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# Managing flexible work arrangements: Teleworking and output controls

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ABSTRACT

Flexible work arrangements present managers with challenges regarding how to manage employees using these arrangements. To date, little research has investigated how managers address these challenges. We investigate the relationship between the use of a specific implementation of flexible work (teleworking) and control system design, specifically the emphasis on output controls. Teleworking reduces the feasibility of monitoring employee behaviour as a control mechanism. Control theory suggests that this might be compensated by placing more emphasis on output controls. We conduct a survey (N = 897) among employees of a financial services institution, of whom 69% is allowed to telework. We find that among teleworking employees, the share of teleworking hours is positively related to the emphasis on output controls. However, employees who are allowed to telework report *less* emphasis on output controls by their manager relative to those not allowed to telework. We pose various directions for future research, which may help in explaining these findings.



## 1. Introduction

Flexible work arrangements are practices such as working from home, working outside regular office hours, reducing or extending contract hours or banking overtime hours (Den Dulk, Groeneveld, Ollier-Malaterre, & Valcour, 2013; Stirpe & Zárraga-Oberty, 2017). These arrangements are offered by firms to support employees in balancing their work and personal life and improve firm performance (Richardson & McKenna, 2014). Although there is a substantial literature investigating the antecedents and consequences of flexible work arrangements at the employee and the firm level (e.g. De Menezes & Kelliher, 2016; Kröll & Nüesch, 2017), there is less attention on how managers address the challenges arising from this increased flexibility. By definition, flexible work arrangements result in employees working at different times and different locations, while performing the same activities and having the same responsibilities and requirements. As Lautsch, Kossek, and Eaton (2009, p. 795) noted, '[Managers] must learn how to supervise, maintain contact with and elicit performance from telecommuting subordinates despite the fact that they are out of sight'. This study focuses on this little-researched aspect, namely on how individual managers deal with the challenges of managing teleworking employees.

The literature on teleworking suggests that managers may deal with the challenge of not being able to monitor the actions of teleworkers by placing more emphasis on output controls (e.g. Felstead, Jewson, & Walters, 2003; Kurland & Egan, 1999). This assumption is in line with control theory. Control theory concerns itself with the processes that firms use to ensure that employee actions are aligned with the objectives of the organisation (e.g. Snell, 1992). Control theory suggests that when direct monitoring of employees is not possible, output controls will become more important (Eisenhardt, 1985; Ouchi, 1979; Snell, 1992), which means managers will place more emphasis on targets, performance indicators and outcomes in managing their employees.

The current study investigates whether the logic of control theory holds empirically in a setting where teleworking is used as a means of implementing flexible work arrangements. To our knowledge, the assumption that managers will put more emphasis on output controls when they allow their employees to telework has not been tested empirically. By establishing whether this is the case, we provide a basis for an increased understanding of how managers address the challenges of managing in a flexible work setting.

The remainder of the paper is organised as follows: in Section 2, we develop our hypothesis on the basis of the current literature.

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Our research setting and survey method is explained in Section 3. Section 4 presents our results, and in Section 5, we discuss the theoretical and practical implications, and the strengths and limitations of our study.

## 2. Theory

### 2.1. Flexible work arrangements and teleworking

Flexible work arrangements offer employees the possibility to deviate from regular working hours and locations. They come under various names such as work-life arrangements, family-friendly working practices and flexible working, and they involve arrangements such as allowing part-time work, flexible working hours, compressed working weeks, saving overtime hours and working from outside the office (e.g. De Menezes & Kelliher, 2016). In this study, we focus on a specific arrangement, namely teleworking. Teleworking, which comes under various names such as telecommuting, remote working or working from home, is defined by Gajendran and Harrison (2007, p. 1525) as 'an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organisation'. Although teleworking can be relatively accurately identified, the various names and definitions used complicate the assessment of its prevalence (e.g. Allen, Golden, & Shockley, 2015). Estimates of how many people are allowed to telework vary from around 10% of firms in Spain (Mayo, Pastor, Gomez-Mejia, & Cruz, 2009) to around 50% in the U.S. U.K. and Germany (Bloom, Lang, Roberts, & Ying, 2015; Whyman, Baimbridge, Buraimo, & Petrescu, 2015). Teleworking is increasingly important, especially in light of the increasing quality of technological applications, which facilitate working outside the office.

