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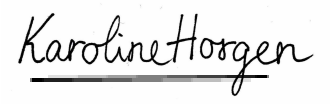

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Abstract

In the post-pandemic era, hybrid work is poised to become the dominant working arrangement of the future. However, little is known about the effects of hybrid work arrangements (HWAs) on employee outcomes, and how managers should lead in HWAs.

JD-R theory was adopted as a theoretical lens to investigate how frequency of virtual work in HWAs, task-oriented, and relations-oriented leadership behaviors are related to employee engagement and burnout. A hypothesized moderation effect of frequency of virtual work on relationships between both types of leadership behaviors with engagement and burnout was also examined.

Data was collected via online questionnaire from 336 employees in a Norwegian maritime company. Correlation analysis found a significant and negative relationship between frequency of virtual work and engagement, and no significant relationship was found with burnout. Task-oriented and relations-oriented leadership behaviors were significantly and positively related to engagement and negatively related to burnout. The hypothesized moderation relationship was not found. Instead, when leadership behaviors were also taken into account, frequency of virtual work no longer negatively predicted employee engagement, while leadership positively predicted employee engagement. Post-hoc analysis examining specific leadership behaviors revealed that *planning* and *delegating* behaviors were consistently the strongest predictors of both engagement and burnout. Findings seek to inform future organizational policy regarding working arrangements, suggesting that companies can implement HWAs without compromising employee outcomes of burnout and engagement.

Keywords: hybrid work, virtual work, telework, leadership behaviors, Job Demands-Resources model, engagement, burnout

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Engagement and Burnout in Hybrid Work Arrangements: Effects of Leadership Behaviors and Frequency of Virtual Work

Virtual work, which involves working remotely and outside of centralized workplaces through the use of information and communications technology (ICT), has gained prominence since the start of COVID-19. In response to the global pandemic, governments across the globe instituted home-office policies to curb the spread of the virus, and virtual work became a norm for most companies in 2020 and 2021 (ILO, 2021). Following the development of vaccines in 2021, workplace restrictions eased in countries across the globe as vaccination rates climbed, and workers in most countries were allowed to return to the office at least partially (ILO, 2021). Organizations were left at a crossroads, deciding between returning to traditional in-office work arrangements, or incorporating elements of virtual work in future working arrangements.

Some companies such as Tesla, Apple, and Google have opted for stricter rules that require all employees to return to the office, citing the importance of face-to-face contact and working in-office for the sake of preserving organizational culture (Ramakrishnan, 2022; Carroll, 2022). On the other hand, given the popularity of virtual work amongst workers, most companies are planning to implement hybrid work arrangements (HWAs; Alexander et al., 2021), where employees are given the freedom to work remotely for parts of the week while working on-site in central offices for other parts of the week, believing that such arrangements are crucial to attracting the best talent (Berger et al., 2021). However, there remain unanswered questions about key concerns that organizations should consider in the implementation of HWAs.

First, a key consideration for organizations considering the implementation of HWA is the effects that such arrangements may have for their employees. Compared to traditional in-office work arrangements, hybrid work involves a degree of virtual work. This form of work brings a different set of work characteristics, benefits, and challenges for employees, and is associated with intensified job demands and a reduction in job resources (Chamakiotis et al., 2021). The shift in the balance between demands placed on employees and the resources available to them can in

turn influence employee outcomes (Bakker & Demerouti, 2007). While the effects of virtual work have been investigated in past research and can be useful in informing our understanding of the effects of hybrid work on employees, Lapierre et al. (2016) highlights that past research in virtual work potentially suffers from a selection bias. Since virtual work before the COVID-19 pandemic had tended to be on a voluntary basis, samples have been self-selected to have more favorable attitudes towards or more able to engage in virtual work, therefore actively seeking and choosing work opportunities that involve working virtually. For this reason, the effects of virtual work as identified in past research may not be valid for the general population of workers. Furthermore, while most research has focused on pure-virtual work, little research has investigated hybrid work (Shifrin & Michel, 2022). Therefore, there remains a gap in the current literature in understanding the effects of hybrid work for employees belonging to the general populace, preventing organizations from making informed decisions when developing policies for HWAs.

Another key consideration for organizations in their implementation of HWAs is how managers should adapt their leadership to suit the context of such arrangements. Scholars have emphasized the crucial role that leadership plays in the success of virtual work (Bell & Kozlowski, 2002; Contreras et al., 2020; Gilson et al., 2015; Liao, 2017; Morgeson et al., 2010), arguing that since such work arrangements have different work characteristics compared to traditional in-office work arrangements, they require leaders to perform different leadership tasks or emphasize certain leadership functions more than others in order to realize the potential benefits and mitigate the challenges associated with virtual work. Based on the same reasoning, we propose that the suitable adaptation of leadership plays an equally crucial role in the context of hybrid work. However, little is known about how various leadership behaviors are related to individual outcomes in the contexts of partially- and purely-virtual teams (Chamakiotis et al. 2021; Gilson et al., 2015; Liao, 2017; Hertel et al., 2005). This gap in understanding of how leaders should lead in hybrid work hinders the successful adaptation of managers' leadership behaviors in the implementation of HWAs within organizations.

To address the aforementioned research gaps, this thesis seeks to examine the effects of hybrid work for employees, as well as the role that their managers play in influencing these effects, in order to inform organizations' decisions regarding future policy for working arrangements. Building on the premise that hybrid work involves a degree of virtual work, which introduces a new set of work characteristics compared to traditional work arrangements where work is conducted purely in-office, we employ the Job-Demand Resources Model (JD-R Model; Demerouti et al., 2001; Bakker & Demerouti, 2007) as our theoretical lens, conceptualizing these differences in work characteristics as differences in job demands and job resources. Specifically, this study examines the following research questions.

First, this study investigates the effects of hybrid work for employees at the individual level. We reason that engaging in hybrid work influences one's job demands and job resources, subsequently having effects on engagement and burnout. We therefore examine how employee engagement and burnout is related to the extent to which daily work in HWAs is conducted off-site and virtually instead of in the office. Second, this study investigates the effects of various types of leadership behavior on employee outcomes in HWAs. We reason that leadership plays a key role in balancing job demands and job resources for employees, thereby creating optimal working conditions for them and subsequently enhancing employee engagement and mitigating employee burnout (Schaufeli, 2015; Tummers & Bakker, 2021). We therefore examine the relationships between the different types of leadership behavior with employee engagement and burnout in HWAs. Third, this study investigates how the effects of various kinds of leadership on employee outcomes change with the degree to which work is virtual in HWAs. We reason that how much one's work is virtual within a HWAs influences the job demands and job resources one has. Hence, we examine whether and how the frequency of virtual work moderates relationships between the different types of leadership behavior with employee engagement and burnout in HWAs.

By answering these research questions, this study seeks to add to the growing body of literature on hybrid work by expanding current understanding of the effects of virtual work frequency on individual employee outcomes in HWAs, specifically

engagement and burnout. Furthermore, this study seeks to extend our understanding about leadership in hybrid work by examining the effects of different kinds of leadership behavior on engagement and burnout in HWAs. Our study also intends to make key practical contributions by informing decision-making of organizations in their development of future policy with regards to implementing in-office, hybrid, or purely-virtual working arrangements, specifically by illuminating the effects of the frequency of virtual work on their employees' experience of burnout and engagement at work. This study also seeks to facilitate the success of HWAs for organizations that choose to implement them by shedding light on how managers in HWAs should lead their employees. Additionally, by investigating how the effects that various kinds of leadership behaviors have on employee burnout and engagement are influenced by how often employees work virtually instead of in-office, this study intends to illuminate how leaders should adapt their leadership as their employees work more and more virtually by identifying which leadership behaviors they should emphasize in order to enhance employee burnout and engagement.

Literature Review

Virtual Work and Hybrid Work

While virtual work has been defined in many different ways in past literature, most definitions involve two aspects: that workers are geographically distributed and depend on computer-mediated technology to communicate with co-workers (Gibson & Gibbs, 2006; Nilles, 1994; O'Leary & Cummings, 2007). Different terminologies related to virtual work have been used in past research, such as telework and remote work.

The concept of telework or telecommuting is an early form of virtual work that gained prominence in the last two decades of the 20th century (Bailey & Kurland, 2002). Telework is defined as "a flexible work arrangement whereby workers work in locations, remote from their central offices or production facilities, the worker has no personal contact with co‐workers there, but is able to communicate with them using technology" (Di Martino & Wirth, 1990, p. 530). Though different in name, both telework and virtual work most commonly refer to the same form of work

(Mihhailova, 2009), where work is performed out of conventional workplaces, and computer-mediated technology was used for communication (Nilles, 1994).

On the other hand, Vartiainen (2021) distinguishes remote work from telework and virtual work by highlighting that remote work refers to a more general category of work involving performing work physically remotely and outside of a central workplace, while telework and virtual work represents a narrower category of remote work that involves the reliance on computer-mediated communications in addition to geographical remoteness. Several other expressions, such as homeworking, work from home (WFH), and work from anywhere (WFA) have been introduced to describe the practice of remote working (Popovici & Popovici, 2020). However, given the ubiquity of ICT, along with the prevalence of usage of computer mediated technology in remote working (Johns & Gratton, 2013), such work arrangements most oftenly also rely on the use of ICT for communication with co-workers, and therefore largely involve virtual work.

