Digital communication overload in the hybrid workplace. Can it be contained?

Pre-Analysis Plan

Carlier Justine, Cockx Bart, Fontenay Sébastien, Tojerow Ilan, Wittich Anna
30/07/2024

Contents

Intervention 2
Treatment administration and tools used 4
Primary Outcomes 4
Register data 4
Survey data 5
Secondary outcomes 5
Register data 5
Survey data 6
Experimental data 7
List of moderators 7
Experimental design 7
Randomisation method 8
Randomisation unit 9
Planned number of clusters 9
Planned number of observations 9
Sample size by treatment arms 9
Power calculation 9
Data used for the power analysis 9
Power analysis 9
Power analysis taking non-response rate into account 10
Methodology of the analysis 11
References 12
Appendices 14
Appendix 1: the well-being check 14
Appendix 2: the six focuses 15
Appendix 3: list of references used to design the survey 23
Appendix 4: experimental design 30
Appendix 5: randomisation method 30
Appendix 6: results of the power calculations for L0-agents and L10-agents separately 31
Appendix 7: results of the power analysis taking non-response into account (10% and 60%) 32

Intervention

Since the pandemic, working a couple of days per week remotely from home has become the norm in many organisations. The ongoing discourse on remote work reveals its potential benefits on objective and (self-reported) performance, alongside improved work satisfaction (Bloom et al., 2024, Choudhury et al., 2020, Angelici & Profeta, 2024). However, concerns regarding potential overwork and the imperative to protect employees' right to disconnect underscore the complexities of modern work arrangements (Angelici & Profeta, 2024). Issues such as Zoom fatigue, interruptions at work, and challenges related to detachment from work in remote settings further emphasize the multifaceted nature of contemporary work environments (Felstead & Henseke, 2017; Fosslien & Duffy, 2020; Nesher Shoshan & Wehrt, 2022; Chen & Karahanna, 2018; Cai et al., 2018).

Prior studies suggest a correlation between digital communication practices, employee well-being, and productivity. Excessive email use and frequent, often poorly managed meetings can lead to negative outcomes such as burnout, lower job satisfaction and reduced productivity (Mazmanian, Orlikowski, & Yates, 2013; Derks & Bakker, 2010). Studies have shown that constant connectivity, facilitated by digital communication tools, creates an environment of 'workplace tele pressure where employees feel compelled to remain constantly accessible, further exacerbating stress and reducing the ability to disengage from work during off-hours (Barber & Santuzzi, 2015). Conversely, research has highlighted that implementing effective strategies to manage digital communication can lead to significant improvements in both individual and organisational outcomes. For example, setting clear boundaries around email use and optimising meeting practices can help employees feel more in control of their work and personal time, thereby improving their overall wellbeing and productivity (Gajendran & Harrison, 2007). This body of literature underscores the importance of addressing digital communication overload to foster a healthier, more productive work environment.

Building on these insights, our research aims to assess the impact of targeted nudges designed to alleviate digital communication overload on employee productivity and well-being. We conduct a randomised controlled trial (RCT) within a Belgian public administration to assess the impact of nudges (tips) aimed at alleviating digital communication overload. The study seeks to assess the impact of these nudges on employee productivity and well-being.

More specifically, the primary outcomes of this research are critical to understanding and addressing the challenges associated with digital communication in the modern workplace. By focusing on these outcomes, we aim to provide actionable insights that can improve employee well-being and productivity. This study will use three data sources: registry data, survey data and experimental data, each of which offers unique perspectives on the impact of digital communication management strategies.

1. **Productivity Metrics from Register Data**

Average Duration of Meetings on MS Teams per Week: The efficiency of meetings is a critical aspect of workplace productivity. Research has shown that long, unstructured meetings can drain employees' energy and reduce overall productivity (Rogelberg et al., 2006). By monitoring the average duration of meetings, we aim to assess whether our nudges can streamline meeting practices to make them more efficient and less time-consuming. Effective meeting management has been linked to higher job satisfaction and improved team performance (Allen et al., 2014).

Number of Meetings Attended per Week on MS Teams: Frequent meetings can disrupt workflow and contribute to employee burnout (Van der Lippe & Lippényi, 2020). By tracking the number of meetings attended, we can determine whether the nudges help to reduce (unnecessary) meetings, allowing employees more uninterrupted time to focus on their tasks.

Email volume (sent, received) on average per day: Excessive email communication can lead to information overload, causing stress and hindering productivity (Derks & Bakker, 2010). Managing email overload is crucial for maintaining a healthy work-life balance and improving overall job performance (Barley et al.,2011).

2. Well-being metrics from survey data

Overall job satisfaction: Employee well-being is a significant predictor of productivity, creativity and retention (Harter et al., 2003). Research indicates that organizational interventions can significantly enhance job satisfaction by cultivating a work environment that values and supports employee efforts (Haeckl & Rege, 2024; Page & Nilsson, 2017). Our surveys assess job satisfaction to capture the immediate and lasting effects of the intervention. By regularly measuring these aspects, we can gauge the effectiveness of the nudges in creating a supportive and productive work environment.

Self-reported productivity and work engagement: Research has consistently shown that self-reported productivity reflects employees' perceptions of their own effectiveness and task completion, which can be influenced by organizational interventions (Judge et al., 2001). Similarly, work engagement, characterized by vigour, dedication, and absorption in work tasks, is vital for organizational success and employee well-being (Rich et al., 2010; Page & Nilsson, 2017). These metrics provide valuable insights into how nudges aimed at optimizing digital communication practices may enhance employees' perceived productivity and their engagement to work.

The intervention involves proposing to managers and employees a specific set of “best” organisational practices (nudges) intended to improve operational efficiency. Theses nudges primarily address the utilisation of digital communication tools, such as email, scheduling meetings, and techniques for disengaging from work. The objected is to provide strategies that minimise unnecessary communication and meetings while optimizing the effectiveness of these communication channels, as well as supporting employees in disconnecting from work,

Between April and June 2024, the employees of a large Belgian public administration receive six brief well-being surveys to gauge general well-being at work. Upon completing a survey, individuals randomly assigned to the treated group encounter one of the six different nudges. Subsequently, a few days after the short well-being checks, another email containing a permanent link to the nudges is sent to the members of the treatment group. Below is the schedule of the nudges and reminders sent between April and June.

- April 18: short well-being survey to all, and tip n°1 on emails use to treated group only;
- April 25: short well-being survey to all, and tip n°2 on emails use to treated group only;
- May 13: reminder of tips 1 and 2 to treatment group only;
- May 16: short well-being survey to all, and tip n°3 on meetings organisation to treated group only;
- May 23: short well-being survey to all, and tip n°4 on meetings organisation to treated group only;
- May 30: reminder of tips 3 and 4 to treated group only;
- June 6: short well-being survey to all, and tip n°5 on disconnection from work to treated group only;
- June 13: short well-being survey to all, and tip n°6 on disconnection from work to treated group only;
- June 27: reminder of tips 5 and 6 to treated group only;

Following the intervention at the end of the Summer, a final short well-being survey is sent to all, and, in addition, a reminder to the treatment group only. The last short well-being survey is sent on August

29. Upon completing the survey, individuals from the treatment group are redirected to a page containing the six nudges together. A week after (on September 5), the reminder is sent to the treatment group with the six nudges again. At the end of September (the exact date is not yet fixed), a longer well-being survey is administered.

Treatment administration and tools used

As explained above, between April and June, all employees of the public administration receive six brief well-being surveys to gauge general well-being at work. The employees are divided into three different groups: treated, controls, and those excluded from the experiment (see below for the exclusion criteria).