Teleworking has received substantial attention in the literature, for example, with regard to the impact of teleworking arrangements on individual teleworkers, including their social relationships, work-family conflict, job satisfaction, organisational commitment and job performance (Biron & van Veldhoven, 2016; Gajendran & Harrison, 2007; Kossek, Lautsch, & Eaton, 2006; Martin & MacDonnell, 2012; Richardson & McKenna, 2014; Stirpe & Zárraga-Oberty, 2017), and the organisational performance effects of teleworking (Beauregard & Henry, 2009; Bloom et al., 2015; Coenen & Kok, 2014; De Menezes & Kelliher, 2011; Whyman et al., 2015). For example, Coenen and Kok (2014) found that teleworking is beneficial for new product development performance through increasing cross-functional communication resulting from increased virtual interaction. Bloom et al. (2015), by applying a rigorous experimental methodology, found a substantial positive impact of teleworking on performance in a call centre: call centre employees who were allowed to work from home showed a 13% increase in performance relative to a within-firm control group. After the success of the experiment, the option to work from home was extended to all call centre employees of the case firm, resulting in a productivity increase estimated at 20–30%. However, De Menezes and Kelliher (2011) concluded that the literature does not offer a convincing positive effect of teleworking on financial performance.

### 2.2. Control theory and teleworking

As we have defined above, control is a process of aligning the actions of employees with the interests of the organisation (Snell, 1992). Once a firm has decided upon its strategic objectives, it has to make sure that it achieves these objectives by designing and applying control mechanisms (Anthony & Govindarajan, 2004). This approach to control is also called management control (e.g. Merchant & Van der Stede, 2012) or organisational control (e.g. Flamholtz, 1996). As such, it is different from the concept of psychological job control, which refers to the extent that an individual employee can decide on where, when and how they do their job (Kossek et al., 2006, p. 356). Control mechanisms can be formal, according to defined procedures and regulations, or informal, resulting from the way in which employees can relate to the organisation's goals and their colleagues and how they interact and share information. Formal controls are often divided into controls at the behavioural or process level and controls at the results or output level; informal controls focus on the human input for organisational processes such as the existence of an organisational culture that leads to goal alignment between a firm and its employees and among employees, facilitated by placing an emphasis on the selection and training of well-qualified employees (Ouchi, 1979; Snell, 1992). Behaviour and output controls are more formal in that they consist of predefined procedures and targets. They necessarily require planning, monitoring and measurement.

Control mechanisms involving behaviour controls consist of prescriptions at the task level and frequent monitoring of whether employees follow the prescriptions, while output controls measure whether targets are achieved. Both types of controls have advantages and disadvantages (Snell, 1992). While behaviour controls allow for tighter monitoring and regulation of activities, they reduce flexibility and may also have a negative impact on employee motivation. Output controls typically give more freedom to the employee, in the sense that employees may choose how they arrive at certain predefined goals (cf. Kerr, 1975; Snell, 1992).

Building on earlier work by Thompson (1967) and Ouchi (1979), Eisenhardt (1985) identified two characteristics of employee behaviour that influence the feasibility of formal control mechanisms: (1) the extent to which performance can be measured and (2) the extent to which it is understood which type of behaviour leads to what type of result. Output controls require good performance measures, while behaviour controls require an understanding of the desired behaviour. Additionally, both types of control require that the relevant characteristic can be observed: for output controls, the organisation has to have the information systems that allow performance measurement and reporting, and for behaviour controls, it has to be able to monitor the desired behaviour (Eisenhardt, 1988).

One of the challenges in managing teleworkers lies in the reduced possibilities of monitoring employee behaviour (Allen et al., 2015; Bloom et al., 2015). Within the teleworking literature, a common suggestion is that the emphasis on output controls will increase when employees telework. For example, Sewell and Taskin (2015) indicated that eligibility for teleworking may partly be determined by whether an employee's output can be measured. Furthermore, Felstead et al. (2003, p. 248) noted that 'a widely recommended approach to the management of home-located workers is to monitor outputs rather than inputs'. Similarly, Illegems and Verbeke (2004, p. 325) suggested that '[telework] requires setting clear performance objectives and measures', and Allen et al. (2015, p 50) noted that 'concrete information on telecommuter performance … can offset managerial concerns with regard to lack of observation'.

Because teleworking is mostly implemented in an existing setting, with existing operations, procedures, activities and policies, in general, similar controls will be present in teleworking and non-teleworking situations. The essence of flexible work arrangements is that they provide flexibility to the employees without impacting the organisation as a whole (e.g. Peters & den Dulk, 2003). As a consequence, when managers allow employees to telework, they

can often use the existing controls and apply these controls differently to teleworkers and non-teleworkers, by placing different levels of emphasis on them (Kurland & Egan, 1999). In this regard, Felstead et al. (2003, p. 246) noted that managers' responses to the challenges of teleworking are mostly of an ad hoc and pragmatic nature, rather than arising from strategic designs. In the survey conducted by Lautsch et al. (2009), around 25% of managers with experience in supervising teleworkers reported that for teleworking employees, they use written performance standards and performance feedback differently from those for non-teleworking employees. Accordingly, Richardson and McKenna (2014) found in a large interview sample that teleworkers feel more pressure to meet performance objectives than non-teleworkers.