This thesis therefore uses the term virtual work synonymously with telework and remote work, specifically referring to working outside of a centralized workplace and using computer-mediated communication to interact with co-workers. We highlight that our research context focuses on virtual work amongst traditional employees working full-time for an employer, as opposed to other alternative forms of employment like self-employment and freelancing.

A closely related concept to virtual work within organizations is virtual teamwork, or working in distributed teams (Raghuram et al., 2019). In contrast with traditional in-office work arrangements where workers are co-located in central offices, workers engaging in virtual work are geographically dispersed from their teammates, and are therefore often required to engage in virtual teamwork. Such virtual teams are defined as “teams of people who work independently across space, time, and organisational boundaries through the use of technology” (DeRosa et al., 2004, p. 219). Accordingly, virtual teamwork is characterized by spatial distance between team members where team members are geographically dispersed (Bell & Kozlowski, 2002; Martins et al., 2004), the use of more asynchronous communication

between team members and colleagues, and a greater reliance on computer-mediated technology for communication (Martins et al., 2004).

Hybrid work involves a combination of both in-office work and virtual work, where workers may sometimes conduct their work tasks in the office while working virtually at other times (Sokolic, 2022). Workers in HWAs may spend parts of their working week working in the office while working off-site, for example from home or a co-working space, on other days. While some scholars consider hybrid workplace models to include two elements, namely working remotely for some parts of the working week and having flexible working hours (Radonić et al., 2021), the term hybrid work in this thesis refers solely to the former. In this way, hybrid work refers to a specific form of flexible work arrangements, where employees have flexibility over where they work. HWAs can vary in terms of how much freedom employees have over how often they can work off-site, and in terms of how regular their schedule for working off-site is. For example, organizations may give employees full flexibility over how often they work virtually, or require employees to come into the office for a minimum number of days. Organizations may also mandate that certain days are "office days", instilling a regular schedule.

Reports indicate that while both employers and employees expect to work virtually to a greater extent post-pandemic than before the pandemic, employees have a greater preference for hybrid work over purely-virtual work arrangements (Eurofound, 2020; OECD, 2021), since HWAs are perceived to allow employees to enjoy the benefits of flexibility, autonomy, and work-life balance from remote working while enjoying social connection from in-office work (Chafi et al., 2021). For this reason, hybrid work arrangements are poised to be the dominant working model of the future (Berger et al., 2021; Sokolic, 2022).

Given that HWAs differ from traditional in-office work arrangements in that they involve working virtually for a certain proportion of the working week, HWAs introduce work characteristics associated with virtual work, bringing a different set of benefits and challenges for employees. In order to analyze the effects of these work characteristics on employees at the individual level, we employ the JD-R model (Demerouti et al., 2001; Bakker & Demerouti, 2007), which examines how work

characteristics are related to individual-level processes and outcomes, as the theoretical framework of our study.

Job Demands-Resources Model

Demerouti et al. (2001) conceptualized work conditions as job demands and job resources. Job demands are aspects of the job that require sustained mental or physical effort to resolve, which are associated with psychological costs. These demands include physical, psychological, social, or organizational demands. Examples of job demands are emotionally demanding interactions, high work pressure, unfavorable physical environments, organizational changes, and emotional dissonance at work (Bakker & Demerouti, 2007: Xanthopoulou et al., 2007). It is important to note that job demands do not always have negative effects, but that they may become straining if they call for high effort that the employee cannot afford (Bakker & Demerouti, 2007; Meijman and Mulder, 1998).

Job resources, on the other hand, are physical, psychological, social, or organizational aspects of the job which help employees achieve goals, lower job demands and their associated costs, or encourage growth and development of the employee (Bakker & Demerouti, 2007). Bakker and Demerouti (2007) suggested that job resources could be split into four different levels, namely organizational, interpersonal and social relations, the organization of work, and the task level. For the level concerning the organization at large, important job resources are pay, career opportunities, and job security. At the interpersonal and social relations level, key job resources are supervisor and coworker support as well as a good team climate. At the level of organization of work, participation in decision making and role clarity are key job resources. At the task level, key job resources are task significance, autonomy, performance feedback, skill variety and task identity.

The JD-R model highlights two different psychological processes that result from job demands and resources, related to burnout and engagement respectively (Demerouti et al., 2001; Hakanen et al., 2006). Burnout is characterized by emotional exhaustion, low levels of energy, cynicism toward work, and reduced professional efficacy, while engagement is characterized by a positive motivational state of vigor,

high levels of energy, involvement, dedication, and absorption (Bakker et al., 2014; Schaufeli et al., 1996; Schaufeli et al., 2002). First, job demands are associated with a de-energising or strain process, where they exhaust an employee's resources, both mental and physical, leading to burnout and in turn negative effects on health. Job resources, on the other hand, are associated with a motivational process, where a greater level of resources promotes work engagement, which in turn enhances organizational commitment. This motivational effect arises from either intrinsic motivation, through the fulfillment of basic human needs for relatedness, autonomy, and competence (Deci & Ryan, 1985, 2000), or through extrinsic motivation, by providing resources instrumental to fulfilling tasks and therefore increasing the likelihood of success (Demerouti et al., 2001; Hakanen et al., 2006).

The model also proposes that job demands and resources have interaction effects, where the presence of job resources can have a buffering effect on the strain process that job demands impose (Bakker & Demerouti, 2007). Furthermore, the model proposes that when job demands are high, the motivational effect of job resources is higher (Bakker & Demerouti, 2007). Following Hobfoll's (2001) conservation of resources (COR) theory, which states that individuals seek to acquire and preserve resources, and prevent the loss of resources, the model asserts that higher job demands exhausts one's job resources, and the resulting high salience of resource loss increases the importance and motivating effect of additional job resources (Hobfoll, 2002). Indeed, testing the Job Demands-Resources model in a study of 2555 Finnish dentists, Hakanen et al. (2008) found that job resources influenced work engagement, and that job demands predicted burnout over time. In the same study they also found that job resources also had a weak negative impact on burnout (Hakanen et al., 2008).

Burnout and work engagement have significant consequences for both individual- and organizational performance (Bakker et al., 2014). Burnout is related to negative health outcomes (Bakker et al., 2014), with higher levels of burnout being associated with more sickness absence days per year (Borritz et al., 2006). Similarly, Schaufeli (2015) found that burnout positively predicted duration of absences due to sickness. Furthermore, burnout has negative effects on job performance (Bakker et

al., 2014). In two studies conducted by Bakker & Heuven (2006), burnout and in-role performance were found to be negatively related. Similarly, in a meta-analysis of 16 studies, Taris (2006) found that burnout was negatively related to objective performance. Bakker et al. (2008) found that as proposed by the JD-R model, exhaustion mediated the relationship between job demands and performance. Similarly, Schaufeli (2015) found that burnout mediated the relationship between job demands and performance, as well as other individual-level outcomes, namely employability and organizational commitment. In addition, high levels of burnout is associated with the occurrence of employee self-undermining, where employees' behaviors "create obstacles that may undermine performance" (Bakker & Costa, 2014, p. 115). These obstacles add to the job demands that are experienced by the employee, leading to greater strain and higher levels of burnout. The burnout experienced by the employee in turn leads to more self-undermining behaviors, such as more mistakes made, which create more obstacles and increase the level of job demands. This leads to a vicious cycle and a self-reinforcing process, and potentially chronic burn-out.

Engagement has similarly been found to be related to health-related individual outcomes, with Schaufeli et al. (2009) finding that engagement was associated with a lower frequency of absences due to sickness. In addition, by measuring self-rated, coworker-rated and supervisor-rated in-role performance for 587 employees, Halbesleben and Wheeler (2008) found evidence for a positive relationship between work engagement and performance, where higher work engagement predicted higher in-role performance. Christian et al. (2011) found that in addition to higher in-role performance, work engagement also led to higher extra-role performance, like the performance of organizational citizenship behaviors. Furthermore, engagement has been found to be an important predictor of client satisfaction, customer loyalty and organizational performance (Bakker et al., 2014; Xanthopoulou et al., 2009; Salanova et al., 2005).

Given the importance of both burnout and engagement as predictors of other individual-level and organizational-level outcomes, this study examines burnout and engagement as the key individual-level outcomes.

Characteristics of Virtual Work

HWAs involve a degree of virtual work in addition to in-office work, thereby introducing work characteristics associated with virtual work. This section explores the unique characteristics of virtual work, which have implications on the job demands placed on employees as well as the job resources that are available to them, as compared to traditional work settings.

Job Demands

Past research has found that virtual work places greater job demands on employees, compared to when working in-office. Since virtual work implies that employees are geographically-dispersed, individuals experience a decrease in face-to-face interaction and a greater reliance on computer technology to communicate with their colleagues (Bailey & Kurland, 2002; Gibson & Gibbs, 2006). This is associated with greater challenges in establishing shared understandings when communicating with coworkers, with the lack of casual and informal encounters with coworkers at the workplace also resulting in lowered awareness of other collaborators' work progress (Cramton, 2001). Furthermore, the geographically-dispersed nature of virtual work is associated with greater difficulties establishing trust (Olson & Olson, 2000), as well as greater role ambiguity (Sardeshmukh et al., 2012). The lowered awareness of other collaborators' work, difficulties establishing trust amongst collaborators and greater role ambiguity poses great challenges for collaboration in virtual settings (Morrison-Smith & Ruiz, 2020).