The experiment has been designed in such a way that individuals receive the treatment (i.e. are displayed the nudge/tip) only if they are assigned to the treated group and, either respond to the well-being check, or if they click on the link in the reminder message. As French and Dutch are both official languages in this public administration, the well-being check is sent in French and in Dutch depending on the preferred language chosen by the individual. In Appendix 1, we present the well-being check in French. Individuals are asked "to which extent are you satisfied with your work week so far?" and can choose from five different smileys, ranging from dissatisfied to satisfied, to respond.

The tool used to send the well-being check is *Mailjet*. This is a digital tool already used within the administration to communicate with the agents. This tool allows us to create different contact lists to send the same email to all the individuals in the same group. In addition, it collects information on whether the email has been sent or opened, and on which smiley clicked. Only for individuals in the treatment group who click on one of the 5 smileys or those who click on the link in the reminder sent after each set of two tips, a new webpage opens with the tips on emails usage, meeting organisation and disconnection from work (see Appendix 2 for the six tips). For individuals in the control group (or not involved in the experiment), a webpage opens which mentions: "thank you for your participation". At the end of these webpages (for all groups), a sentence was written with a link to a webpage of the administration with the useful contact information if people do not feel well at work.

As explained in detail below, a longer survey is administered at the end of the experiment to have a better understanding of the well-being, productivity and disconnection in the administration. This survey is sent to everyone by *Mailjet,* which creates a unique link to the anonymized identifier of the agent. This enables to match the survey responses with the personal information in the register data described below.

Primary Outcomes

We measure the effects on primary outcomes, both separately for the employees and the managers and jointly for both groups included in the experiment, up to one year after the experiment. We will consider three data sources:

- Register data of the employees of the public administration,
- Survey data

Register data

Productivity metrics linked to the use of emails, and time spent and number of online meetings:

- Average duration of meetings on MS Teams per week,
- Number of meetings attended per week on MS Teams,
- Email volume (sent) on average per day.

Duration and frequency of MS Teams meetings, as well, as the email volume, are continuously monitored and can be accessed from the registry data.

For the register data, we consider the next 2 time periods as primary outcomes:

(i) the average of the outcomes over the period between the moment the first reminder has been sent and the last week of June

(ii) the average during September, period after which the reminders are sent and overlapping with the period to which the longer survey refers.

We will also analyse how the impact on these productivity measures changes each week over time up to 9 months after the start of the intervention. We are particularly interested in getting a better insight into how the impact on these outcomes evolves over time depending on the nature of the tip. E.g., we expect the email volume to be affected directly after the first two tips, while the number and duration of meetings should be affected only from the third tip onwards. Such dynamic patterns could be useful to validate our analysis. Furthermore, an analysis of the dynamics of the impact on these outcomes can help us in getting a better understanding in the mechanisms. However, note that the analysis of the dynamics is an exploratory analysis and that these dynamic effects are therefore not considered as primary outcomes.

Survey data

General job satisfaction will be assessed through the above-mentioned short surveys dispatched to all employees via email throughout the intervention.

For the general job satisfaction, we consider the following measure as primary outcomes:

(i) Average of the short well-being surveys 3 to 6;[1]

(ii) The average change between surveys 1 and 6.

Measure (ii) aims at testing whether since the start of the intervention the well-being of the treated group grows significantly over time relative to the control group since the start of the intervention. In a more exploratory analysis, we will also study more in detail the dynamic pattern of the changes in well-being between surveys 1 and 6.

Additionally, a post-intervention evaluation will be conducted as part of the longer well-being survey. The following constructs are considered as primary outcomes:

- Productivity (self-perceived/reported productivity and work engagement)

Secondary outcomes

The secondary outcomes will be evaluated from the same two main sources as before. In addition, a third source will be considered: experimental data.

Register data

Absenteeism metric categorised by the following two reasons: 1) sickness and 2) holidays leave.

- 1) A binary indicator equal to one if a person was absent for a reason for at least half a day due to one of the above reasons within the first six months after the start of the experiment.
- 2) The total time a person was absent due to one of the above reasons as a fraction of the contractual working time within the first six months after the start of the experiment.

Productivity metrics associated with the utilisation of chats[2]

[1] We choose to exclude the first two surveys, and use can them as a placebo test.

[2] We will use this information to examine whether people are compensating for scheduling meetings or sending emails by using chat messages.

- Number of private chats (on Teams) recorded on average per working team measured over the same two time periods as the three primary outcomes in the register data.

Survey data

In the longer well-being survey, which will be administered after the intervention (in connection with an internal survey administered by the public administration) our aim is to evaluate the following constructs:

- Working situation (e.g. whether the individual manages a team and how much time the individual works from home)
- Well-being (work satisfaction, social life satisfaction, free time satisfaction, general life satisfaction)
- Disconnection (perceptions and beliefs on disconnection/teleworking, actual behaviour, detachment from work)

The well-being survey will be sent during the second half of September. Some of the questions asked in the survey have been chosen based on the literature and others have been chosen based on a previous survey ran by the Belgian public service administration in which the intervention is conducted. The survey is divided following the sections above. In Appendix 3, two tables are presented: one with the references used to construct each question and the relevance and effects in the literature, and another with the list of all questions and possible answers.[3]

[3] The exact questions/wording are still subject to changes because it needs to be approved by the trade unions by the end of the Summer.

Experimental data

Indicators of email opening/clicking behaviour (capturing treatment intensity):

- An indicator that reveals whether the employees has responded to one or several of the short well-being survey, thereby indicating their engagement with the nudges,
- An indicator that reveals whether the employee has opened one or several emails with permanent links to the nudges,
- An indicator that reveals whether the employee has clicked on one or several of the permanent links to the information within the different nudges.
- An indicator whether individuals have seen (i.e. clicked on the short well-being survey or on a link in the reminder sent either before or after the Summer)
    - at least one of the nudges;
    - all six nudges;
    - at least one of the nudges by type (nudges 1-2 on e-mails; 3-4 on meetings; 5-6 on disconnection).

This analysis helps to obtain more insight into the mechanism that generate the effects, such as to what extent a (lack of) effect is induced by (lack of) responsiveness and whether some nudges induce specific effects. Since members of the treatment group might forward reminders to individuals in the treatment group and we can observe whether individuals in the control group have clicked on these links, analysing this clicking behaviour also allows to study the extent of contamination of treatment to control group. In addition, it also makes it possible to construct Wald estimates that identify several local average treatment effects of the different types of compliers according to type of clicking behaviour (see methods of analysis below).

List of moderators

- Gender,
- The number (and age) of children interacted with age class and gender,
- For employees assigned to the experiment, the treatment status of the direct manager: treated, not treated of not participating in the experiment,
- The team size.

Experimental design

To create the sample and to construct the treatment and control group for the experiment, the public administration provided the researchers with an anonymized list of all the agents.[4] Blue-collar workers and unpaid trainees are excluded from the experimental intervention because they are not concerned by issues related to digital overload which the intervention aims at relieving,

Since we are concerned that contamination through communication between employees may confound the experimental assignment to treatment and control groups, we take some precautionary measures to minimize the risk of contamination. First, we implement the random assignment to treatment and control groups at the team level. Second, we exclude from the experimental intervention managers who have direct relations with multiple teams. This avoids having managers in the experiment leading multiple teams (as they lead other managers in charge of other teams), some of which are assigned to the treatment, while others to the control. As such, we not only avoid having managers with an ambiguous treatment status, but also reduce the risk that the teams in the control group get contaminated by the treatment of treated teams led by the same manager.

[4] This list does not include the external agents who persistently collaborate with other employees of the public administration. As we lack information on these external agents, these agents had to be excluded from the intervention and the analysis.