The logic from the teleworking literature is consistent with control theory: because of an increased difficulty in monitoring employee activity, a higher emphasis on output control enables the manager to achieve a similar level of control as that in the situation where the employee does not telework. We therefore formulate the following hypothesis:

$H_1$: There is a positive relationship between teleworking and the emphasis placed on output controls.

## 3. Research design

### 3.1. Research setting and sample

Our research setting is a large financial services firm located in the Netherlands that offers a wide range of products and services, including banking through local branches, internet banking, insurances and investment banking. The setting for this research involves the national support organisation for the retail banking department of the firm. Within this organisation, activities include finance and control, human resources, IT, marketing, legal, and also consultancy and sales for national business clients (i.e. clients that are too large to be served by local branches).

Employees of the firm are subject to a yearly planning, coaching and evaluation cycle, which is mandated by the firm. As part of this, the employee and the direct supervisor agree upon a set of individual performance objectives. These objectives should be associated with the departmental objectives (which were in turn derived from the firm's overall objectives), but they are not standardised. For example, within the finance department, one of the objectives is 'enhance business partnering'. Examples of individual performance objectives derived from this departmental objective are 'accurate, timely and complete financial update for the management team', 'timely implementation of the rolling forecast' and 'answering emails within 24 h'. Other objectives may relate to the employee's competencies and behaviours, such as being more proactive or more customer focused. At the end of the cycle, the employee's results regarding the objectives are used as input by the manager to come to a final appraisal of the employee's performance, which determines the employee's salary increase. It is up to the manager to decide on the relative importance of the individual objectives when deciding on the yearly evaluation: there is no prescribed formula-based calculation of the overall performance result, and managers are free to choose the emphasis they place on each objective. Most assessments of performance are subjectively done by managers, and there is no formal policy that requires the use of objective sources of information such as 360-degree feedback.

Traditionally, in this firm, it was the manager of each individual employee who decided whether this employee was allowed to telework or not, and at the time of the survey, this remained the case for most of the employees. However, 3 years before this study, the firm had started a pilot in a limited group of departments which they fully facilitated with the necessary portable equipment, appropriate office space and accompanying training and instructions. All the employees in the pilot received a laptop and headset, and wireless access to the firm's internal network. The pilot involved a physical transformation of the workspace on several floors of buildings, with the departments located at that floor becoming part of the pilot. The renovated floors consisted of open office space, smaller quiet rooms and meeting rooms equipped with desks with big monitors, which were easy to connect to a laptop. Additionally, the meeting rooms contained sophisticated teleconferencing equipment. Employees within the pilot departments were always allowed to telework, i.e. their supervisors formally could not refuse a request to allow teleworking. While pilot departments noticed a reduction in the number of available desks, it was always possible for the employees wanting to work at the office to find a location to do so. Thus, employees were free to decide whether they would work from home or not.

At the time of the survey, the pilot departments had 549 employees who were all invited to join the survey. For the non-pilot employees, we sent survey invitations to 2067 randomly selected employees. In the end, we received 897 completed questionnaires, i.e. a response rate of 34.3%. The number of completed questionnaires obtained from pilot employees was 190, i.e. a response rate of 34.6%, while from non-pilot employees, this was 707, i.e. a response rate of 34.2%.[1]

We identified three groups of respondents in the sample: (1) respondents who are part of the pilot and thus are allowed to telework as a matter of policy, (2) respondents who are not in the pilot but are allowed to telework at the discretion of their manager and (3) respondents who are not in the pilot and whose managers do not allow them to telework. Table 1 reports the distribution of respondents over these groups. Among the 707 non-pilot respondents, 430 (61%) are allowed to telework; of this group of 430 respondents being allowed to telework, 297 or 69% actually does telework. For the pilot members, the share of teleworkers is higher at 93%. On average, the teleworkers spend 24.7% of their time outside the office, so slightly more than a day; pilot workers make more use of the option to telework (mean time outside the office 28.3% versus 22.6% for the non-pilot group).

### 3.2. Main variables

This study focuses on the impact of telework on the emphasis placed on output controls. Table 2 reports the constructs and their sources used in the survey, including our dependent variable emphasis on output controls and the constructs we used as control variables (see Section 3.3). Emphasis on output controls was measured using nine items from Snell (1992).[2] Principal component analysis using Varimax rotation revealed that seven items load on one factor with a Cronbach's alpha of .747 and AVE of .403. Two items with low factor loadings, which reduced the Cronbach's alpha, were not used.

Teleworking is operationalised in two ways: (1) allowed to telework and (2) share of teleworking hours. First, employees were

[1] In addition to the 190 completed surveys from pilot group members, we received eight further surveys from respondents working in pilot departments who indicated that they are not allowed to telework; it is not clear whether these respondents made a mistake in answering the survey or whether their managers do not permit teleworking, although they are in the pilot. We have excluded these responses from our analyses to enable more parsimonious reporting, but results are similar if we include these respondents.