Additionally, the reliance on computer-mediated communication in virtual work also introduces the challenge of adopting new ways of working that integrate more technology, which place greater demands on employees to adopt new technologies and expand their technological competencies (Graves & Karabayeva, 2020; Olson & Olson, 2000). Virtual work is also associated with a greater experience of technostress (Molino et al., 2020), which is defined as "the phenomenon of stress experienced by end users in organizations as a result of their use of ICTs" (Ragu-Nathan et al., 2008, pp. 417–418), resulting in negative symptoms including anxiety, mental fatigue, poor concentration (Tarafdar et al.,

2015; La Torre et al., 2019). Another job demand related to the increase of technology use is the experience of technology anxiety (Prodanova & Kocarev, 2021), where the employee is unsure of how to handle the technology needed to perform their work tasks because they are afraid of the consequences if they were to make mistakes, e.g. losing data, corrupting the system, which result in negative affect and negatively affect work outcomes (Prodanova & Kocarev, 2021).

Virtual work has also been found to be related to increased workload (Graves & Karabayeva, 2020; Jamal et al., 2021), in part from the increased cognitive load arising from the need to process and manage information from multiple streams and platforms (Ragu-Nathan et al., 2008), a higher level of expectations for work completion and resultantly greater pressure to complete more work in the same amount of time (Tarafdar et al., 2015), as well as being constantly available and accessible to work demands through communication technology (Schröder et al., 2021). Indeed, Eurofound and ILO (2017) found that virtual workers are more affected by overtime, experience greater time pressure, and have more intense work schedules, overall experiencing higher levels of stress.

In addition, virtual work is associated to greater work-life conflict due to blurred boundaries between work and family life (Graves & Karabayeva, 2020; Eurofound & ILO, 2017), with employees being increasing subject to the expectation that work should be completed outside of the usual working hours (Barber et al., 2019; Sarbu, 2018) and facing greater difficulties in disconnecting from work (Felstead & Henseke, 2017). Furthermore, virtual work is associated with greater role conflict since both work and family may place a concurrent demand on the individual (Moore, 2006), with individuals having to make more role transitions between home and work roles (Delanoeije et al., 2019).

Job Resources

With lower levels of in face-to-face interaction and a greater reliance on computer technology communication associated with virtual work (Bailey & Kurland, 2002; Gibson & Gibbs, 2006), virtual work is associated with a reduced sense of connectedness (Gibson & Gibbs, 2006; Kirkman et al., 2002), increased

sense of isolation (Golden et al., 2008; Whittle & Mueller, 2009), reduced social support (Sardeshmukh et al., 2012; Tejero et al., 2021), and greater experience of psychological distance (Tejero et al., 2021) amongst employees. Furthermore, the lack of face-to-face interactions and informal encounters between employees and their co-workers or supervisors reduce opportunities to ask for, give, or receive feedback (McLarnon et al., 2019; Sardeshmukh et al., 2012).

Although virtual work is associated with a greater experience of job autonomy (Gálvez et al., 2020), Sardeshmukh and colleagues (2012) found that the negative effect of virtual work on social support was stronger than its positive effect on job autonomy. Taken together, the overall decrease in job resources mediated a negative relationship between virtual work and work engagement (Sardeshmukh et al., 2012). Furthermore, the use of technology to monitor employees is associated with an "autonomy paradox" where the greater the autonomy one has from virtual work, the more employees feel controlled (Putnam et al., 2014; Mazmanian et al., 2013). In addition, Santarpia et al. (2021) highlight the complex, "double-edged" effects of enhanced job autonomy in virtual work, finding that job autonomy was related to the greater occurrence of both work interrupting non-work behaviors and non-work interrupting work behaviors, and was thereby indirectly and positively related to greater work-family conflict. Given the complexity related to enhanced job autonomy in virtual work, the overall effect that it has on job resources remains inconclusive. Taking its negative impact on social support into account, we deem virtual work to have an overall negative impact on job resources.

In the context of hybrid work, we posit that a greater frequency of virtual work in HWAs brings a greater shift towards the work characteristics associated with virtual work outlined above. In other words, as employees spend more time working virtually instead of in-office, the more they experience the job demands and resources associated with virtual work.

Role of Leadership in JD-R Theory

In an integration of leadership into the JD-R model, Schaufeli (2015) proposed that leaders have the role of managing the job demands and resources that

followers have, in order to promote engagement and mitigate burnout. Specifically, Schaufeli (2015) theorized that *engaging leadership*, where leaders inspire, strengthen, and connect their followers, is directly related to lower burnout and higher engagement through the fulfillment of basic psychological needs (Deci & Ryan, 1985, 2000), and also has indirect effects of lower burnout and higher engagement by lowering job demands and enhancing job resources. In a study involving 1213 participants, Schaufeli (2015) found that engaging leadership had an indirect effect on burnout and engagement through influencing followers' job demands and resources, while no direct effect was found. In other words, engaging leadership that inspires, strengthens, and connects followers influences follower burnout and engagement solely through its effect on job demands and resources.

In a literature review of leadership and JD-R theory, Tummers and Bakker (2021) identify three main mechanisms through which leaders can influence employee outcomes through its effects on job demands and resources. First, leaders may directly reduce job demands placed on followers, for example by reducing work overload, managing work-home conflicts, and managing organizational change (Schaufeli, 2015). In addition, leaders can also directly enhance work resources by enhancing the control that followers have over their work, providing developmental resources by giving performance feedback, coaching, or opportunities for training, enhancing organizational resources by instilling a climate for organizational trust and justice, or establishing an inspiring vision and organizational values (Schaufeli, 2015). These job resources can be either functional resources which are instrumental to the fulfillment of job tasks, or psychological resources which fulfill basic human needs for relatedness, autonomy, and competence (Deci & Ryan, 1985, 2000), which in turn enhance extrinsic and intrinsic motivation respectively (Bakker & Demerouti, 2007; Chiniara & Bentein, 2016).

Second, Tummers and Bakker (2021) highlight that certain leadership behaviors can have a moderating effect on the relationships between job resources and the motivational process, and between job demands and the strain process. For instance, inspiring leadership behaviors can engage followers to mobilize and make better use of the job resources that they have (Bass & Riggio, 2006). This enhances

the motivational process, through the greater utilization of job resources. Furthermore, the mobilization of job resources enhances the buffering effect of such resources, which serves to reduce the strain caused by job demands (Bakker & Demerouti, 2007).

Finally, leaders can influence job demands and job resources indirectly. For example, several forms of leadership have been found to be related to job-crafting amongst followers (Mäkikangas et al., 2017; Thun & Bakker, 2018; Wang et al., 2017; Yang et al., 2017). Job-crafting is a process in which followers proactively craft and shape their jobs to make work characteristics more optimal, in turn reducing job demands and enhancing job resources. Servant leadership (Yang et al., 2017), transformational leadership (Wang et al., 2017), engaging leadership (Mäkikangas et al., 2017), and empowering leadership (Thun & Bakker, 2018) have been identified in past research as antecedents to follower job-crafting. In this way, leadership can serve not only to enhance job demands and resources directly, but also inspire and empower followers to directly manage and mitigate other job demands that they face and enhance their job resources on their own accord.

Through these three mechanisms, leaders can have a significant role in reducing the job demands and enhancing job resources that employees have at work, and by extension have a significant impact on individual employee outcomes of burnout and engagement, through the strain and motivational processes.

Leadership Taxonomy

Aligned with this study's intended objective to illuminate how leadership should be adapted to hybrid work in order to pave the way for development of appropriate leadership competencies in HWAs, this study adopts the behavioral approach to leadership. Since the behavioral approach provides a structured overview of positive leadership behaviors (Behrendt et al., 2017), it provides for a useful and comprehensive conceptual framework to examine how various behavioral aspects of leadership become more or less important to enhancing employee outcomes as virtual work becomes more frequent in HWA. Furthermore, by conceptualizing effective leadership as the exhibition of learnable leadership behaviors, the premise underlying

the behavior approach is that good leadership can be developed (Northouse, 2019). Adopting the behavior approach to leadership to examine the importance of various leadership behaviors in HWA allows us to identify leadership behaviors that should be developed amongst managers in HWAs, establishing a starting point for leadership development for such managers. Our findings will be able to empower current leaders to lead effectively in HWAs by providing them with a roadmap for how they should adapt their leadership and which leadership behaviors they should emphasize.

The first studies employing the behavioral approach to leadership were conducted by Hemphill and Coons (1957) who developed The Leader Behavior Description Questionnaire (LBDQ). Stogdill (1974) found that followers' ratings of their leaders' behaviors using the LBDQ formed two clusters, namely *consideration* and *initiating structure*, which were viewed as two distinct and independent types of leadership behavior. *Consideration* refers to the extent to which the leader is concerned about the welfare of followers, and *initiating structure* refers to behaviors that are related to task fulfillment (Stogdill, 1974). Similarly, researchers at the University of Michigan identified two types of behaviors, naming them *employee orientation* and *production orientation* (Katz & Kahn, 1951; Likert, 1961, 1967), which are conceptually very similar to *consideration* and *initiating structure* (Stogdill, 1974) respectively. In the same vein, Blake and Mouton (1964) explored how managers used task and relationship behaviors in organizational settings, developing a Managerial Grid comprising two independent dimensions of leader behavior, namely *concern for people* and *concern for production*. These three lines of research align on two core dimensions of leader behavior, which can broadly be defined as *task-oriented* and *relationship-oriented behaviors*. Since its development, much of leadership research has built upon this framework, and in meta-analyses by both Judge et al. (2004) and DeRue et al. (2011), the two dimensions are related to key leadership outcomes, namely ratings of leadership effectiveness, follower motivation, satisfaction with leader, follower job satisfaction, and team performance.