Because the hierarchy is complex, we introduce some notation to clarify how we concretely implement this experimental design. In this public administration there are seven different hierarchical levels: the lowest level N (an agent who is not manager), the N+1 level (a direct manager), the N+2 level (a manager of a manager), and so on up to the N+6 level. Some managers manage other managers (possibly in addition to a team of non-managers). To clarify the position of each agent, we therefore introduce the following notation:

- L0-agent: an individual who is not managing any other employee.
- L1-agent: an individual who manages directly L0-agents, and possibly other managers of any level. L1-agents can be subdivided into L10-agents and L11-agents.
    - L10-agent: an individual who manages directly L0-agents, and no other managers.
    - L11-agent: an individual who manages directly L0-agents and at least one other manager of any level.

A team at level L1 is a team composed of all L0-agents with their direct managers, i.e. L1-agents.

As mentioned above, to reduce the risk of contamination between teams, (i) the random assignment to the treatment condition is implemented at the L1-teamlevel, and (ii) the six nudges are sent to L0-agents and L10-agents only. This means that no nudges are sent to any direct managers who manage other managers. Note, however, that the L0-agents subordinate of L11-agents may still be randomly assigned to the treatment condition and therefore receive the six nudges.

Finally, since some L1-agents and L0-agents have been involved in the development of the experiment, we excluded them from the group eligible for assignment to the intervention. Furthermore, the entire team of L0-agents who is directly managed by someone who is informed about the experiment, and L10-agents who are directly managed by someone who is informed about the experiment have also been removed from the pool of eligible agents.

After removing all agents that are not eligible for the experiment, the sample consists of 1,200 L0-agents and 130 L10-agents. The 1,200 L0-agents are divided into 216 teams at L1-level, which is also the level at which the random assignment is implemented.

Randomisation method

The randomisation has been done on a computer using the command “set seed” and “gen u = runiform()” sur STATA. This command assigns a random number between 0 and 1 to each team (cluster) within strata defined by any combination of gender and experimental inclusion status of the manager. There are therefore 4 strata.

- Stratum n°1: the manager is a man and is included in the experiment, i.e. a male L10-agent.
- Stratum n°2: the manager is a woman and is included in the experiment, i.e. a female L10-agent.
- Stratum n°3: the manager is a man and is not included in the experiment, i.e. a male L11-agent.
- Stratum n°4: the manager is a woman and is not included in the experiment, i.e. a female L11 agent.

Because the sizes of teams are very unequal, we have created sub-strata based on the size of the team (see Appendix 4). In total, there are 9 sub-strata. The randomisation was done within each of these 9 sub-strata. Based on this distribution, we ran the randomisation within each substratum. We repeated the randomization until the sample was balanced within each stratum based on the following variables measured during the month prior to the start of the intervention, i.e. March 2024 : gender, age, language, nationality, the number of children, the working time, the contract type, the level of the individual, the family situation (single, married, widowed, legally separated, de facto separated, legally cohabiting), the partner situation (no income, professional income), the department in which the individual works, the logarithm of the average number of chats sent on Teams per week, and the same variable without

taking the logarithm. In addition, we included the primary outcomes variables: the logarithm of the average number of meetings attended per week on MS Teams, the same variable without taking the logarithm, the logarithm of the average number of emails sent per day, and the same variable without taking the logarithm. We obtain balanced data for both L0-agents and L10-agents together and separately.

Randomisation unit

Randomisation take place at the L1-level (team level).

Planned number of clusters

All 216 teams (clusters) at the L1 level within the Belgian public administration were randomized in either to the treated or control group.

Planned number of observations

There are 1,200 L0-agents and 130 L10-agents included in the experiment.

Sample size by treatment arms

For the L0-agents, there are 108 clusters in the treatment group and 108 clusters in the control group. Within these clusters, there are 652 individuals assigned to the control group and 548 assigned to the treatment group.

For the L10-agents, 65 managers are in the treatment group and 65 managers are in the control group.

Power calculation

Data used for the power analysis

To run the power analysis for the experiment, we used the latest available register data: the data from March 2024. The data cover a period of one month (30 days) because the data from February 2024 have not been extracted, and the data from January 2024 cover the period from mid-December to mid-January (covering a period of holidays in Belgium). The tests are done on 3 different variables:

- The number of emails sent per day: the number of daily emails were computed by dividing the total number of emails by 30 (the length of the period extraction) as we consider that individuals can also send emails during the weekend.
- The audio duration of Teams meetings per hour per week: the audio duration has been computed by dividing the duration by 21 (the number of working days for the period), and then multiplying it by 5 (the number of working days per week), and finally by dividing this number by 3600 to obtain the audio duration in hours instead of seconds.
- A standardised variable (mean of 0 and standard deviation of 1).
- A standardised variable (mean of 0 and standard deviation of 1) for multiple response rates to the survey after the experiment (10%, 30%, 60% and 100%).

Power analysis

We ran three different power analyses: one in which we included all team members (including both subordinates and managers), one in which we include only subordinates, and one in which we include only the managers. We do this because we plan to implement the analysis at these three levels of aggregation. We report here only the power analysis for the case when all team members are included. The analyses for the two other cases can be found in Appendix 5. For the first two we always implement the power analysis in which clustering at the team-level is accounted for. We always consider two scenarios for the intra-cluster correlation coefficient (ICC): we consider values that are observed in the pre-treatment data for the two first outcome variables. In all analyses we take the unequal team sizes

into account by conditioning it on the observed coefficient of variation of team size. Depending on the outcomes measured, we used the corresponding intraclass correlation coefficients (see below).

In this section we consider the power analysis assuming a response rates of 100 %. This holds for all outcomes that are measured in the register data. In the next section we also consider a response rate of 30% for the standardized variable, i.e. any outcome variable that is measured by the survey data. We believe that a response rate of 30% is realistic because this is the lower bound of the response rate that we observed for the first two short well-being surveys. In Appendix 6 we also report a sensitivity analysis allowing for response rates of 10% and 60%.

Power analysis for outcomes measured in the register data

	Sample size			**Intraclass correlation coefficient**	**α = 0,05; power = 0.8 % and cvcluster = 0.78**	
Outcomes	**N**	**N_0 (k_0 and m_0)**	**N_1 (k_1 and m_1)**	**ICC**	**MDE**	**%Δ**
1	1,330	717[5] (108 and 6.64)	613[6] (108 and 5.68)	0.19	0.032	0.93%
2	1,330	717 (108 and 6.64)	613 (108 and 5.68)	0.29	0.022	1.36%
Standardised	1,330	717 (108 and 6.64)	613 (108 and 5.68)	0.19 0.29	0.24 0.26	- -

Notes: MDE = minimum detectable effect, %Δ = percentage of the effect relative to the mean
Outcome 1 = The number of emails sent per day: the number of daily emails were computed by diving the total number of emails by 30 (the length of the period extraction) as we consider that individuals can also send emails during the weekend (mean of the control group = 3.448443; standard deviation of the control group = 0.1260698; standard deviation of the treatment group = 0.1450065)
Outcome 2 = The audio duration of Teams meetings per hour per week: the audio duration has been computed by dividing the duration by 21 (the number of working days for the period), and then multiplying it by 5 (the number of working days per week), and finally by dividing this number by 3600 to obtain the audio duration in hours instead of seconds (the mean of the control group is 1.623145; the standard deviation of the control group = 0.0807328; standard deviation of the treatment group = 0.0894389)
Standardised = A standardised variable (mean of 0 and standard deviation of 1)
N = total number of individuals in the experiment
N_0 (k_0 and m_0) = total number of individuals in the control group (k_0 is the number of clusters in this control group, and m_0 is the average number of individuals within each cluster in the control group)
N_1 (k_1 and m_1) = total number of individuals in the treatment group (k_1 is the number of clusters in this treatment group, and m_1 is the average number of individuals within each cluster in the treatment group)
ICC: intraclass correlation coefficient calculated by loneway assigning both employees and managers belonging to the same team to the same cluster.
The power is set at 80 %, the significance level (α) is set at 5%.
CVcluster: coefficient of variation for cluster sizes (the standard deviation of cluster size divided by the mean of cluster size)