[2] We excluded three questions from Snell (1992) list that are difficult to answer for an employee rather than a manager because they ask about differences in pay structures among employees.

**Table 1**
Telework descriptives for total sample and for pilot and non-pilot groups.

| | Pilot group | Non-pilot group, allowed to telework | Non-pilot group, not allowed to telework | Total |
|---|---|---|---|---|
| Number of individuals in the sample (count) | 190 | 430 | 277 | 897 |
| Does telework (count) | 177 | 297 | 0 | 474 |
| Does telework (as share of sample) | 93.2% | 69.1% | 0% | 52.8% |
| Share of working hours spent outside office if teleworking | 0.283 | 0.226 | | 0.247 |

**Table 2**
Construct measurement and reliability.

| Measures, sources and Cronbach's α | Item formulation | Factor loading |
|---|---|---|
| Emphasis on output controls (Snell, 1992) | My manager judges me primarily on results | 0.553 |
| | My performance targets are written in stone | 0.712 |
| α = .747 AVE = .403 | In evaluations, my manager compares my performance to pre-established targets | 0.733 |
| | My manager measures my effectiveness chiefly with numerical scores | 0.715 |
| | My manager judges me on whether I reach my targets, regardless of my personality | 0.595 |
| | If I do not meet the objectives, I receive a lower rating | 0.490 |
| | My manager judges me on whether I reach my targets, regardless of my capabilities | 0.580 |
| In-role behaviour (Williams & Anderson, 1991) | I perform all tasks that are expected | 0.715 |
| | I perform all essential duties | 0.700 |
| | I always complete all assigned duties | 0.723 |
| α = .853 | I engage in all activities that directly affect my performance evaluation | 0.737 |
| AVE = .538 | I always meet the formal performance requirements of my job | 0.784 |
| | I always fulfil all responsibilities specified in my job description | 0.766 |
| | I always perform all aspects of my job that I am obligated to | 0.705 |
| Autonomous motivation (Gagné et al., 2010) | I enjoy this work | 0.808 |
| | Job fulfils my career plans | 0.657 |
| | Job allows me to reach my life goals | 0.511 |
| α = .801 | Job brings me moments of pleasure | 0.747 |
| AVE = .527 | Job fits my personal values | 0.791 |
| | I have fun doing my job | 0.796 |
| Controlled motivation (Gagné et al., 2010) | Job allows me to make a lot of money | 0.586 |
| | Job affords me a certain standard of living | 0.739 |
| | I do this job for the pay check | 0.584 |
| α = .681 | I have to be the best in my job, be a 'winner' | 0.506 |
| AVE = .394 | My reputation depends on it | 0.689 |
| | My work is my life and I don't want to fail | 0.631 |

Note: The following items were excluded from the emphasis on output controls scale because of their low factor loadings (0.294 and 0.021, respectively): 'If I perform better, I get a higher raise' and 'It is not feasible to set a target up front for my activities (recoded).'

asked whether they were allowed to telework. Allowing employees to telework is a discrete choice, leading to a dummy variable which is 1 when the employee indicates he or she is allowed to telework and 0 otherwise. Once teleworking is allowed, employees decide in consultation with their manager what percentage of their work time they will make use of this arrangement. The variable share of teleworking hours is the percentage of work time spent outside the office, as indicated by the employee. Furthermore, a dummy indicates whether the respondent was a part of the teleworking pilot.

Because the dependent and independent variables are very different types of variables (a Likert scale, a 0–1 variable and a percentage of time), the risk of common method bias is low. To further reduce this risk, we placed several other constructs in between the dependent and independent variables, presented only items of one construct at the same survey page each with a separate short introduction and emphasised on the confidentiality of the answers (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Finally, when entering all Likert-type questions into a factor analysis, the first factor explains 19.6% of the variance, again suggesting that common method bias is not an issue.

### 3.3. Control variables

We use a number of control variables to correct for possible other influences on the use of output controls: gender, working part-time, tenure, education level, job level, job category, employee performance, and autonomous and controlled motivation. Previous research about work practices has shown that men and women may react differently to work-life balance initiatives such as teleworking (Beauregard & Henry, 2009), but there is no indication that the use of controls is affected by the employee's gender (Ramaswami, 2002). Working part-time is included as a control variable to increase the generalisability of the study because working part-time is more common in the Netherlands than in other countries among all types of jobs (Eurofound, 2015). The part-time dummy indicates whether the respondent works less than 36 h per week because in the Netherlands full work weeks are officially typically 36 or 38 h. Employees with a known track record from longer tenure have had the opportunity to create trustworthiness with their managers regarding their performance, reducing the need for output controls; similarly, higher levels of education may proxy for higher skill levels and lower need for managerial guidance through controls (e.g. Cravens, Ingram, LaForge, & Young, 1993). Tenure is measured as years in job, and education level is measured with a dummy college education equalling 1 if the respondent has a bachelor diploma or higher. Job level is included as a control because employees at higher job levels often have less clearly defined activities that may complicate the use of output controls (Baik, Evans, Kim & Yanadori, 2016), and at the same time, teleworking is more prevalent in professional and managerial environments (Allen et al., 2015, p. 50). Job level is measured by the respondent's pay scale according to the firm's internal salary system: higher level jobs have a higher pay scale. Results will be similar if we use category dummies for the job levels rather than