However, this framework has also been criticized, where researchers have been unable to find consistent relationships between task-oriented and relationship-oriented behaviors and performance (Bryman, 1992; Yukl, 1994). Yukl

(1994, p. 75) states that research has been "mostly contradictory and inconclusive". In response to the inconsistency of findings in leadership behavior research, Yukl and colleagues (2002) proposed a new leadership taxonomy. They argued that transformational and charismatic leadership (Bass & Avolio, 1993; House & Howell, 1992) included behaviors that related to change, which were not captured by the two-dimensional conceptualisation of leadership. Building on past research, a new taxonomy for leadership behavior was proposed, with three meta-categories, namely task-oriented, relation-oriented, and change-oriented behaviors, each consisting of a number of component behaviors. Confirmatory factor analysis showed that the proposed taxonomy had superior fit over both a one-factor model and the traditional two-factor model. A meta-analysis of 286 studies across five decades of research conducted by Borgmann et al. (2016) supports Yukl and colleagues' (2002) conceptualisation of the three meta-categories. The meta-analysis found that a structural equation model using Yukl's three meta-categories with outcomes of job satisfaction, commitment, and performance had superior fit over a model with two meta-categories of task and relation-oriented leadership, and a model one meta-category considering all leadership constructs combined. This study therefore utilizes Yukl's (2002, 2012) taxonomy to study leadership behaviors in the context of hybrid work arrangements (Table 1), specifically task-oriented, relation-oriented, and change-oriented leadership behaviors.

Yukl et al. (2002) highlight that the importance of each leadership behavior changes with context, stating that the *"*taxonomy identifies behaviors that are potentially relevant for effective leadership, but it is not assumed that they are equally relevant in all situations, or that every behavior is relevant in every situation*"* (pp. 29). Indeed, the situational leadership perspective, pioneered by Hersey and Blanchard (1969), emphasizes the need to consider situation variance when prescribing appropriate leadership behavior. Similarly, Lambert et al. (2012) also found that the *fit* between the type of leadership needed and received influences workers trust in their supervisors, job satisfaction, and affective commitment to the organization, highlighting that leadership behaviors should not be universally applied, but rather the effectiveness of the behaviors depends on how suitable it is for the

Table 1

Leadership Taxonomy from Yukl (2012)

Meta-category	Specific Behavior	Definition
Task-Oriented Behavior	Clarifying	Clearly explains task assignments and member responsibilities; sets specific goals and deadlines for important aspects of the work; explains priorities for different objectives; explains rules, policies, and standard procedures
	Planning	Develops short-term plans for the work; determines how to schedule and coordinate activities to use people and resources efficiently; determines the action steps and resources needed to accomplish a project or activity
	Monitoring Operations	Checks on the progress and quality of the work; examines relevant sources of information to determine how well important tasks are being performed; evaluates the performance of members in a systematic-way
	Problem Solving	Identifies work-related problems that can disrupt operations, makes a systematic but rapid diagnosis, and takes action to resolve the problems in a decisive and confident way
Relations-Oriented Behavior	Supporting	Shows concern for the needs and feelings of individual members; provides support and encouragement when there is a difficult or stressful task, and expresses confidence members can successfully complete it
	Developing	Provides helpful feedback and coaching for members who need it; provides helpful career advice; encourages members to take advantage of opportunities for skill development
	Recognizing	Praises effective performance by members; provides recognition for member achievements and contributions to the organization; recommends appropriate rewards for members with high performance
	Empowering[1]	Involves members in making important work related decisions and considers their suggestions and concerns; delegates responsibility and authority to members for important tasks and allows them to resolve work-related problems without prior approval
Change-Oriented Behavior	Advocating Change	Explains an emerging threat or opportunity; explains why a policy or procedure is no longer appropriate and should be changed; proposes desirable changes; takes personal risks to push for approval of essential but difficult changes.
	Envisioning Change	Communicates a clear, appealing vision of what could be accomplished; links the vision to member values and ideals; describes a proposed change or new initiative with enthusiasm and optimism
	Encouraging Innovation	Talks about the importance of innovation and flexibility; encourages innovative thinking and new approaches for solving problems; encourages and supports efforts to develop innovative new products, services, or processes
	Facilitating Collective Learning	Uses systematic procedures for learning how to improve work unit performance; helps members understand causes of work unit performance; encourages members to share new knowledge with each other
External-Oriented Behavior	Networking	Attends meetings or events; joins professional associations or social clubs; uses social networks to build and maintain favorable relationships with peers, superiors, and outsiders who can provide useful information or assistance
	External Monitoring	Analyzes information about events, trends, and changes in the external environment to identify threats, opportunities, and other implications for the work unit
	Representing	Lobbies for essential funding or resources; promotes and defends the reputation of the work unit or organization; negotiates agreements and coordinates related activities with other parts of the organisation or with outsiders

[1] Empowering was split into “Consulting” and “Delegating” in the Managerial Practices Survey (MPS-G-16-4).

situation. Past research has found that how virtual work is moderates the effect of different styles of leadership. For example, a greater degree of virtuality in work has been found to weaken the effect of hierarchical leadership on performance (Hoch & Kozlowski, 2014) and enhance the effect of inspirational leadership on commitment and trust (Joshi et al., 2009). Building on the premise that the importance of leadership behaviors can change depending on the situation, this study investigates how the effects of the three categories leadership behaviors in the leadership taxonomy changes as the extent to which work is conducted virtually instead of in-office in HWAs changes.

Hypotheses

Effects of Virtual Work Frequency

Virtual work has different characteristics from co-located work, which brings a different set of job demands and resources for workers. With a greater frequency of working virtually instead of in-office in a HWA, the increase in job demands and decrease in job resources associated with virtual work is proposed to strengthen the strain and weaken the motivational processes proposed by JD-R theory (Demerouti et al., 2001; Hakanen, Bakker, & Schaufeli, 2006), thereby having a negative effect on employee burnout and engagement.

The motivational process in the JD-R model posits that job resources enhance employee work engagement (Hakanen et al., 2006; Bakker & Demerouti, 2007). Virtual work is associated with decreases in job resources that employees have, with increased isolation and the lack of face-to-face communication reducing important feedback and support from coworkers and leaders (Sardeshmukh et al., 2012; Jamal et al., 2021) while having complex and inconclusive effects on job autonomy (Putnam et al., 2014; Santarpia et al., 2021). This weakens the motivational process, which leads to lower levels of engagement. Therefore, we theorize that virtual work frequency is negatively related to employee engagement, where engagement decreases as virtual work becomes more frequent.

The strain process in the JD-R model posits that job demands lead to the exhaustion of mental and physical resources of employees, in turn leading to burnout

(Hakanen et al., 2006; Bakker & Demerouti, 2007). Virtual work increases the job demands placed on employees, with studies showing that job demands such as workload pressure, task interdependence, family interference, role ambiguity, and technology anxiety are often higher in virtual work (Jamal et al., 2021; Sardeshmukh, 2012; Prodanova & Kocarev, 2021). This strengthens the strain process, which leads to exhaustion and burnout. Hence, we theorize that virtual work frequency is positively related to employee burnout, where burnout increases as virtual work becomes more frequent.

H1a: Frequency of virtual work is negatively related to employee engagement, where a higher frequency of virtual work decreases employee engagement.

H1b: Frequency of virtual work is positively related to employee burnout, where a higher frequency of virtual work increases employee burnout.

Effects of Leadership Behaviors

We theorize that in hybrid work arrangements, leader behaviors from all three meta-categories, namely task-oriented, relations-oriented, and change-oriented leadership (Yukl, 2012), are related to employee engagement and burnout by influencing job demands and resources available to employees, and subsequently through the strain and motivational processes proposed by JD-R theory (Hakanen et al., 2006; Bakker & Demerouti, 2007). Specifically, each of the three meta-categories of leader behavior influence job demands and resources through the three mechanisms identified by Tummers and Bakker (2021).

First, each of the three meta-categories of leadership behaviors directly influence the job demands and job resources of their followers. We propose that task-oriented leadership behaviors reduce job demands and enhance job resources. By clarifying roles and procedures, providing instructions and direction for followers, helping them to problem solve and removing obstacles in fulfilling their job tasks, task-related leadership behaviors reduce the amount of mental or physical effort that is required to perform job tasks, thereby reducing job demands for employees. At the same time, these behaviors provide followers with job resources that are functional in achieving work goals, such as a clear role understanding and action plans as well as

solutions to problems encountered, thereby enhancing job resources (Bakker & Demerouti, 2007).

In the same vein, we theorize that relations-oriented leadership behavior enhances job resources. Firstly, relations-oriented leadership behaviors enhance psychological resources by fulfilling basic human needs (Deci & Ryan, 1985, 2000). Specifically, *supporting* behaviors fulfill the need for relatedness, through showing concern for employees' needs and emotions and providing support and encouragement when they are faced with difficulties at work. *Consulting* and *delegating* behaviors fulfills the need for autonomy, through involving employees in decision-making, taking their opinions and concerns into account, as well as assigning authority to employees to make decisions regarding their work tasks and issues. Finally, one's need for competence is fulfilled through *developing* behaviors, where leaders develop employees skills and competencies through feedback, advice, and coaching. *Recognizing* behaviors also fulfill the need for competence, where leaders commend and praise employees for good performance and achievements.