The first outcome that we are looking at is the number of emails sent per day. With the sample size of 1,330 individuals and the distribution of our clusters between the treatment (613 individuals) and control (717 individuals) groups, and by using the intra correlation coefficient of 0.19 (with a significance level (alpha) 0.05 and power 0.08 and coefficient of variation for cluster sizes 0.78), we can detect an effect of the treatment of 3.21 percentage points. In addition to the minimum detectable effect (MDE), the table also reports the percentage size of the effect relative to the mean which is equal to 0.93%. For the second outcome of interests, the audio duration of Teams meetings per hour per week, we can detect an effect of the treatment of 2.21 percentage points. Finally, the table above reports the results for a standardised variable (with mean 0 and standard deviation of 1).

Power analysis taking non-response rate into account

In this part, we ran the power analysis for different response rate in the survey. More precisely, we have estimated to have a survey response rate of approximately 30%. As a result, in the table below we present

[5] The total number of individuals is 717 and is composed by 652 agents and 65 managers.
[6] The total number of individuals is 613 and is composed by 548 agents and 65 managers.

the results for 30% and 100% of participation rates (100% i.e. corresponding to the benchmark previously reported). Considering different response rates is equivalent to reducing the effective sample size. Other response rates (10% and 60% are available in the Appendix 6).

Intraclass correlation coefficients used in the table below are the one of the two previous outcomes presented in the previous section.

General power analysis

	Sample size			**Intraclass correlation coefficient**	**α = 0,05; power = 0.8 % and cvcluster = 0.78**
Outcomes	**N**	**N_0 (k_0 and m_0)**	**N_1 (k_1 and m_1)**	**ICC**	**MDE**
Standardised: 30%	399	215.1 (108 and 1.99)	183.9 (108 and 1.70)	0.19 0.29	0.33 0.34
Standardised: 100%	1,330	717 (108 and 6.64)	613 (108 and 5.68)	0.19 0.29	0.24 0.26

On the table above, we used a standardised variable, and we take into account the non-response rate. For both response rates (30% and 100%) we used the same ICC and CVcluster as for the outcomes above. The MDEs that we obtain for a response rate of 30% is 33 and 34 percentage points.

Methods of the analysis

The main analysis is standard. We will regress the outcomes of interest in a linear regression on the treatment indicator. We will consider three types of analysis:

1. An analysis including only L0 agents. In this analysis the standard errors will be clustered at the team level, i.e. at L1;
2. An analysis including only L10 managers. For discrete outcomes the Huber-White standard errors robust against heteroskedasticity are taken.
3. An analysis including both L0 and L10 agents. In this analysis the standard errors will be clustered at the team level, i.e. at L1.

To analyse the moderating effects, the moderators will be each time included both with and without interaction with the treatment indicator.

The benchmark analysis is an intention-to-treat (ITT) analysis. To obtain more insights into the mechanism by which the ITT-effects come, we will also, in a secondary analysis, construct Wald estimates by instrumenting the treatment indicator by several indicators of clicking behaviour listed in the subsection on experimental data within the section discussing secondary outcomes. This allows us to identify the LATEs of the individuals of compliers, i.e. individuals who have seen a particular set of nudges. These Wald estimators boil down to dividing the ITT estimates by the fraction of individuals in the treatment group that has seen the corresponding set of nudges reduced by the fraction of individuals in the control group, if any, that have clicked on these nudges.

As is clear from the above exclusion rules of managers from the experiment, we are concerned about information spillovers from individuals in the experimental group to individuals in the control group. This could clearly bias the measurement of the treatment effect downwards. However, these exclusions

do not fully eliminate the risk of such spillovers. To test for the presence of this bias, we will implement two types of tests.

First, we aim at testing whether we can measure any significant difference between the individuals that were excluded from the experiment to avoid information spillover and the individuals in the control group of the experiment. As individuals are not randomly assigned to these two groups, we will follow a difference-in-differences strategy to control for the potential selection bias affecting this comparison. Such a strategy can only be implemented for outcomes in the register data of the firm for which we have information prior to the intervention. We will consider pre-intervention data for which the parallel trend assumption is not violated. Second, we will monitor the extent to which the intranet pages that display the focus messages are viewed by individuals in the control group or those excluded from the experiment. As mentioned above, we can check whether any individuals in the control group or outside the experiment have seen any of these focus messages as we monitor whether they click on one of the links in the reminder messages. This allows to identify the extent of spillover to the control group and those excluded from the experiment.

References

Allen, J., Lehmann-Willenbrock, N., & Landowski, N. (2014). Linking pre-meeting communication to meeting effectiveness. *Journal of Managerial Psychology*, *29*(8), 1064-1081.

Angelici, M., & Profeta, P. (2024). Smart working: work flexibility without constraints. *Management Science, 70(3*), 1680-1705.

Barber, L. K., & Santuzzi, A. M. (2015). Please respond ASAP: workplace telepressure and employee recovery. *Journal of occupational health psychology*, *20*(2), 172.

Barley, S. R., Meyerson, D. E., & Grodal, S. (2011). E-mail as a source and symbol of stress. *Organization science*, *22*(4), 887-906.

Bloom, N., Han, R., & Liang, J. (2024). Hybrid working from home improves retention without damaging performance. *Nature*, 1-6.

Cai, X., Gong, J., Lu, Y., & Zhong, S. (2018). Recover overnight? Work interruption and worker productivity. *Management Science*, *64*(8), 3489-3500.

Chen, A., & Karahanna, E. (2018). Life Interrupted. *MIS quarterly*, *42*(4), 1023-A14.

Choudhury, P., Foroughi, C., & Larson, B. (2021). Work-from-anywhere: The productivity effects of geographic flexibility. *Strategic Management Journal, 42(4*), 655-683.

Derks, D., & Bakker, A. B. (2010). The impact of e-mail communication on organizational life. *Cyberpsychology*, *4*(1).

Felstead, A., & Henseke, G. (2017). Assessing the growth of remote working and its consequences for effort, well-being and work-life balance. *New Technology, Work and Employment*, *32*(3), 195-212.

Fosslien, L., & Duffy, M. W. (2020). How to combat zoom fatigue. *Harvard Business Review*, *29*(1), 1-6.

Gajendran, R. S., & Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: meta-analysis of psychological mediators and individual consequences. *Journal of applied psychology*, *92*(6), 1524.

Haeckl, S., & Rege, M. (2024). Effects of Supportive Leadership Behaviors on Employee Satisfaction, Engagement, and Performance: An Experimental Field Investigation. *Management Science.*

Harter, J. K., Schmidt, F. L., & Keyes, C. L. (2003). Well-being in the workplace and its relationship to business outcomes: A review of the Gallup studies.

Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review. Psychological bulletin, 127(3), 376.

Mazmanian, M., Orlikowski, W. J., & Yates, J. (2013). The autonomy paradox: The implications of mobile email devices for knowledge professionals. *Organization science*, *24*(5), 1337-1357.

Nesher Shoshan, H., & Wehrt, W. (2022). Understanding "Zoom fatigue": A mixed-method approach. *Applied Psychology, 71(3),* 827-852.