the interval measure we use now. We control for job category because the measurability of activities may impact the possibility to use output controls (Eisenhardt, 1988). Job category is measured by asking respondents to indicate their type of work from a list of 12, including IT, finance and accounting, administration, sales, staff and management, which were added as (unreported) dummies to the analysis.

We control for possible confounding effects arising from managerial choices or employee preferences regarding teleworking by including motivation and performance in the analyses. Managers may be more willing to allow more highly motivated employees to telework (Bailey & Kurland, 2002), while employees may not want to telework if they are afraid that their performance is not good enough and they need to be seen as hard working (Felstead et al., 2003). Furthermore, employees who view themselves as well performing may be more accepting of output control (e.g. Cadsby, Song, & Tapon, 2007); alternatively, Cravens et al. (1993) argued that employees with higher levels of performance require a less outcome-based control focus. Performance is measured using the in-role behaviour scale of Williams and Anderson (1991). This scale measures the extent to which employees think they meet their job requirements. The Cronbach's alpha is .853 and the AVE is .538. Employees' motivation was measured using the motivation at work scale of Gagné et al. (2010). As advised by Gagné et al. (2010, p. 641), we report results using the aggregated measures for autonomous motivation (Cronbach's alpha .801, AVE .527) and controlled motivation (Cronbach's alpha .681, AVE .394).[3]

## 4. Results

### 4.1. Descriptive statistics

Table 3 reports the descriptive statistics, and Table 4 reports the bivariate correlations. We see that emphasis of output controls is significantly negatively related with being allowed to telework, but there is no significant relationship with the share of teleworking hours; this provides some first support for investigating these operationalisations of teleworking separately. We further see that all the control variables have significant correlations with emphasis on output controls and/or with the teleworking measures, justifying their inclusion in the analyses. As expected, job level and education have a significant negative relationship with emphasis on output controls. In-role behaviour and motivation are positively related to emphasis on output controls, suggesting that more motivated employees are more suited for output control. Contrary to expectations, tenure is not significantly related to emphasis on output controls. Furthermore, as the literature suggests, higher level and higher educated employees are more often allowed to telework. The negative relationship between in-role behaviour and being allowed to telework is likely affected by the job level: in untabulated results, partialling out the effect of job level from the correlation between in-role behaviour and being allowed to telework results in an insignificant coefficient.

### 4.2. Regression analyses

We analyse the relationship between teleworking and emphasis on output controls using OLS with robust standard errors. The results reported in Table 5 show that the hypothesis is only supported in the model that investigates the subsample of employees who telework (Model 7): within this subsample, the share of teleworking is positively related with the perceived emphasis on output controls. In other models, the relationship between the teleworking variables and emphasis on output controls is negative or non-significant.

Models 1 and 2 test the hypothesis by analysing the impact of being allowed to telework on emphasis on output controls in the full sample of 897 respondents. In Model 1, we use a dummy indicating whether the respondent is allowed to telework. In Model 2, we split the group allowed to telework into pilot members and respondents who are allowed to telework at the discretion of their manager. Hence, the base group is again the group of respondents who are not allowed to telework. Both models show that being allowed to telework impacts the perceived emphasis on output controls but in a different direction than hypothesised: employees who are allowed to work from home report a *lower* level of output control (Model 1, $b = -.13$, $p < .01$). This effect is not dependent on whether working from home is allowed as a matter of policy or by discretion of the manager: an F-test for the equality of the coefficients on the dummies representing the pilot and the non-pilot respondents in Model 2 is not significant, indicating that the coefficients do not statistically differ from each other. This means that both groups report a lower level of output control relative to the base group of respondents not allowed to telework.