We theorize that change-oriented leadership behavior (Yukl, 2012) also reduces job demands and enhances job resources. Particularly in the context of virtual work being involuntary and initiated by governmental regulations, change-oriented leadership behavior reduces employees' change resistance and enhances employees' change-readiness, which is crucial in the transition to virtual work from traditional work arrangements. Specifically, *advocating change* involve communicating to followers the need for transformation and proposing a desirable change to respond to an emerging threat of opportunity. *Envisioning change* involves communicating a clear vision of a future state that is appealing and engaging to followers. *Encouraging innovation* involves communicating the importance of innovation, encouraging new ways of working or finding new solutions to problems, and encouraging efforts in innovation. *Facilitating collective learning* involves establishing processes for organizational or team-level learning and encouraging knowledge sharing. These change-oriented leadership behaviors serve to reduce the job demands, specifically organizational demands, placed on followers when organizations undergo digital transformations by helping to manage organizational change (Yukl, 2012). These

behaviors also serve to enhance followers' change readiness, defined as "beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organization's capacity to successfully undertake those changes" (Armenakis et al., 1993, pp. 681). Change readiness is a key personal resource especially in the context of digital transformation, which is associated with change-supportive behaviors, job performance, job satisfaction and organizational commitment (Rafferty et al., 2013; Rafferty & Minbashian, 2019).

Secondly, as proposed by Tummers and Bakker (2021) leadership behaviors can influence the strain and motivational processes and moderate the effects of job demands and job resources on burnout and engagement respectively. Specifically, change-oriented leadership behaviors of *advocating change* and *envisioning change* serve to inspire commitment and motivation towards a vision, which motivates followers to mobilize the job resources that they have. This firstly enhances the motivational process, and secondly strengthens the buffering effect of job resources such that the strain process associated with job demands becomes weaker.

Thirdly, leadership behaviors can also have indirect effects on job demands and job resources. Relations-oriented leadership behaviors, specifically autonomy-enhancing leadership behaviors such as *consulting* and *delegating* behaviors in Yukl's (2012) taxonomy, have been found to facilitate job crafting (Mäkikangas et al., 2017; Thun & Bakker, 2018; Wang et al., 2017; Yang et al., 2017), through which followers actively and directly influence the job demands that they face and the job resources that they have. In addition, change-oriented behaviors, such as *encouraging innovation* and *facilitating collective learning* encourage and enable followers to find new ways of doing things better, which can reduce job demands and increase the job resources they have.

By both directly and indirectly influencing job demands and resources, each of the three meta-categories of leadership behaviors are theorized to influence employee engagement and burnout through the motivational process and strain process proposed in the JD-R model respectively (Hakanen et al., 2006; Bakker & Demerouti, 2007).

Motivational Process

According to the JD-R model (Bakker & Demerouti, 2007; Demerouti et al., 2001; Hakanen, Bakker, & Schaufeli, 2006), job resources are associated with a motivational process. Specifically, they enhance intrinsic motivation through resources that fulfill basic human needs for relatedness, autonomy, and competence (Deci & Ryan, 1985, 2000), or extrinsic motivation through functional resources which increase the likelihood of success in fulfillment of tasks, both of which enhances employee engagement.

We theorize that task-oriented behaviors enhance extrinsic motivation by providing functional resources that are crucial to task-fulfillment, such as clear role and task expectations, plans of action or schedules for tasks to be done, and solutions for problems that individuals are facing. Additionally, we theorize that relations-oriented behaviors enhance intrinsic motivation by fulfilling basic needs of relatedness, autonomy, and competence, as outlined in the preceding section. Finally, we theorize that change-oriented behaviors enhance both intrinsic and extrinsic motivation, firstly by enhancing alignment and identification with a given organizational change, and secondly by engaging followers in innovative and learning behaviors to establish new ways of working, which are instrumental resources to the fulfillment of job tasks. Altogether, we theorize that through the aforementioned motivational processes, each of the three meta-categories of leadership behaviors are positively related to employee engagement.

H2a: Leader task-oriented behavior is positively related to employee engagement.

H2b: Leader relations-oriented behavior is positively related to employee engagement.

H2c: Leader change-related behavior is positively related to employee engagement.

Strain Process

According to the strain process, a high level of job demands exhaust one's job resources, which in turn leads to burn out (Demerouti et al., 2001; Hakanen, Bakker, & Schaufeli, 2006). We theorize that the lower levels of job demands resulting from

higher levels of task-oriented leadership behavior will also lead to lower levels of strain, and thereby lower levels of employee burnout. Change-oriented leadership behaviors also serve to enhance change-readiness and reduce change-resistance, relieving followers of the organizational demands associated with organizational change particularly in the context of digital transformation towards hybrid work arrangements involving more virtual work.

Additionally, the buffer hypothesis of the JD-R model proposes that job resources serve as a buffer against the strain process associated with job demands, where the higher the level of job resources, the lower the strain and exhausting effect of job demands (Bakker & Demerouti, 2007). We therefore theorize that with higher levels of relations-oriented behavior or change-oriented behavior, which serve to enhance job resources, there will be a greater buffering effect against the strain process associated with job demands, thereby leading to lower levels of employee burnout.

H3a: Leader task-oriented behavior is negatively related to burnout.
H3b: Leader relations-oriented behavior is negatively related to burnout.
H3c: Leader change-related behavior is negatively related to burnout.

Moderating Relationships

Liao (2017) proposes that leader behaviors have stronger relationships with individual processes and outcomes as the frequency of virtual work increases. Indeed, job demands like role ambiguity (Sardeshmukh et al., 2012), difficulty of communication (Morrison-Smith & Ruiz, 2020), workload (Graves & Karabayeva, 2020; Jamal et al., 2021), technological demands (Olson & Olson, 2000), and work-life conflict (Graves & Karabayeva, 2020) increase as work becomes increasingly virtual. Furthermore, as work becomes more virtual, employees may experience greater disconnectedness (Gibson & Gibbs, 2006; Kirkman et al., 2002) and isolation and less social support (Golden et al., 2008; Whittle & Mueller, 2009; Sardeshmukh et al., 2012), thereby having a lower level of job resources than when the frequency of virtual work is lower. Hence, the leader's role in mitigating these

challenges and reducing job demands, as well as enhancing job resources becomes even more important in work arrangements that are more virtual (Liao, 2017).

Indeed, comparing follower-reported ratings of the importance of various leadership behaviors in virtual communication settings and face-to-face communication settings, Zimmermann et al. (2008) found that the relative importance of several behaviors increases as team members' daily work is increasingly virtual. We therefore theorize that as the frequency of virtual work increases in HWAs, each of the three meta-categories of leadership behaviors will have a stronger effect on both the strain and motivational processes.

H4a: Frequency of virtual work moderates the relationship between leader task-oriented behavior and employee engagement. The more frequently one works virtually instead of in-office, the stronger the positive relationship between leader task-oriented behavior and employee engagement.

H4b: Frequency of virtual work moderates the relationship between leader relations-oriented behavior and employee engagement. The more frequently one works virtually instead of in-office, the stronger the positive relationship between leader relations-oriented behavior and employee engagement.

H4c: Frequency of virtual work moderates the relationship between leader change-oriented behavior and employee engagement. The more frequently one works virtually instead of in-office, the stronger the positive relationship between leader change-oriented behavior and employee engagement.

H5a: Frequency of virtual work moderates the relationship between leader task-oriented behavior and employee burnout. The more frequently one works virtually instead of in-office, the stronger the negative relationship between leader task-oriented behavior and employee burnout.

H5b: Frequency of virtual work moderates the relationship between leader relations-oriented behavior and employee work burnout. The more frequently one works virtually instead of in-office, the stronger the negative relationship between leader relations-oriented behavior and employee work burnout.

H5c: Frequency of virtual work moderates the relationship between leader change-oriented behavior and employee work burnout. The more frequently one works virtually instead of in-office, the stronger the negative relationship between leader change-oriented behavior and employee work burnout.

Method

To investigate our hypotheses, a survey-based, cross-sectional study was conducted. Although cross-sectional designs are associated with common method variance (Podsakoff et al., 2003) and reduced ability to draw causal conclusions (Spector, 2019) as compared to longitudinal designs, a cross-sectional design was deemed most suitable for our study given our limited time-frame for data collection. Furthermore, Spector (2019) argues that temporal separation controls only for a narrow range of potential error, for example occasion factors like momentary mood, and does not aid in controlling for more enduring sources of common method variance such as individual characteristics or measurement methods. Additionally, Spector (2019) cites that cross-sectional designs have not been found that have consistently larger correlations than findings emerging from longitudinal designs (Nixon et al., 2011; Pindek & Spector, 2016). While associated with greater common method variance (Podsakoff & Organ, 1986), self-report surveys were deemed most suitable due to the ease of administration to the large, geographically dispersed sample. Furthermore, the constructs measured, such as engagement and burnout, concern internal states, are difficult to measure outside of self-reports. We therefore utilized self-report surveys while mitigating the potential risk of common method variance with statistical remedies to ensure discrimination validity between the measured constructs (Podsakoff & Organ, 1986).