Page, N. C., & Nilsson, V. O. (2017). Active commuting: workplace health promotion for improved employee well-being and organizational behavior. *Frontiers in psychology*, *7*, 219625.

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. Academy of management journal, 53(3), 617-635.

Rogelberg, S. G., Leach, D. J., Warr, P. B., & Burnfield, J. L. (2006). " Not another meeting!" Are meeting time demands related to employee well-being?. *Journal of Applied Psychology*, *91*(1), 83.

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. Educational and psychological measurement, 66(4), 701-716.

Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: development and validation of a measure for assessing recuperation and unwinding from work. Journal of occupational health psychology, 12(3), 204.

Van der Lippe, T., & Lippényi, Z. (2020). Beyond formal access: Organizational context, working from home, and work–family conflict of men and women in European workplaces. *Social indicators research*, *151*(2), 383-402.

Appendices

Appendix 1: the well-being check[7]

Dans quelle mesure êtes-vous satisfait de votre semaine de travail jusqu'à présent ?

Votre bien-être est notre principale priorité au

Faites nous savoir dans quelle mesure vous êtes satisfait de votre semaine de travail jusqu'à présent en cliquant sur l'un des emojis ci-dessous.

N'oubliez pas que votre réponse est anonyme et que vous pouvez gagner un prix en répondant à cette question !

(1) Pas du tout satisfaisante (5) Très satisfaisante

[7] The name of the administration has been removed from the picture here.

Appendix 2: the six focuses

- Focus 1: emails usage

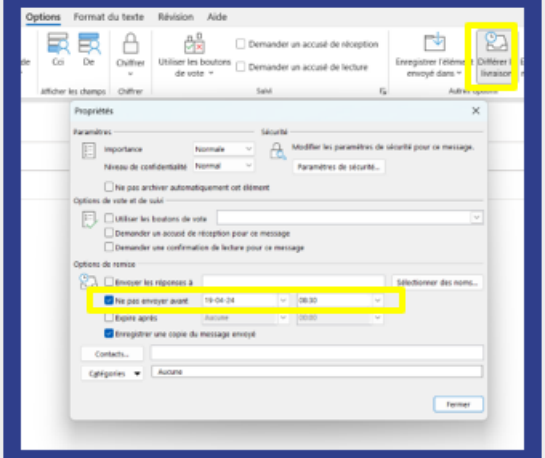
Merci d'avoir participé au check bien-être.

Dans ce nouvel environnement de travail hybride, les questions de déconnexion sont au cœur des préoccupations d[illegible], car il est crucial d'appréhender ce nouveau contexte. Cette notice a pour objectif de vous fournir des conseils issus du manuel de bonnes pratiques du SPRB afin de vous apprendre à mieux naviguer dans ce nouveau monde du travail.

1. Comment reporter l'envoi des e-mails le soir et le week-end ?

Si vous envoyez exceptionnellement un e-mail le soir, le week-end ou un jour férié, utilisez l'option **"Différer la livraison" disponible dans Outlook et programmez l'envoi pour le lendemain.**

L'e-mail sera alors délivré automatiquement à l'heure que vous avez fixée (pour autant qu'Outlook soit activé sur votre ordinateur).



De cette manière, vous évitez de donner du travail à d'autres personnes en dehors des heures de travail et vous n'incitez pas vos collègues à lire leurs e-mails en dehors de leurs heures de travail habituelles.

2. Comment ne pas surcharger la boîte mail de ses collègues ?

À (destinataire principal): pour les personnes qui doivent répondre; vous pouvez spécifier directement pour chaque point spécifique quelles personnes doivent répondre via le bouton @ (raccourci : Alt Gr + @)

CC (copie carbone) : pour les personnes qui doivent être informées mais qui ne doivent pas répondre. Cette fonction ne doit pas être destinée à inscrire systématiquement toute la ligne hiérarchique ou à justifier votre travail.

De cette manière, vous indiquez clairement à vos collègues s'il est attendu de leur part qu'ils réagissent ou non à votre mail, afin de réduire la surcharge de e-mails. Aussi, évitez de mettre systématiquement toute votre ligne hiérarchique en CC.

atique : activée

- Focus 2: emails usage

Merci d'avoir participé au check bien-être.

Dans ce nouvel environnement de travail hybride, les questions de déconnexion sont au cœur des préoccupations du [illegible], car il est crucial d'appréhender ce nouveau contexte. Cette notice a pour objectif de vous fournir des conseils issus du manuel de bonnes pratiques du SPRB afin de vous apprendre à mieux naviguer dans ce nouveau monde du travail

1. L'email n'est pas toujours le meilleur moyen de communication

Alors que l'email est une méthode de communication courante, nous en envoyons tous trop, ce qui peut mener à une surcharge de travail ou de stress. Cela mène à une communication peu efficace. À la place, utilisez plutôt ces méthodes :

Appel téléphonique

Si vous avez une question complexe, si vous voulez partager une émotion ou si vous devez transmettre un message difficile à un collègue, un **appel téléphonique** est le meilleur moyen de faire avancer les choses et d'améliorer les relations de travail.

Message sur Teams

Si vous avez besoin d'une réponse rapide, **un message sur Teams** est une bonne idée.

Les groupes Teams peuvent être utilisés pour partager des informations et des documents.

Ainsi, vous évitez d'envoyer des emails superflus, et vous obtenez des réponses plus rapidement.

2. Comment éviter d'envoyer trop d'emails lorsque l'on collabore à un document

Lorsque l'on collabore à un document, envoyer des emails fréquents avec des mises à jour des documents peut mener à une perte d'informations. Envisagez plutôt les méthodes suivantes :

Sharepoint

Si vous souhaitez travailler à plusieurs sur un même document, partagez ces documents via **Sharepoint** pour éviter de devoir envoyer des versions successives par email et éviter les pertes de données.

Ainsi, vous ne perdez pas d'information si vous collaborez sur le même document.

- Focus 3: meetings organisation

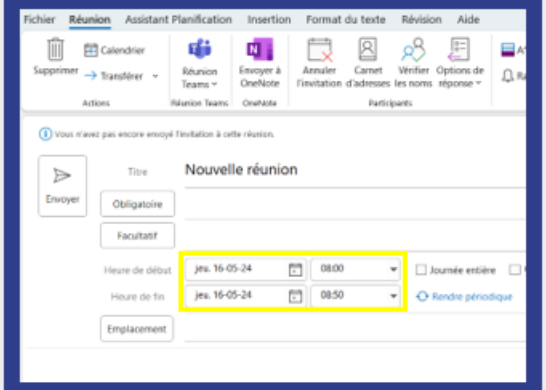
Merci d'avoir participé au check bien-être.

Dans ce nouvel environnement de travail hybride, les questions de déconnexion sont au cœur des préoccupations du [illegible], car il est crucial d'appréhender ce nouveau contexte. Cette notice a pour objectif de vous fournir des conseils issus du manuel de bonnes pratiques du SPRB afin de vous apprendre à mieux naviguer dans ce nouveau monde du travail.

Nous organisons et assistons tous à beaucoup de réunions. Il est dès lors important que celles-ci soient organisées de manière efficace. Ci-dessous, plusieurs conseils pour une meilleure organisation de ces réunions.

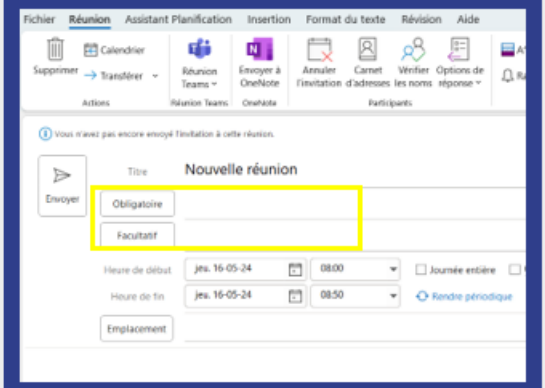
1. Optimisez les temps de réunions

Prévoyez des plages de réunions de **50 minutes** plutôt qu'une heure, en modifiant l'heure de fin manuellement sur Outlook afin de pouvoir laisser des pauses entre vos différentes réunions si vous en avez.