To further examine where this counterintuitive effect comes from, Models 3 and 4 look only at respondents who do not telework. This group consists of 146 employees who are allowed to telework either as pilot participant or because their managers allow them to but do not make use of this possibility, and 277 employees who are not allowed to telework, resulting in a total of 423 employees. Models 3 and 4 suggest that the lower emphasis on output controls is not related to actually using teleworking possibilities but to being allowed as such. Model 3 shows that the relationship between being allowed to telework while not making use of this option and emphasis on output controls is significantly negative ($b = -0.13$, $p < 0.05$). Model 4 suggests that this effect is mostly due to the group of non-pilot respondents. However, because the number of respondents in the pilot group who do not make use of teleworking possibilities is very small (only 13 out of 190 pilot members do not telework), care must be taken in interpreting differences in the coefficients. Indeed, the F-test shows that the coefficients for group membership in Model 4 do not differ significantly. Overall, the analyses show that Hypothesis 1 should be rejected: employees who telework report lower rather than higher emphasis on output controls, and this also holds for employees who are allowed to telework but do not make use of this option.

**Table 3**
Descriptive statistics.

| | Mean | Std dev | Min | Median | Max |
|---|---|---|---|---|---|
| Emphasis on output controls | 4.40 | 0.89 | 1.14 | 4.43 | 7.00 |
| Allowed to telework | 0.69 | 0.46 | 0 | 1 | 1 |
| Share teleworking hours | 0.13 | 0.17 | 0.00 | 0.05 | 0.85 |
| Pilot participant | 0.21 | 0.41 | 0 | 0 | 1 |
| Female | 0.34 | 0.47 | 0 | 0 | 1 |
| Part-time | 0.18 | 0.38 | 0 | 0 | 1 |
| Tenure | 7.69 | 7.50 | 0.1 | 5 | 45 |
| College education | 0.72 | 0.45 | 0 | 1 | 1 |
| Job level | 9.95 | 2.11 | 1 | 10 | 15 |
| In-role behaviour | 5.27 | 0.91 | 1.00 | 5.43 | 7.00 |
| Autonomous motivation | 5.30 | 0.87 | 1.17 | 5.50 | 7.00 |
| Controlled motivation | 4.55 | 0.81 | 1.83 | 4.67 | 7.00 |

Note: N = 897.

[3] These two types of motivation can further be subdivided into intrinsic motivation and identified regulation for autonomous motivation, and introjected regulation and extrinsic motivation for controlled motivation (Gagné et al., 2010). Results are similar when we use four separate scales.

**Table 4**
Bivariate correlations.

| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Emphasis on output controls | 1 | | | | | | | | | | | |
| 2 | Allowed to telework | −0.18** | 1 | | | | | | | | | | |
| 3 | Share teleworking hours | −0.05 | 0.53** | 1 | | | | | | | | | |
| 4 | Pilot participant | −0.07* | 0.35** | 0.42** | 1 | | | | | | | | |
| 5 | Female | 0.01 | −0.11** | −0.03 | 0.10** | 1 | | | | | | | |
| 6 | Part-time | 0.03 | −0.17** | −0.13** | −0.05 | 0.34** | 1 | | | | | | |
| 7 | Tenure | 0.06 | −0.13** | −0.03 | −0.07* | 0.03 | 0.11** | 1 | | | | | |
| 8 | College education | −0.10** | 0.28** | 0.15** | 0.16** | −0.09** | −0.20** | −0.22** | 1 | | | | |
| 9 | Job level | −0.15** | 0.52** | 0.33** | 0.26** | −0.26** | −0.31** | −0.18** | 0.49** | 1 | | | |
| 10 | In-role behaviour | 0.26** | −0.14** | −0.07* | −0.11** | 0.15** | 0.05 | 0.08* | −0.11** | −0.22** | 1 | | |
| 11 | Autonomous motivation | 0.16** | 0.16** | 0.05 | 0.07* | 0.04 | −0.08* | −0.06 | 0.12** | 0.16** | 0.22** | 1 | |
| 12 | Controlled motivation | 0.20** | −0.04 | −0.05 | −0.05 | −0.03 | −0.05 | 0.06 | 0.00 | 0.00 | 0.28** | 0.46** | 1 |

N = 897; *$p < .05$; **$p < .01$ (two-tailed).