Organizational Context

Our hypotheses were tested using data collected from employees working for Wilh. Wilhelmsen Group, a Norwegian maritime company. Wilh. Wilhelmsen Group employs 10,988 seafarers, and 4,476 land-based employees in 239 offices across 60 countries (WWH, 2021). Following the global COVID-19 pandemic, most land-based employees have worked from home in 2020 (WWH, 2020) in compliance with

governmental stay-home orders in countries all over the globe mandating workplace closures (ILO, 2021). As vaccination rates increased in 2021, workplace restrictions were eased in many countries (ILO, 2021), allowing workers to return to offices at least partially (i.e. for a certain number of days each week). Wilh. Wilhelmsen Group then launched a global organizational policy allowing for HWA, requiring that employees work from their designated offices at least three days out of each five-day working week if governmental regulations allowed them to while giving employees the choice to work virtually for two days of the week. However, since different offices were affected by varying government-mandated restrictions, many employees were required to work from home for more than three days a week (WWH, 2021). The sample therefore consisted of employees who worked in HWA with varying frequencies of virtual work, yielding a research setting with a reasonable distribution in the number of days that employees spent working virtually in 2021.

Procedure and Sample

Approval for the collection and processing of personal data was first obtained from the Norwegian Centre for Research Data (Appendix A). All land-based employees in Wilh. Wilhelmsen Group were then invited via email to complete an online questionnaire in March 2022, hosted on Qualtrics. Employees were informed about the nature of the questionnaire in a cover letter. Participation was voluntary, and consent to participate in the study was obtained from each participant before data collection. In addition, all participants were able to withdraw their consent from participating in the project at any point of time. Data was encrypted and stored securely, to be deleted after 12 months.

A total of 336 responses were received. A total of 199 were female (59.2%), 135 were male (40.2%), while the remaining 2 participants preferred not to answer. The average age was 40.99 years old (*S.D.* = 10.20). The average organizational tenure was 10.17 years (*S.D.* = 8.23). The average duration working under their current line manager was 4.17 years (*S.D.* = 3.95). On average, participants worked virtually for 2.29 days out of a five-day work week in the year of 2021.

Measures

Frequency of Virtual Work

Frequency of virtual work was measured by asking participants "How many days in a five-day work week did you work out of the office, on average, in 2021?" Participants answered in true days, between 0 to 5.

Leadership Behaviors

Leadership behaviors were measured using the revised version of Managerial Practices Survey from Yukl et al. (2002), as used in Yukl et al. (2012; MPS-G-16-4). Participants were instructed to rate the frequency at which their current line managers exhibited various leadership behaviors in the year 2021 on a five point scale (1 = Not at all, or Not applicable, 2 = To a limited extent, 3 = To a moderate extent, 4 = To a considerable extent, 5 = To a very great extent). An example item from the task-oriented scale was "*explains what results are expected for a task or assignmen*t." An example item from the relations-oriented scale was "*shows sympathy and understanding when a member is worried or upset*". Finally, an example item from the change-oriented scale was "*explains why changes are necessary to deal with an emerging threat or opportunity*". Cronbach's alpha was .99, and similarly high for each subscale, namely Task-oriented ($\alpha = .97$), Relations-oriented ($\alpha = .98$), and Change-oriented ($\alpha = .98$).

Employee Work Engagement

Employee work engagement was measured using the Utrecht Work Engagement Scale (UWES-9) created by Schaufeli et al. (2006) where participants rated nine statements about how they feel at work on a seven-point scale ($\alpha = .91$). If the participants had never experienced the feeling they should cross the "0", but if they had experienced the feeling they should cross one of the numbers from 1-6 to indicate how frequently they have felt that way. Examples of items were "*At my job, I feel strong and vigorous*" and "*I am enthusiastic about my job*". Participants were asked to rate these statements based on how they felt at the end of year 2021.

Employee Burnout

Employee burnout was measured using the Maslach Burnout Inventory (MBI; α = .85) originally created by Maslach and Jackson (1981) where respondents rate 16 statements concerning burnout on a four-point Likert scale (Strongly Disagree, Disagree, Agree, Strongly Agree). Examples of statements being used were *"I always find new and interesting aspects in my work"* and "*during my work, I often feel emotionally drained*". Participants were asked to rate these statements based on how they felt at the end of year 2021.

Other Variables

Data on gender, age, organizational tenure, and duration working under the current line manager were also collected. Gender was measured in three categories, namely 1 = Female, 2 = Male, and 3 = Prefer not to answer. Participants reported their ages, organizational tenures, and tenure under line manager in true years.

Analysis

A Principal Component Analysis (PCA) was first conducted on SPSS to inspect the factor loadings, in order to ensure the convergent and discriminant validity of the measures (Farrell, 2010). Subsequently, a Confirmatory Factor Analysis (CFA) was conducted to examine the fit of the variables measured in our study with their structural model. The CFA was conducted on R using the lavaan package.

H1a proposes a negative relationship between the frequency of virtual work and employee engagement. To test H1a, a bivariate correlation analysis between the frequency of virtual work and engagement was performed on SPSS. H1b proposes a positive relationship between the frequency of virtual work and employee burnout. To test H1b, a bivariate correlation analysis between the frequency of virtual work and burnout was performed on SPSS.

H2a, H2b, and H2c propose a positive relationship between engagement and leader task-oriented, relations-oriented, and change-oriented behavior respectively. To test these hypotheses, a bivariate correlation analysis between employee engagement

and the three meta-categories of leader behavior was performed on SPSS. Similarly, H3a, H3b, and H3c propose a negative relationship between burnout and leader task-oriented behavior, relations-oriented, and change-oriented behavior respectively. To test these hypotheses, a bivariate correlation analysis between employee burnout and the three meta-categories of leader behavior was performed on SPSS.

H4a, H4b, and H4c propose that the frequency of virtual work moderates the relationship between engagement and leader task-oriented, relations-oriented, and change-oriented behavior respectively, such that as the frequency of virtual work increases, the positive relationship between each of the three meta-categories of leader behavior and engagement becomes stronger. Similarly, H5a, H5b, and H5c propose that the frequency of virtual work moderates the relationship between burnout and leader task-oriented behavior, relations-oriented behavior, and change-oriented behavior respectively, such that as the frequency of virtual work increases, the negative relationship between each of the three meta-categories of leader behavior and burnout becomes stronger. To test H4 and H5, a moderation analysis was performed on SPSS using the PROCESS macro (version 4.1). The models were specified to conduct bootstrapping with 5,000 resamples, with 95% confidence intervals.

Results

The study sought to examine three meta-categories of leadership behavior, which Yukl (2012) asserts to have superior fit over a two-factor model, namely task-oriented, relations-oriented, and change-oriented leadership. However, PCA indicated cross-loading of items in change-oriented behavior on multiple factors. Removing change-oriented items, the PCA supported a two-factor structure, with task-oriented and relations-oriented items loading on distinct factors. Given the inadequate fit of change-oriented items to the model, change-oriented leadership behaviors and associated hypotheses were therefore removed from the analyses, leaving task-oriented and relations-oriented leadership behaviors as the key leadership constructs studied.

Results of the CFA model including employee engagement, employee burnout, and task-oriented and relations-oriented leader behaviors as separate factors indicated an acceptable fit to the data ($\chi 2$ (1696) = 3006.81, $p < .001$; $\chi 2$ /df = 1.77; CFI = .93 .; TLI = .92; RMSEA = .05; SRMR = 0.06). The four-factor model had a better fit than a three-factor model where task-oriented and relations-oriented leadership behavior meta-categories were collapsed into a single leadership factor ($\chi 2$ (1707) = 5435.20, $p < .001$; $\chi 2$ /df = 3.18; CFI = .79; TLI = .78; RMSEA = .08; SRMR = 0.07). Similarly, the four-factor model had a better fit than a three-factor model where engagement and burnout were collapsed into a single factor ($\chi 2$ (1766) = 5713.66, $p < .001$; $\chi 2$ /df =3.24; CFI = .78; TLI = .77; RMSEA = .08; SRMR = 0.07). Finally, the four-factor model had a superior fit over a one-factor model ($\chi 2$ (1769) = 8412.89, $p < .001$; $\chi 2$ /df =4.76; CFI = .63; TLI = .62; RMSEA = .11; SRMR = 0.13). Table 2 displays the means, standard deviations, and correlations of all variables.

Hypothesis Testing

H1a predicted a negative relationship between frequency of virtual work and employee engagement. As depicted in Table 2, the results of the bivariate correlation analysis show a significant and negative relationship was found between frequency of virtual work and engagement (-.17, $p < .001$). H1a was therefore supported. On the other hand, H1b predicted a positive relationship between frequency of virtual work and employee burnout. The results of the bivariate correlation analysis show that no significant relationship was found between frequency of virtual work and burnout (.03, $p > .10$). H1b was therefore not supported.

H2a and H2b each predicted a positive relationship between task-oriented and relations-oriented leadership behaviors with employee engagement respectively. As depicted in Table 2, the results of the bivariate correlation analysis found a significant and positive relationship between employee engagement and task-oriented (.24, $p < .01$) and relations-oriented leadership behaviors (.25, $p < .01$) respectively. H2 was therefore supported.

Table 2

Means, Standard Deviations, Correlations, and Alpha Reliabilities[1]

	M	S.D.	1	2	3	4	5	6	7	8	9
1. Age	40.99	10.20	-								
2. Gender[2]	.40	.49	05	-							
3. Organizational Tenure	10.17	8.23	.63**	.02	-						
4. Years under Manager	4.17	3.95	.17**	.04	.34**	-					
5. Frequency of Virtual Work[3]	2.29	1.84	.07	-.76	-.04	-.16**	-				
6. Task-Oriented	4.05	.74	-.06	.03	.01	.09	-.02	(.97)			
7. Relations-Oriented	4.04	.80	-.05	-.01	.01	.11	-.02	.90**	(.98)		
8. Engagement	4.06	1.00	.07	.17**	0.05	-.14*	-.17**	.24**	.25**	(.91)	
9. Burnout	2.15	.40	-.11*	-.09	-.07	-.01	.03	-.23**	-.26**	-.52**	(.85)

[1] Alpha coefficients are in parentheses on the diagonal

[2] Female coded as 1, Male coded as 0

[3] Number of days working virtually in a 5-day work week

$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$.