2. Veillez à ce que les bonnes personnes soient invitées aux réunions

Lorsque vous planifiez une réunion, identifiez clairement qui y participera (présence obligatoire ou optionnelle), n'invitez pas trop de monde, seulement les personnes dont l'expertise et les connaissances sont requises.



De cette manière, vous permettez de réduire le temps et la quantité de réunions ainsi que la surcharge de travail que cela peut engendrer.

- Focus 4: meetings organisation

Merci d'avoir participé au check bien-être.

Dans ce nouvel environnement de travail hybride, les questions de déconnexion sont au cœur des préoccupations d[illegible], car il est crucial d'appréhender ce nouveau contexte. Cette notice a pour objectif de vous fournir des conseils issus du manuel de bonnes pratiques du SPRB afin de vous apprendre à mieux naviguer dans ce nouveau monde du travail.

Nous organisons et assistons tous à beaucoup de réunions. Il est dès lors important que celles-ci soient organisées de manière efficace. Ci-dessous, plusieurs conseils pour une meilleure organisation de ces réunions.

1. Veillez à organiser des réunions efficaces

En tant qu'organisateur·rice d'une réunion

Veillez à préparer un agenda lorsque vous envoyez l'invitation de la réunion afin que chacun puisse se préparer correctement à la réunion

Veillez à arriver à l'heure et à ce que la réunion commence à l'heure prévue et désignez un « timekeeper »

Enfin, guidez l'ensemble du groupe à travers les différents points de l'agenda pendant la réunion

2. Optimisez le temps de vos réunions grâce à quelques astuces simples

En tant que « timekeeper »

Celui-ci indiquera le temps qu'il reste au fur et à mesure de la réunion, pour ne pas dépasser le temps imparti

En tant que participant·e

- Veillez à vous présenter à l'heure afin de ne pas retarder la réunion
- Préparez-vous à l'avance en fonction de l'agenda de la réunion

De cette manière, vous vous assurez de ne pas perdre de temps et de ne pas le dépasser. Grâce à cela, vous permettez de réduire les temps de réunions ainsi que la surcharge de travail que cela peut engendrer.

- Focus 5: disconnection from work

Merci d'avoir participé au check bien-être.

Dans ce nouvel environnement de travail hybride, les questions de déconnexion sont au cœur des préoccupations du [illegible] car il est crucial d'appréhender ce nouveau contexte. Cette notice a pour objectif de vous fournir des conseils issus du manuel de bonnes pratiques du SPRB afin de vous apprendre à mieux naviguer dans ce nouveau monde du travail.

Quelques conseils pour une bonne utilisation des outils numériques

Se **déconnecter** du travail implique d'éviter les activités liées au travail et de désengager mentalement du travail pendant notre temps libre. Afin de vous aider à atteindre cet aspect important de l'équilibre entre vie privée et vie professionnelle, vous trouverez ci-dessous quelques conseils pour l'utilisation des outils numériques.

Cela est particulièrement important pour les personnes qui occupent des postes de manager, car le fait **de donner l'exemple** constitue un élément essentiel pour l'ensemble de l'équipe.

Pendant la journée, prévoyez des moments de déconnexion pendant votre travail :

- Faites des réunions en présentiel plutôt que par Teams, et ayez des conversations en personne plutôt que par téléphone par exemple

Mettez votre ordinateur dans un casier au bureau si vous ne faites pas de télétravail le lendemain

Fixez collectivement avec votre équipe des moments de pauses café pendant lesquelles vous vous déconnectez.

Séparez vos communications personnelles et professionnelles en utilisant votre téléphone de service (si vous en avez un) uniquement pour les communications professionnelles ; faites également cela avec vos emails.

Enlevez les notifications de votre téléphone, ou bien mettez celui-ci en mode « ne pas déranger »

- Focus 6: disconnection from work

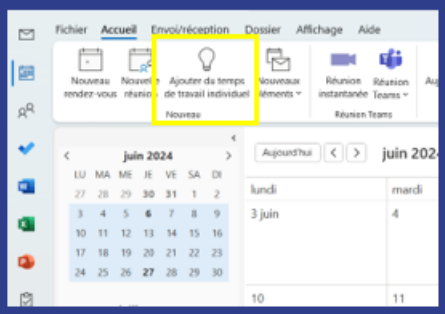
Merci d'avoir participé au check bien-être.

Dans ce nouvel environnement de travail hybride, les questions de déconnexion sont au cœur des préoccupations du [redacted], car il est crucial d'appréhender ce nouveau contexte. Cette notice a pour objectif de vous fournir des conseils issus du manuel de bonnes pratiques du SPRB afin de vous apprendre à mieux naviguer dans ce nouveau monde du travail.

Quelques conseils pour optimiser votre organisation du travail

Une organisation efficace du travail consiste à structurer les tâches et les horaires de manière à permettre des périodes de déconnexion (et de détente) des responsabilités professionnelles en dehors des heures de travail. Ci-dessous quelques conseils pour vous aider à mettre en œuvre cet aspect important de l'intégration de la vie professionnelle et de la vie privée afin d'optimiser votre organisation de travail :

Fixez des plages horaires dans votre agenda pour le travail individuel et essayez de les respecter (n'acceptez pas de réunions, ne consultez pas vos mails, supprimez les notifications de mails ou Teams si besoin, mettez votre téléphone en silencieux, et se mettre en « ne pas déranger » dans Teams. Cela permet d'éviter les interruptions pendant la journée. Minimiser les interruptions permet de mieux gérer le temps de travail et d'éviter d'empiéter sur le temps personnel.



Prévoyez des moments d'activités personnelles pour vous déconnecter pendant votre journée ou à la fin de celle-ci. Il est en effet important de prévoir du temps pour se relaxer. Par exemple, vous pouvez prévoir une promenade ou de faire une séance de yoga pendant votre pause midi.

Prenez des congés pour vous ressourcer, il est important que vous utilisiez tous vos jours de congés (avec l'accord de votre manager) avec au moins une fois 10 jours d'affilée pour faire une vraie coupure.

- Recap message focus 1 and 2

Bien appréhender ce nouvel environnement de travail est crucial pour votre bien-être !

Comme vous l'avez peut-être remarqué, deux checks bien-être vous ont été envoyés récemment. Si vous y avez participé, merci ! Si ce n'est pas le cas, nous espérons que vous participerez au prochain.

Vous trouverez ci-dessous les conseils tirés du guide de bonnes pratiques qui vous ont été présentés après ces checks bien-être.

Cliquez ici pour revoir les conseils sur les sujets suivants :

- 1. Comment reporter l'envoi des emails le soir et le week-end ?
- 2. Comment ne pas surcharger la boîte mail de vos collègues ?

Cliquez ici pour revoir les conseils sur les sujets suivants :

- 3. L'email n'est pas toujours le meilleur moyen de communication.
- 4. Comment éviter d'envoyer trop de mails lorsqu'on collabore à un document.

- Recap message focus 3 and 4

Bien appréhender ce nouvel environnement de travail est crucial pour votre bien-être !

Comme vous l'avez peut-être remarqué, deux checks bien-être vous ont été envoyés récemment. Si vous y avez participé, merci ! Si ce n'est pas le cas, nous espérons que vous participerez au prochain.