**Table 5**
Results of regression analyses on emphasis on output controls.

| | Full sample (N = 897) | | Non-teleworkers (N = 423) | | Full sample (N = 897) | | Teleworkers (N = 474) | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 |
| Female | −0.06 | −0.06 | −0.02 | −0.02 | −0.06 | −0.06 | −0.10 | −0.10 |
| Part-time | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 |
| Tenure | 0.03 | 0.03 | 0.09 | 0.09 | 0.03 | 0.03 | −0.06 | −0.07 |
| College education | −0.05 | −0.05 | −0.05 | −0.05 | −0.06 | −0.06 | −0.02 | −0.02 |
| Job level | −0.08 | −0.08 | −0.09 | −0.09 | −0.13* | −0.12* | −0.04 | −0.05 |
| In-role behaviour | 0.19** | 0.19** | 0.18** | 0.18** | 0.19** | 0.19** | 0.17** | 0.17** |
| Autonomous motivation | 0.09 | 0.09 | 0.14 | 0.14 | 0.08 | 0.08 | 0.06 | 0.06 |
| Controlled motivation | 0.08* | 0.08* | 0.03 | 0.03 | 0.09* | 0.09* | 0.12* | 0.12* |
| Allowed to telework | −0.13** | | −0.13* | | | | | |
| Allowed to telework pilot | | −0.10* | | −0.05 | | | | |
| Allowed to telework manager | | −0.14** | | −0.13* | | | | |
| Share teleworking hours | | | | | −0.00 | −0.02 | 0.11* | 0.10 |
| Pilot member | | | | | | −0.09 | | 0.01 |
| Share teleworking * Pilot member | | | | | | 0.09 | | 0.02 |
| Job category indicators | Included | Included | Included | Included | Included | Included | Included | Included |
| $R^2$ | 0.15 | 0.15 | 0.16 | 0.16 | 0.14 | 0.14 | 0.16 | 0.16 |
| Adjusted $R^2$ | 0.13 | 0.13 | 0.12 | 0.12 | 0.12 | 0.12 | 0.13 | 0.12 |
| F | 7.64 | 7.26 | 3.98 | 3.82 | 7.32 | 6.79 | 4.64 | 4.38 |
| $p$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Standardised coefficients are shown. *$p < .05$; **$p < .01$ (two-tailed). In Models 1–4, the base group consists of all the employees who are not allowed to telework.

Models 5 and 6 analyse the impact of the share of time employees spend teleworking, in the full sample of 897 respondents. Model 5 shows that the relationship between the share of teleworking hours and emphasis on output controls is not significant, and Model 6 shows that the interaction between share of teleworking hours and being pilot participant is not significant either. This result differs from that of earlier models, where being allowed to telework had a significant negative relationship with emphasis on output controls.

In Models 7 and 8, we analyse the group of actual teleworkers (N = 474) to evaluate the relationship between the share of teleworking hours and the extent of emphasis placed on output controls. As shown in Table 1, this share of work hours spent outside the office ranges between 0.01 and 0.85. Model 7 shows that among teleworking employees, the relative time spent outside the office is *positively* related to the extent of emphasis placed on output controls (b = 0.11, $p < 0.05$). If we include the interaction effect with the pilot group, we again see no difference between pilot- and non-pilot workers. The significance of the direct effect of the share of teleworking hours in Model 8 drops below conventional levels ($p = 0.10$), although the coefficient remains similar (b = 0.10).

The data suggest that the control theory logic applies only if employees actually make use of the telework arrangement: the more hours they work outside the office, the more emphasis on output controls they experience. Contrary to control theory, we find a negative relationship between being allowed to telework and emphasis on output controls.

## 5. Discussion

This study investigates how managers deal with the challenges of implementing flexible work arrangements. Specifically, it tests the common assumption from the teleworking body of knowledge that managers will place more emphasis on output controls when dealing with the challenge of not being able to directly monitor the behaviour of employees who work outside the office location. This assumption is in line with control theory, which suggests that reduced possibility of monitoring employee behaviour may be compensated by an increased emphasis on output controls. We find this effect within the group of teleworking employees in relation to the amount of teleworking (employees experience more emphasis on output controls when they work a larger share of their time outside the office). Contrary to the theory, we find that employees who are allowed to telework report *less* emphasis on output controls when compared to those who are not allowed to telework. Furthermore, employees who are allowed to telework but choose

not to do so report a lower emphasis on output controls than those who are not allowed to telework. Thus, our results are mixed relative to the theoretical predictions derived from both the generic control literature (e.g. Eisenhardt, 1988; Snell, 1992) and the teleworking literature (e.g. Allen et al., 2015; Felstead et al., 2003): the theory explains the findings within the group of teleworking employees but not between teleworking and non-teleworking employees.

As the first study about the relationship between telework and output controls, this large-n study provides a starting point for future research around how to control telework. Our study focuses on how individual managers deal with the challenges of managing teleworking employees. It investigates the relationship between manager and teleworking employees, rather than the performance impact of teleworking or the interaction of control choices and teleworking on performance. Given that the theoretical importance of the output control derives from the need for controlling performance, an interesting direction for future research would be to investigate whether output controls impact the relationship between teleworking and employee performance. A second suggestion for future research coming from this study is that, in researching telework, it is important to make a distinction between being allowed to telework on the one hand and the extent of teleworking on the other hand.

Below, we discuss four possible explanations for why a part of our findings runs opposite to our theoretical expectations: employee perceptions of output controls, differences between the managers, research context and other types of control. These explanations provide insight to the limitations of our research design and also serve as starting points for future research around how managers deal with the challenges of telework.