H3a and H3b each predicted a negative relationship between task-oriented and relations-oriented leadership behaviors with employee burnout respectively. As depicted in Table 2, the results of the bivariate correlation analysis found a significant and negative relationship between employee burnout and task-oriented (-.23, $p < .01$) and relations-oriented leadership behaviors (-.26, $p < .01$) respectively. H3 was therefore supported.

Results of the moderation analyses testing H4 and H5 are presented in Table 3. H4a and H4b each predicted that the frequency of virtual work moderates the relationships between engagement and task-oriented and relations-oriented leadership behaviors respectively. Moderation analyses showed that while task-oriented (B = .34, SE = .12, t = 2.91, $p < .01$) and relations-oriented leadership behaviors (B = .28, SE = .11, t = 2.64, $p < .05$) were each found to positively predict engagement, neither the frequency of virtual work nor the interaction between each of the leadership behavior meta-categories and frequency of virtual work had predictive effects on engagement. H4 was therefore not supported.

H5a and H5b, each predicted that the frequency of virtual work moderates the relationships between burnout and task-oriented and relations-oriented leadership behaviors respectively. Moderation analyses showed that task-oriented (B = -.13, SE = .05, t = -2.93, $p < .01$) and relations-oriented leadership behaviors (B = -.11, SE = .04, t = -2.60, $p < .05$) each negatively predicted burnout, but neither the frequency of virtual work nor the interaction between each of the leadership behavior meta-categories and frequency of virtual work had a significant predictive effect on burnout. H5 was therefore not supported.

Post-hoc Analysis

Yukl et al. (2019) propose that the specific leader behaviors in each of the broad meta-categories can have more predictive value than the meta-categories themselves. We therefore investigated the relationships between specific-leader behaviors with engagement and burnout. Using SPSS, correlation analyses were run between each of the specific leadership behaviors from the task-oriented and relations-oriented meta-categories with engagement and burnout.

Table 3

Moderation Analyses

	B	**SE**	***t***	***p***	**LLCI**	**ULCI**
Model 1 (Engagement)						
Constant	2.89	.48	5.97	.00	1.94	3.84
Task-Oriented	.34	.12	2.91	.00	.11	.57
Virtual Work Frequency	-.03	.16	-.18	.86	-.36	.30
Task-Oriented x Virtual Work Frequency	-.01	.04	-.37	.71	-.09	.06
Model 2 (Engagement)						
Constant	3.12	.44	7.01	.00	2.24	3.99
Relations-Oriented	.28	.11	2.64	.01	.07	.49
Virtual Work Frequency	-.11	.15	-.76	.45	-.40	.18
Relations-Oriented x Virtual Work Frequency	.01	.04	.15	.88	-.06	.08
Model 3 (Burnout)						
Constant	2.69	.19	14.12	.00	2.31	3.06
Task-Oriented	-.13	.05	-2.93	.00	-.22	-.04
Virtual Work Frequency	-.01	.07	-.14	.89	-.14	.12
Task-Oriented x Virtual Work Frequency	.00	.02	.23	.81	-.03	.03
Model 4 (Burnout)						
Constant	2.58	.17	14.83	.00	2.24	2.93
Relations-Oriented	-.11	.04	-2.60	.01	-.19	-.03
Virtual Work Frequency	.04	.06	.76	.45	-.07	.16
Relations-Oriented x Virtual Work Frequency	-.01	.01	-.68	.50	-.04	.02

N = 336, LLCI, lower limit confidence interval, ULCI, upper limit confidence interval

As shown in Table 4, the relationships between each of the specific leadership behaviors and engagement were significant ($p < .01$) and positive, with *r* ranging from .19 to .27. Similarly, the relationships between each of the specific leadership behaviors and burnout were significant ($p < .01$) and negative, with *r* ranging from -.19 to -.29. It is worth nothing that two specific leadership behaviors, namely *planning* and *delegating*, consistently have the largest correlations with both engagement ($r = .27$ and $r = .27$ respectively) and burnout ($r = -.26$ and $r = -.29$ respectively).

Table 4

Alpha Reliabilities, Correlations of Specific Behaviors with Engagement and Burnout

	α	Engagement	Burnout
Task-Oriented			
Clarifying	.92	.20**	-.19**
Planning	.93	.27**	-.26**
Monitoring Operations	.93	.21**	-.23**
Problem Solving	.93	.19**	-.19**
Relations-Oriented			
Supporting	.92	.17**	-.20**
Recognizing	.95	.22**	-.22**
Developing	.94	.24**	.-24**
Consulting	.94	.22**	-.25**
Delegating	.92	.27**	-.29**

$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$

Discussion

Through the lens of JD-R theory, this study examined the effects of different leadership behaviors on employee outcomes at the individual level in the context of hybrid work. Specifically, we examined the relationships between task-oriented and relations-oriented leadership behaviors and employee outcomes of engagement and burnout, and whether these relationships are influenced by how frequently one works virtually in a HWA. As predicted, this study found that the frequency of virtual work is negatively correlated with employee engagement, where the more frequently one works out of the office, the less engaged one is. Contrary to our hypothesis, we found that the frequency of virtual work was not associated with any effects on employee burnout. As predicted, both task-oriented and relations-oriented leadership behaviors were positively correlated with employee engagement and negatively correlated with employee burnout. We did not find the hypothesized moderation effects of virtual work frequency on the relationships between task-oriented and relations-oriented leadership behaviors with neither engagement nor burnout. Interestingly, although frequency of virtual work was found to be negatively correlated with engagement, entering leadership behaviors, virtual work frequency, and their interaction term into

the same regression model predicting engagement resulted in leadership behaviors being the only variable of significant predictive value to employee engagement.

Theoretical Implications

Past research on virtual work was conducted when virtual work arrangements were less commonplace and suffers from a selection bias, involving samples that had actively sought and chosen opportunities that allow for virtual work (Lapierre et al., 2016). This study captured a novel research setting by examining a sample from the general population of workers.

This study extends current literature in hybrid work. Specifically, the study investigated the effects of hybrid work on individual employee outcomes of engagement and burnout, finding that how frequently one works virtually in a HWA is negatively related to engagement but has no significant relationship with burnout.

This study builds our understanding of effective leadership in hybrid work, by investigating the effects of the different meta-categories of leadership behavior on employee engagement and burnout in HWAs. The findings show that both task-oriented and relations-oriented leadership behaviors were both significant and equally important predictors of employee engagement and burnout, with relatively similar effect sizes.

In addition, this study tested one of the key research propositions put forth in Liao's (2017) proposed model for research into leadership in virtual teams, which posits that the relationships between leadership behaviors and employee outcomes becomes stronger as the work becomes more virtual. The findings showed no evidence of the proposed moderation effect, shedding light on Liao's (2017) preliminary model. Instead, the moderation analyses unexpectedly revealed that although the frequency of virtual work was found to be negatively associated with employee engagement, when leadership behaviors were also taken into account, frequency of virtual work was no longer a significant predictor of employee engagement, while only leadership significantly and positively predicted employee engagement. This adds to our growing understanding of the relative importance of virtual work frequency and leadership in influencing employee outcomes.

In addition, our study contributes to the stream of research integrating leadership into the JD-R model. Firstly, by finding the predicted relationships between various categories of leadership behaviors and employee engagement and burnout, the study serves to reconfirm Schaufeli's (2015) proposed integration of leadership into the JD-R model. The study adds on to our understanding of this conceptualisation of the role of leadership in the JD-R model by highlighting that both task-oriented and relations-oriented leadership behaviors are similarly related to both engagement and burnout. This suggests that both meta-categories of leadership behaviors enhance both job resources and job demands, and are in turn related to both the strain and motivational processes, contrary to hypotheses that suggest task-oriented and relations-oriented behaviors have differential effects on job demands and job resources.

Finally, this study contributes more broadly to the behavioral approach in leadership research by lending insight into the validity of various models for leadership behaviors. While we utilized Yukl's (2012) proposed three-factor model for leadership, which is composed of task-oriented, relations-oriented, and change-oriented leadership, we did not find support for this three-factor structure in our data. Specifically, in a PCA involving items measuring all three meta-categories of leadership behaviors, items measuring change-oriented leadership cross-loaded highly on multiple factors. When change-oriented leadership items were removed from the PCA, the loading of the remaining items supported a two-factor structure, namely task-oriented and relations-oriented leadership. Our study therefore finds support for the two-factor framework involving task-oriented and relations-oriented behaviors instead of the three-factor structure proposed by Yukl et al. (2002).

Practical Implications

This study has significant implications particularly for organizations today. As vaccination rates increase and infection rates fall, countries across the world have largely relaxed workplace regulations, allowing workers to return to the office without restrictions (ILO, 2021). Since remote work is no longer mandated, organizations are now placed in a position to decide on future policy regarding work arrangements. This study therefore sought to inform organizations' development of

future policies for in-office, hybrid, or purely-virtual work arrangements by investigating the effects of hybrid work on their employees' experience of burnout and engagement at work, as well as to enable the successful implementation of HWAs by shedding light on how managers should lead their employees in such work arrangements.