Vous trouverez ci-dessous les conseils tirés du guide de bonnes pratiques qui vous ont été présentés après ces checks bien-être.

Cliquez ici pour revoir les conseils sur les sujets suivants :

- 1. Optimisez les temps de réunions
- 2. Veillez à ce que les bonnes personnes soient invitées aux réunions

Cliquez ici pour revoir les conseils sur les sujets suivants :

- 3. Veillez à organiser des réunions efficaces
- 4. Optimisez le temps de vos réunions grâce à quelques astuces simples

- Recap message focus 5 and 6

Bien appréhender ce nouvel environnement de travail est crucial pour votre bien-être !

Comme vous l'avez peut-être remarqué, deux checks bien-être vous ont été envoyés récemment. Si vous y avez participé, merci ! Si ce n'est pas le cas, nous espérons que vous participerez au prochain.

Vous trouverez ci-dessous les conseils tirés du guide de bonnes pratiques qui vous ont été présentés après ces checks bien-être.

Cliquez ici pour revoir les conseils sur les sujets suivants :

- 1. Bonne utilisation des outils numériques

Cliquez ici pour revoir les conseils sur les sujets suivants :

- 2. Optimisation de l'organisation du travail

Appendix 3: list of references used to design the survey

Table 1. List of references used to construct the questions in the survey

Topic	Construct	Main source	Exact references	Explanation and relevance and effects in the literature
Working situation	Manager vs employee	Administration survey	Administration survey	
	WFH situation	Own form	Own form	
Productivity	Self-perceived/reported productivity	Follow Angelici & Profeta (2024, Management Science)	Angelici, M., & Profeta, P. (2024). Smart working: work flexibility without constraints. Management Science, 70(3), 1680-1705.	Following exact questions by Angelici & Profeta (Management Science), who report the following: Measures are consistent with measures used by existing case studies, reports, and toolkits focused on flexible work and productivity (see Pruchno et al. 2000, Kossek and Michel 2011, Golden 2012, etc.). Several effects found in the literature on working from home on self-perceived productivity: Angelici & Profeta (2024) Treatment of smart working arrangements --> The treatment increases the coefficient of self-assessed proactivity and respect for deadline by approximately 0.4 standard deviations. Deole et al (2023): increases in WFH frequency during the pandemic are associated with a rise in the hourly productivity by 0.138 point (Deole, S. S., Deter, M., & Huang, Y. (2023). Home sweet home: Working from home and employee performance during the COVID-19 pandemic in the UK. Labour economics, 80, 102295.)
	Work engagement	Short Utrecht Work engagement scale (UWES-3, based on Schaufeli et al., 2006)	Original scale: Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. Educational and	Short version (3 items) has been recently validated. Due to time constrains, apply that variant. It still distinguished between the following 3 topics: VI= vigor; DE = dedication; AB = absorption Relevant construct: Work engagement is currently a popular topic within many organisations, given its association with employee wellbeing and performance (e.g. Christian, Garza, & Slaughter, 2011; Halbesleben, 2010).

			psychological measurement, 66(4), 701-716.	Applied in the organisational behaviour/psychology/ human resource literature (e.g. Knight, C., Patterson, M., & Dawson, J. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. Journal of organizational behavior, 38(6), 792-81)) and the public health literature (e.g. Unda-López, A., Paz, C., Hidalgo-Andrade, P., & Hermosa-Bosano, C. (2023). Variations of work engagement and psychological distress based on three working modalities during the COVID-19 pandemic. Frontiers in Public Health, 11, 1191314.) Opposite of work engagement --> work exhaustion within the economics literature Work exhaustion: −0.564*** (logged value) (Bloom et al., 2015)
Well-being	Work satisfaction	Follow Angelici & Profeta (2024, Management Science)	Angelici, M., & Profeta, P. (2024). Smart working: work flexibility without constraints. Management Science, 70(3), 1680-1705.	The well-being assessment includes standard questions drawn from the British Household Panel Survey (Taylor et al. 1993). These questions are widely used in the literature on the economics of happiness (see reviews in Van Praag et al. 2003, Luhmann et al. 2012). Next to work satisfaction, our intervention might also have an effect on soclial life satisfaction, free time satisfaction and general life satisfaction. Effects found in the economics literature:
	Social life satisfaction			

	Free time satisfaction			Treated employees that could work 2 days from home: Work satisfaction: 0.351*** (Bloom et al., 2022) Job satisfaction increases by 12% (Choudhury, P., Khanna, T., Makridis, C. A., & Schirmann, K. (2024). Is hybrid work the best of both worlds? Evidence from a field experiment. Review of Economics and Statistics, 1-24.) Program improves workplace satisfaction by 0.27 standard deviations (Alan, S., Corekcioglu, G., & Sutter, M. (2023). Improving workplace climate in large corporations: A clustered randomized intervention. The Quarterly Journal of Economics, 138(1), 151-203.) Overall life satisfaction 0.246** (Cai, J., & Wang, S. Y. (2022). Improving management through worker evaluations: Evidence from auto manufacturing. The Quarterly Journal of Economics, 137(4), 2459-2497.)
	General life satisfaction			
Disconnection	Perceptions and beliefs on disconnection/teleworking	Based on the survey done by the administration, but own formulation	Survey of the administration	
	Actual behaviour			
	Detachment from work (recovery experience questionnaire)	Recovery Experience Scale (Sonnentag & Fritz, 2007)	Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: development and validation of a measure for assessing recuperation and unwinding from work. Journal of occupational health psychology, 12(3), 204. Follow subscale of: Fritz, C., Yankelevich,	Meta analysis on interventions for Improving Psychological Detachment From Work: A Meta-Analysis: Interventions showed a significant positive effect on detachment from work (d = 0.36) (Karabinski, T., Haun, V. C., Nübold, A., Wendsche, J., & Wegge, J. (2021). Interventions for improving psychological detachment from work: A meta-analysis. Journal of occupational health psychology, 26(3), 224.)

			M., Zarubin, A., & Barger, P. (2010). Happy, healthy, and productive: the role of detachment from work during nonwork time. Journal of Applied Psychology, 95(5), 977.	
Household situation	Children	Follow Angelici & Profeta (2024, Management Science)	Angelici, M., & Profeta, P. (2024). Smart working: work flexibility without constraints. Management Science, 70(3), 1680-1705.	Family/kids relevant e.g. for productivity at home.

Table 2. List of the questions and answers in the survey

Topic	Construct	Main source	English items	English – answer option
Household situation	Children	Follow Angelici & Profeta (2024, Management Science)	Select the number of children (and their age) you are responsible for:	Age brackets and then fill in numbers
Working situation	Manager vs employee	Administration survey	Do you manage a team?	• Yes • No
	WFH situation	Own form	How much percentage of your working time do you work from home?	Fill in number
Productivity	Self-perceived/reported productivity	Follow Angelici & Profeta (2024, Management Science)	Indicate your level of …	• 1 - Very low • 2 – Low • 3 – Average • 4 – High • 5 -Very hig
			... productivity during working hours (capacity to achieve assigned goals)	
			... efficiency at work (capacity to achieve assigned goals within an appropriate time)	
			... proactivity at work (capacity to take initiative that is appreciated by others)	
	Work engagement	Short Utrecht Work engagement scale (UWES-3, based on Schaufeli et al., 2006)	Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the '0' (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 6) that best describes how frequently you feel that way.	• 0 – Never • 1 – Almost never • 2 – Rarely • 3 – Sometimes • 4 – Often • 5 – Very often • 6 – Always
			At my work, I feel bursting with energy.	
			I am enthusiastic about my job.	
			I am immersed in my work.	

