are partially mediated by WE.

Tab. 6: Significance testing of indirect effect. Sobel Test

	Indirect effect	St. Er.	z-value	p-value	Conf. interval
FI → PSS → POS	0.215*	0.029	7.454	0.000	0.158- 0.271
FI → PSS → WE	0.052*	0.020	2.587	0.010	0.013 - 0.092
POS → WE → Pr	0.062*	0.014	4.302	0.000	0.034 - 0.090
POS → WE → KS	0.086*	0.018	4.754	0.000	0.050 - 0.121
POS → WE → Cr	0.042*	0.013	3.324	0.001	0.017 - 0.067
POS → WE → Ad	0.066*	0.015	4.351	0.000	0.036 - 0.096
PSS → WE → Pr	0.023	0.009	2.409	0.016	0.004 - 0.041
PSS → WE → KS	0.032	0.013	2.480	0.013	0.007 - 0.057
PSS → WE → Cr	0.016	0.007	2.188	0.029	0.002 - 0.030
PSS → WE → Ad	0.024	0.010	2.418	0.016	0.005 - 0.044

Note. St. Er = Standard error; Conf. Interval = Confidence interval * = Significant at $p < 0.01$

Source: Authors' elaboration

6. Discussion

6.1 Theoretical contributions

Through this study, we demonstrated that ongoing interaction between supervisors and their collaborators positively relates to PSS, POS, and, consequently, to work engagement and performance extra-role of remote workers. In doing so, we provide four main contributions.

Firstly, adopting a more micro-sociological perspective, we suggest that work engagement and performance extra-role may be investigated through the lens of relational cohesion theory. As argued by Boccoli *et al.* (2023), work engagement can be studied as a social construct characterized

by social interaction, social exchange, and social recognition. These three social conditions are embedded in the relationship with the supervisor. Results confirm that a higher frequency of interaction positively influences the support perceived by the supervisor.

As already illustrated, during the pandemic many employees have communicated with their supervisors frequently through communication channels like video calls and calls able to offer rich and synchronic communication. Compared to other communication channels, these solutions allow individuals to communicate in a way that resembles face-to-face interaction, permitting the exchange of different levels of communication that include also paraverbal language, i.e. tone and speed of the voice, body language, etc. (Daft and Lengel, 1984, 1986; Dennis *et al.*, 2008).

In line with relational cohesion theory and affect exchange theory (Thye *et al.*, 2002; Lawler *et al.*, 2008) we suggest that the adoption of these communication channels, together with a high frequency of interaction with supervisors, may have favoured the social and relational cohesion through the exchange of positive emotions among individuals.

As discussed in the theoretical background, a constant frequency of interaction is one of the main conditions to stimulate relational cohesion. Our results demonstrate that a higher frequency of interaction corresponds to a higher level of support perception offered by the supervisor.

Secondly, in contrast with previous studies (e.g., Zigurs, 2003), our results show that the frequency of virtual interaction between leaders and their collaborators has not decreased. This could be explained by the fact that during the pandemic period many individuals were compelled to communicate and collaborate solely remotely. Furthermore, attempting to maintain levels of interaction similar to those experienced before the pandemic may be a response offered by organizations and, more generally, by individuals to maintain a sense of “normality”.

Thirdly, our research demonstrates that the support offered by supervisors influences the support offered by the organization within a forced remote working context. This could be explained by the role played by supervisors and their ability to reduce the social and physical distance from the organization itself. During the pandemic, employees have been less able to perceive the proximity of their organization if not mainly through the interaction with their supervisor, and this situation could have reinforced the role of the latter in representing the organization within the collective consciousness of employees. Even in this case, we assume that the relational and social cohesion generated by an ongoing frequency of interaction might have augmented the commitment of employees towards their work organization.

Despite the implementation of mandatory remote work practices during the pandemic, various challenges have arisen for employees, impacting their wellbeing and behaviours, such as isolation and procrastination (Wang *et al.*, 2021). Our research indicates that increased interaction frequency may indirectly influence positive behaviours among remote employees. The social support perceived by employees during the pandemic has helped alleviate some of these negative challenges,

fostering a reciprocal relationship between employees, supervisors, and the organization as a whole. Ultimately, the positive perception of support provided by organizations and supervisors prompts employees to respond in kind through positive actions, thereby aiding organizations in achieving their goals (Rhoades and Eisenberger, 2002).

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6.2 Managerial contributions

This research provides some useful indications to organizations to deal with remote working, an increasingly present context to be tackled in the future (Fuchs and Reichel, 2023).

First, a higher frequency of interaction between supervisors and their collaborators may help managers to offer and maintain high levels of support within remote work settings.

Second, we suggest that if an organization shows the ability to support and care about the feelings and concerns of their employees in a remote working context, it will be able to stimulate their degree of engagement.

Finally, we suggest that, if managers and organizations aim to stimulate the performance extra role of their collaborators in a remote working context, mitigating the sense of isolation and procrastination, they could invest in ongoing and frequent interaction between supervisors and their peers.

7. Conclusions

7.1 Limitations and avenues for further research

This study is not without limitations. Firstly, it analyses a sample consisting only of one type of worker (consultants). Secondly, being a cross-sectional study, it could not explore the causal relationships among the investigated constructs. Thirdly, additional control variables could be included in the model. Fourthly, colleague support could also be investigated.

In future research, it would be valuable to longitudinally investigate what other variables might influence relational and social cohesion and, subsequently, how these relate to employee wellbeing. Additionally, it would be beneficial to use congeneric approaches to estimate unidimensional latent constructs, providing more robust results compared to suboptimal parallel-based scoring methods (Marzi *et al.*, 2023). Given that many organizations are currently experiencing hybrid forms of work, it would be intriguing to explore whether the frequency of interaction with supervisors might similarly impact employee behaviour in this context. Additionally, investigating these relationships within small and medium-sized enterprises (SMEs) could provide valuable insights. Furthermore, delving deeper into this interaction and understanding the differences between face-to-face and remote interactions would be valuable. Understanding how different communication channels, based on their richness and synchronicity, may differently influence the relationship between supervisors and employees is

crucial. When is it better to interact remotely? When is it better to interact in person? Moreover, it could be intriguing to investigate which leadership approaches are most effective and suitable in hybrid work contexts. Is there a more effective leadership approach for promoting balanced and healthy work flexibility? Lastly, considering work engagement as a social construct, it would be interesting to explore the other two social conditions: social exchange and social recognition (Boccoli *et al.*, 2023).

7.2 Conclusions

This research demonstrates that the relational cohesion supported by a higher frequency of interaction between supervisors and their collaborators lead them to perceive greater support within a forced remote working context. Social and relational cohesion leads employees to perceive more support from their supervisor and, indirectly, from their organization when they work remotely.

We have shown that the PSS influences positively the POS of employees, demonstrating that the proximal distance exhibited by supervisors to their collaborators in a remote working context is able to enhance the perception of the support offered by the whole organization. This effect could be explained because the supervisor plays a key role in representing the organization.

Our study demonstrates how a higher frequency of interaction with the supervisor may influence positively the performance extra-role of employees through social support and work engagement within a remote working context.

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