Investigating the effects of virtual work frequency in HWAs, our study found no relationship between frequency of virtual work and employee burnout. While our study found a negative correlation between how often employees work virtually and their level of engagement, when leadership behaviors are taken into account, the negative effect of virtual work on engagement is no longer significant. Instead, both task-oriented and relations-oriented leadership behaviors were the only significant predictors of both employee burnout and engagement. This suggests that how often an employee works virtually has no effect on their experience of burnout or their level of engagement, and it is rather leadership that has an important role to play in predicting these outcomes. The findings suggest that rather than restricting the number of days that employees can work from home and mandating a minimum number of days employees work in-office, organizations should emphasize leadership development and train their leaders to lead effectively in hybrid work arrangements.

Our study also sheds light on which specific leadership behaviors should be emphasized when leading hybrid workers. Our post-hoc analysis revealed that while all the specific leadership behaviors have significant effects on both engagement and burnout, *planning* and *delegating* behaviors consistently emerged as the strongest predictors of both engagement and burnout. This suggests that in a hybrid working context, by emphasizing *planning* and *delegating* behavior, managers can reduce burnout and increase engagement amongst their followers. Specifically, *planning* involves the development of short-term plans for accomplishing tasks, planning and organizing activities that use people, resources and tools effectively, identification of a sequence or schedule for these activities to avoid delays, duplication of work or wastage of resources (Yukl, 2012). *Delegating* involves encouraging followers to take ownership in deciding the best way of working, entrusting followers with decision-making authority, assigning tasks of importance to followers and allowing

them to take charge, and encouraging followers to take proactive action to solve problems instead of waiting for instructions for how to approach them (Yukl, 2012).

Limitations

A limitation of this study is that data was collected at a single time-point using self-report measures, increasing the risk for common method variance (Podsakoff et al., 2003). Although this limitation was mitigated by using confirmatory factor analysis to ensure discrimination validity between the measured constructs, future replications of this study should attempt to reduce the risk of common method variance by collecting data over multiple time points.

Another potential limitation is that our study utilized self-report measures, where participants rated retrospectively various items with regards to the year of 2021 or the end of 2021, with the point of data collection being approximately three months after the reference time period. This time-delay may result in greater degree of error in self-report ratings. However, given that governmental restrictions mandating closures for all but essential workplaces were almost completely removed at the point of data collection in early 2022 (ILO, 2022), this retrospective approach was deemed necessary to capture wider variation in the frequency of virtual work in order to answer our research questions.

Furthermore, this study involved constructs measured based on a relatively long time period. Specifically, virtual work frequency was measured by having participants report the average number of days they worked out of the office in a five-day work week in 2021. However, the frequency of virtual work is likely to have varied throughout the year, given changing governmental regulations for working from home (ILO, 2021). Similarly, participants rated their line managers' leadership behaviors throughout the year of 2021, which may vary over time periods, albeit to a lesser extent. This study was unable to capture these variations over different time periods and their associated effects on engagement and burnout. Future studies can utilize shorter time-frames of reference, or employ longitudinal research designs in order to capture variations of these constructs over time.

Additionally, although we conceptualized that leadership influences engagement and burnout through its influence on job demands and job resources, our study did not measure job demands and job resources. While untested in this study, the assumed mediation relationship between job demands and job resources on burnout and engagement is well-established in past research (Bakker & Demerouti, 2017).

Future Research

Since the model structure for change-oriented leadership behaviors was problematic in our dataset, change-oriented leadership behaviors were excluded from our analyses. Hence, our study did not manage to test the hypotheses related to change-oriented leadership despite its theoretical significance. Future research should examine these hypotheses, as well as examine how specific change-oriented behaviors are related to engagement and burnout in hybrid work.

Future research can also be done to validate our theoretical conceptualisation of the relationship between leadership behaviors and engagement and burnout, by testing the mediation relationships we assume in our study. Specifically, in addition to leadership behaviors, engagement and burnout, future studies can measure the job resources and job demands experienced by employees in HWAs to examine whether leadership influences engagement and burnout through its effects on job resources and job demands. In addition, future studies can expand our understanding of the importance of engagement and burnout, by including other outcome variables, such as job performance and job satisfaction. Specifically, studies can test whether engagement and burnout mediate the relationships between leadership behaviors and these outcomes.

Finally, our study identified *planning* and *delegating* leadership behaviors to be significant and relatively important predictors of both engagement and burnout for hybrid workers. Future research can build upon these findings by utilizing qualitative methods to examine in-depth what *planning* and *delegating* behaviors involve particularly in the context of hybrid work, potentially identifying best-practices for managers in HWAs.

Conclusion

Studies show that in the post-pandemic era, organizations are unlikely to adopt pure-virtual working arrangements, nor return to traditional pure in-office working arrangements (Eurofound, 2020; OECD, 2021). Instead, hybrid work is poised to become the dominant working arrangement of the future (Sokolic, 2022).

This study sheds light on the effects of hybrid work, finding that a greater frequency of virtual work is associated with lower employee engagement and unrelated to employee burnout. More importantly, this study found that when the managers' exhibition of positive leadership behaviors are taken into account, how often one works virtually no longer has a predictive effect on engagement. Instead, it is only the extent to which managers perform both task-oriented and relations-oriented leadership behaviors that significantly predict both employee engagement and burnout. Our findings indicate that it is possible for companies to implement HWAs and thereby retain their attractiveness as an employer (Alexander et al., 2021) without compromising employee outcomes of burnout and engagement. At the same time, our findings underscore the importance of managers' leadership behaviors in mitigating potential negative effects on employee engagement.

It is our hope that this thesis will contribute to the successful transition towards a hybrid work model for organizations across the world.

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Appendix A

Approval from Norwegian Center for Research Data

Notification form / Leadership in Remote and Hybrid Work Arrangements / Assessment

Assessment

Date
03.03.2022

Type
Standard

Reference number
609334

Project title
Leadership in Remote and Hybrid Work Arrangements

Data controller (institution responsible for the project)
Handelshøyskolen BI / BI Oslo / Institutt for ledelse og organisasjon

Project leader
Elizabeth Solberg

Student
Jue Ying Choo

Project period
01.03.2022 - 01.07.2022

Notification Form

Comment
ABOUT OUR ASSESSMENT
Data Protection Services has an agreement with the institution where you are carrying out research or studying. As part of this agreement, we provide guidance so that the processing of personal data in your project is lawful and complies with data protection legislation.

We have now assessed the planned processing of personal data. Our assessment is that the processing is lawful, so long as it is carried out as described in the Notification Form with dialogue and attachments.

SHARE THE NOTIFICATION FORM
It is mandatory for students to share the Notification Form with their supervisor (the project leader). You do this by clicking on "Share project" in the upper-left corner of the form. If your supervisor doesn't accept the invitation within a week then the invitation must be sent again.

TYPE OF DATA AND DURATION
The project will be processing general categories of personal data until the date documented in the Notification form.

LEGAL BASIS
The project will gain consent from data subjects to process their personal data. We find that consent will meet the necessary requirements under art. 4 (11) and 7, in that it will be a freely given, specific, informed and unambiguous statement or action, which will be documented and can be withdrawn.

The legal basis for processing general categories of personal data is therefore consent given by the data subject, cf. the General Data Protection Regulation art. 6.1 a).

PRINCIPLES RELATING TO PROCESSING PERSONAL DATA
We find that the planned processing of personal data will be in accordance with the principles under the General Data Protection Regulation regarding:
• lawfulness, fairness and transparency (art. 5.1 a), in that data subjects will receive sufficient information about the processing and will give their consent
• purpose limitation (art. 5.1 b), in that personal data will be collected for specified, explicit and legitimate purposes, and will not be processed for new, incompatible purposes
• data minimisation (art. 5.1 c), in that only personal data which are adequate, relevant and necessary for the purpose of the project will be processed
• storage limitation (art. 5.1 e), in that personal data will not be stored for longer than is necessary to fulfil the project's purpose

THE RIGHTS OF DATA SUBJECTS
As long as the data subjects can be identified in the data material, they will have the following rights: access (art. 15), rectification (art. 16), erasure (art. 17), restriction of processing (art. 18), data portability (art. 20).

We find that the information that will be given to data subjects about the processing of their personal data will meet the legal requirements for form and content, cf. art. 12.1 and art. 13.

We remind you that if a data subject contacts you about their rights, the data controller has a duty to reply within a month.

FOLLOW YOUR INSTITUTION'S GUIDELINES
We presuppose that the project will meet the requirements of accuracy (art. 5.1 d), integrity and confidentiality (art. 5.1 f) and security (art. 32) when processing personal data.

If you use a data processor (online survey tool, cloud storage or online interview platform) the processing must meet requirements under arts. 28 and 29. Use a data processor that your institution has an agreement with.

To ensure that these requirements are met you must follow your institution's internal guidelines and/or consult with your institution (i.e. the institution responsible for the project).

NOTIFY CHANGES
If you intend to make changes to the processing of personal data in this project it may be necessary to notify us. This is done by updating the Notification Form. On our website we explain which changes must be notified: https://www.nsd.no/en/data-protection-services/notification-form-for-personal-data/notify-changes-in-the-notification-form

Wait until you receive an answer from us before you carry out the changes.

FOLLOW-UP OF THE PROJECT
We will follow up the progress of the project at the planned end date in order to determine whether the processing of personal data has been concluded.

Good luck with the project!