Well-being		Follow Angelici & Profeta (2024, Management Science)	On a scale from 1 to 7, where 1 corresponds to “highly dissatisfied”, and 7 corresponds to “highly satisfied”, indicate how much you are unsatisfied or satisfied with ...	• Not applicable • 1 - Highly dissatisfied • 2 • 3 • 4 • 5 • 6 • 7 – Highly satisfied
	Work satisfaction		… your work:	
	Social life satisfaction		… your social life:	
	Free time satisfaction		… your available free time:	
	General life satisfaction		… your life in general:	
Disconnection	Perception and beliefs on disconnection/teleworking	Administration survey * Own formulation	Working at the administration,…	• 1 (strongly disagree) • 2 (disagree) • 3 (neutral) • 4 (agree) • 5 (strongly agree)
			I feel obliged to work in the evenings	
			I feel obliged to work at weekends	
			I feel obliged to work during holidays	
			I feel obliged to work more than 7h36 per day (or 38h/week)	
			Are you aware of the administration’s advice on disconnection?	• Yes • No • Don’t know
			Do you think it is the role of the manager to put in practice that improves your teleworking experience? *	• Yes • No • Don’t know

			For a healthy teleworking environment at the administration, the following solutions are important to me:	
			• A general framework on disconnection for the whole administration • A disconnection charter for each team • An awareness campaign aimed at line managers • A charter of commitment to make the people concerned, particularly the hierarchy, aware of their responsibilities • An alert system if connections are made outside normal working hours • A system for blocking repeated abuse on a case-by-case basis	• 1 (strongly disagree) • 2 (disagree) • 3 (neutral) • 4 (agree) • 5 (strongly agree)
	Actual behaviour	Administration survey	The last months, how often did you go online in the evening (in addition to the statutory 7.36 hours)?	• Regularly (several times a week) • Occasionally (2 or 3 times a month) • Never
			The last months, how often did you go online in the weekend (in addition to the statutory 7.36 hours)?	• Every weekend • Sometimes • Never
	Detachment from work (recovery experience questionnaire)	Recovery Experience Scale (Sonnentag & Fritz, 2007)	The last months, during my off-job time…	• 1 (strongly disagree) • 2 (disagree) • 3 (neutral) • 4 (agree) • 5 (strongly agree)
			I got a break from the demands of work.	
			I forgot about work.	
			I didn't think about work at all.	
			I distanced myself from work.	

Appendix 4: randomisation method

The 9 sub-strata are detailed below:

- Stratum n°1: 80 teams
  - Sub-stratum 1: 40 teams (teams with size[8] between 1 and 4 + 1 team of size 5[9])
  - Sub-stratum 2: 22 teams (teams with size between 5 and 8 + 1 team of size 9[10])
  - Sub-stratum 3: 18 teams (teams with size strictly greater than 8)
- Stratum n°2: 50 teams
  - Sub-stratum 4: 34 teams (teams with size between 1 and 5 + 1 team of size 6)
  - Sub-stratum 5: 16 teams (teams with size strictly greater than 5)
- Stratum n°3: 54 teams
  - Sub-stratum 6: 36 teams (teams with size between 1 and 6)
  - Sub-stratum 7: 18 teams (teams with size strictly greater than 6)
- Stratum n°4: 32 teams
  - Sub-stratum 8: 20 teams (teams with size between 1 and 5)
  - Sub-stratum 9: 12 teams (teams with size strictly greater than 6)

[8] The size of the team is defined by the number of L0-agents and excludes therefore L10-agents.
[9] This team has been chosen randomly within all teams of size 5.
[10] Idem.

Appendix 5: results of the power calculations for L0-agents and L10-agents separately

Power analysis for L0-agents

	Sample size			Intraclass correlation coefficient	α = 0,05; power = 0.8 % and cvcluster = 0.87	
Outcomes	**N**	**N_0 (k_0 and m_0)**	**N_1 (k_1 and m_1)**	**ICC**	**MDE**	**%Δ**
1	1,200	652 (108 and 6.04)	548 (108 and 5.07)	0.22482	0.03363	1.09%
2	1,200	652 (108 and 6.04)	548 (108 and 5.07)	0.31788	0.02223	1.50%
Standardised	1,200	652 (108 and 6.04)	548 (108 and 5.07)	0.22482 0.31788	0.2541 0.2749	- -

Notes: MDE = minimum detectable effect, %Δ = percentage of the effect relative to the mean
Outcome 1 = The number of emails sent per day: the number of daily emails were computed by diving the total number of emails by 30 (the length of the period extraction) as we consider that individuals can also send emails during the weekend (mean of the control group = 3.099387; standard deviation of the control group = 0.1173866; standard deviation of the treatment group = 0.1449138)
Outcome 2 = The audio duration of Teams meetings per hour per week: the audio duration has been computed by dividing the duration by 21 (the number of working days for the period), and then multiplying it by 5 (the number of working days per week), and finally by dividing this number by 3600 to obtain the audio duration in hours instead of seconds (the mean of the control group is 1.481172; the standard deviation of the control group = 0.0791141; standard deviation of the treatment group = 0.0.0824723)
Standardised = A standardised variable (mean of 0 and standard deviation of 1)
N = total number of individuals in the experiment
N_0 (k_0 and m_0) = total number of individuals in the control group (k_0 is the number of clusters in this control group, and m_0 is the average number of individuals within each cluster in the control group)
N_1 (k_1 and m_1) = total number of individuals in the treatment group (k_1 is the number of clusters in this treatment group, and m_1 is the average number of individuals within each cluster in the treatment group)
ICC: intraclass correlation coefficient computed using the command loneway for L0-agents only
The power is set at 80 %, the significance level (α) is set at 5%.
CVcluster: coefficient of variation for cluster sizes (the standard deviation of cluster size divided by the mean of cluster size)

Power analysis for L10-agents

	Sample size			α = 0,05; power = 0.8%	
Outcomes	**N**	**N_0**	**N_1**	**MDE**	**%Δ**
1	130	65	65	0.2907	4.18%
2	130	65	65	0.1791	5.88%
Standardised	130	65	65	0.4952	-

Notes: MDE = minimum detectable effect, %Δ = percentage of the effect relative to the mean
Outcome 1 = The number of emails sent per day: the number of daily emails were computed by diving the total number of emails by 30 (the length of the period extraction) as we consider that individuals can also send emails during the weekend (mean of the control group = 6.949744; standard deviation of the control group = 0.5871742)
Outcome 2 = The audio duration of Teams meetings per hour per week: the audio duration has been computed by dividing the duration by 21 (the number of working days for the period), and then multiplying it by 5 (the number of working days per week), and finally by dividing this number by 3600 to obtain the audio duration in hours instead of seconds (the mean of the control group is 3.047244; the standard deviation of the control group = 0.3617606)
Standardised = A standardised variable (mean of 0 and standard deviation of 1)
N = total number of individuals in the experiment
N_0 = total number of individuals in the control group
N_1 = total number of individuals in the treatment
The power is set at 80 %, the significance level (α) is set at 5%.

Appendix 6: results of the power analysis taking non-response into account (10% and 60%)

General power analysis

	Sample size			Intraclass correlation coefficient	α = 0,05; power = 0.8 % and cvcluster = 0.78
Outcomes	**N**	**N_0 (k_0 and m_0)**	**N_1 (k_1 and m_1)**	**ICC**	**MDE**
Standardised: 10%	133	71.7 (108 and 0.64)	61.3 (108 and 0.57)	0.19447 0.28929	0.4885 0.486
Standardised: 60%	798	430.2 (108 and 3.98)	367.8 (108 and 3.41)	0.19447 0.28929	0.2663 0.2868