### 5.1. Employee perceptions of output controls

In this study, employee perceptions of emphasis on output controls were used as the dependent variable. An important reason to measure employee perceptions of output controls instead of, for example, asking the managers how much emphasis they place on output controls, or asking top management about control policies, is that employee perceptions are the most proximal to the attitudinal and behavioural responses of employees that should lead to positive outcomes such as higher employee job performance and satisfaction (Bowen & Ostroff, 2004; Kehoe & Wright, 2013; Nishii & Wright, 2008). The downside of measuring employee perceptions is that we do not know whether the reported emphasis on output controls resembles the actual output controls employees are exposed to.

We set up our study assuming that the level of emphasis on output controls is independent of employee perception; that is, we assumed that the importance managers attach to results and numerical scores in judging employees, and the extent of using targets in this process, is assessed in an unbiased way by employees. However, the unexpected effect of being allowed to telework versus not being allowed to telework points to a different direction. Employees who are allowed to telework experience less emphasis on output controls, even when they do not make use of this option, and irrespective of whether the teleworking possibility arises from managerial discretion or from company policy. To better understand the relationship between teleworking and output control, future research should investigate the mediating mechanisms between these two. For example, experiencing lower levels of managerial control may come from the increased feelings of job control that employees who are allowed to telework often experience (Kossek et al., 2006).

Similarly, the positive relationship we found between the share of time employees work outside the office and perceived output control may be influenced by the fact that we asked for employee perceptions. Employees might report more emphasis on output controls if they work more outside the office just because they find it obvious that spending less time in the office is compensated by more emphasis on output controls. This complements Richardson and McKenna (2014) finding that teleworkers experience more pressure to meet performance objectives. Future research might investigate whether this increase in pressure is caused by an actual increase in emphasis on output controls, or whether it is just an attitudinal change within the employee itself. Associated to this, it would be interesting to also investigate the relationship between teleworking of employees and information provided by their managers regarding the emphasis these managers place on output controls, as this will give insight into *actual* control practices in teleworking situations.

### 5.2. Managerial characteristics

In this study, we hypothesised that managers would place more emphasis on output controls when they allow employees to telework. Because a cross-sectional survey study does not allow to test for causality, it might also be possible that—contrary to what control theory suggests—the underlying mechanism works in the opposite direction, i.e. the extent to which managers emphasise output controls influences whether they allow employees to telework. Poelmans and Beham (2008) proposed that managers who focus more on output control will be more willing to allow teleworking because these managers will feel better able to control teleworkers' activities. Alternatively, managers who actively monitor performance and guide employees in detail with regard to goals, means and performance standards ('directive' leaders, see e.g. Martin, Liao, & Campbell, 2013) may be less likely to allow teleworking than 'empowering' leaders who give their employees more autonomy.

Our data do not allow us to include managerial characteristics such as leadership style. However, the pilot and non-pilot conditions of teleworking differ in the extent to which managers can impact the teleworking option: non-pilot employees were offered the option of teleworking at the discretion of their manager, whereas employees who were in the pilot were allowed to telework irrespective of their manager's preferences. The selection of pilot departments was not associated with managerial characteristics but driven by location within the office building, and pilot managers were compelled to facilitate telework, independent of their leadership style. This implies that in the pilot condition, managerial characteristics do not impact the opportunity to work from home. The regression results in Models 2 and 4, as shown in Table 5, indicate similar relationships for both groups. Although the coefficients are more negative for the non-pilot group, this difference is small and not statistically significant. Similarly, in Models 6 and 8, the coefficients for membership of the pilot group are not significant. This suggests that the negative relationship between being allowed to telework and emphasis on output controls is not driven by leadership style or other preferences of the managers in our sample. Future research is necessary before definite conclusions can be made regarding the influence of difference in leadership style on the use of output controls in teleworking situations.

### 5.3. Research context

Surveying a large sample of employees from one organisation allows us to keep industry effects, technological differences, and human resources and reward policies constant. It is unclear how

our results translate to other organisations, for example, in other types of industries, with lower-educated employees or with higher telework intensity.

### 5.4. Other types of control

A final interesting direction for future research would be to investigate how other types of control change when employees are teleworking. In our research setting, being allowed to telework is exogenous to pilot participants' activities and to their relationship with their managers, and the pilot did not involve job-related training. We find similar results for pilot teleworkers and non-pilot teleworkers in our sample. In other settings, managers may use input controls, in the sense that teleworking employees may be those who have a history of high performance and may receive training that is different from that for non-teleworking employees. Furthermore, managers may use alternative forms of behaviour controls, such as monitoring online activities, specifying the exact tasks that are to be performed at home and scheduling regular project meetings and more formalised communication between employees and supervisors (Kurland & Egan, 1999; Sewell & Taskin, 2015). A focus on these other types of control in future research will give a more complete picture of how managers stay in control while allowing employees to telework.

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