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Does Working From Home Kill Innovation? Examining the Relationship Between Working From Home and Innovative Work Behaviour

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ABSTRACT

A large proportion of employees regularly work from home despite doubts about their ability to be innovative while working remotely. The relationship between working from home and innovative work behaviour is a pressing issue that has produced ambivalent research results, presumably because the mechanisms that underpin the relationship are poorly understood. The present study addresses this issue by differentiating spatial, temporal, and task-related flexibility as mediators between working from home and innovative work behaviour. To test our hypotheses, we conducted an online survey with 173 knowledge workers from a variety of German organizations. After running confirmatory factor analyses, we used covariance-based structural equation modelling for data analysis. Our results show that working from home is positively related to all three dimensions of employees' perceived job flexibility—spatial, temporal and task-related. Spatial and task-related flexibility are positively related to innovative work behaviour, whereas temporal flexibility has a negative relationship. All three mediation pathways are significant. The study contributes to the literature by pointing out the importance of differentiating among the three dimensions of flexibility and challenging the assumption that autonomy is universally beneficial. While spatial and task-related flexibility are positively related to innovative work behaviour, temporal flexibility might be a threat to innovation. Therefore, organizations should be aware of the differential effects of the flexibility dimensions as a one-dimensional view of working from home is under-complex.

1 | Introduction

Working from home, which means that members of an organization substitute some of their typical work hours to work from home by using information and communication technology (Allen et al. 2015), received a considerable boost from the COVID-19 pandemic (Kniffin et al. 2021; Stiles and Smart 2021). Working from home can come with increased flexibility in terms of where (spatial flexibility), when (temporal flexibility) and how (task-related flexibility) work is performed (Dilmaghani 2021; Shobe 2018). This flexibility allows knowledge workers to overcome the boundaries that have traditionally been set for the execution of work (Kaiser et al. 2022; Stiles and Smart 2021) and to benefit from various positive outcomes, such as decreased work–family conflict (Allen et al. 2013).

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Before the pandemic, working from home was primarily associated with positive outcomes for both employees and employers (Giménez-Nadal et al. 2020; Golden and Gajendran 2019; Maruyama et al. 2009; Vega et al. 2015). However, as its use became widespread and research on this subject increased, its risks became increasingly apparent (Hjálmsdóttir and Bjarnadóttir 2021; Manroop and Petrovski 2023; Ruhle and Schmoll 2021; Sandoval-Reyes et al. 2021). One topic of intense debate in research (Almahamid and Ayoub 2022; Moll and De Leede 2016; Qi et al. 2023; Wang and Xie 2023) and among the public (Tsipursky 2021; Wingard 2022; Ziegler 2023) in this context is the impact of working from home on innovative work behaviour. Generally, innovative work behaviour can be defined as the reflection of creating something new or different (Spreitzer 1995). More specifically, innovative work behaviour can be understood as the intentional creation, introduction and application of new ideas that benefit the performance of the work role, group, or organization (De Jong and Den Hartog 2007; Radaelli et al. 2014). Thus, innovative work behaviour is a necessary prerequisite for innovation in the corporate context (AlEssa and Durugbo 2022). Further, innovative work behaviour is an example of extra-role behaviour, as it is not typically part of an employee's primary tasks (Aboramadan et al. 2022). The debate is fueled by doubts concerning employees' ability to be innovative when they are away from co-workers, supervisors, and other sources of ideas (Mele et al. 2021). According to Johnny C. Taylor, president and chief executive officer of the Society of Human Resource Management, 'Remote work doesn't cultivate the level of interpersonal relationships that business leaders see as vital to workplace synergy, collaboration and innovation' (Taylor 2022).

Studies on the relationship between working from home and innovative work behaviour have led to ambiguous results. Generally, research so far primarily observes the direct effects of working from home on innovative work behaviour or closely related constructs. This is problematic as the conflicting findings may result from complexity in the pathways between one and the other. Exploring mediating factors may provide insights into the underlying processes that contribute to different results. Our analysis aims to unravel these complex pathways by examining spatial, temporal, and task-related flexibility as mediators between working from home and innovative work behaviour. This approach allows us to unmask the potential differential effects on innovative work behaviour based on the different forms of flexibility associated with working from home (Allen et al. 2013).

Spatial flexibility, meaning discretion over where employees conduct their work (Thompson et al. 2015), usually comes along with working from home, as the work model gives employees the opportunity of another place to work besides the office (Allen et al. 2013). Temporal flexibility, meaning discretion over when employees work (Dilmaghani 2021), is usually also available to employees when working from home (Allen et al. 2013). Task-related flexibility, meaning discretion in deciding how to carry work out (Langfred and Moye 2004), is likewise associated with working from home, as employees are usually able to reconfigure their duties and responsibilities when working from home proactively (Gajendran et al. 2015).

The knowledge gap on the relationship between working from home and innovative work behaviour is problematic for two primary reasons. First, innovative work behaviour is essential for organisational success. Regular innovation at the product, service and process levels is necessary to master competitive challenges in an environment of constant change (Di Vincenzo and Iacopino 2022; Huo et al. 2023; Shin et al. 2017). The COVID-19 pandemic intensified this need for innovation, as it brought unpredicted challenges in adapting to changing conditions and maintaining competitiveness (De Lucas Ancillo et al. 2021). Second, the COVID-19 pandemic fostered the long-term continuation of working from home that can be seen in the current trend toward hybrid work—working part of the time from home and the other part in the office (Appel-Meulenbroek et al. 2022; Vyas 2022). Finding the appropriate work model will have much higher practical relevance than before the pandemic.

Against this background, the present study's aim is to examine the relationship between working from home and innovative work behaviour. Specifically, we aim to answer the following research question: Which role do spatial, temporal, and task-related flexibility play in the relationship between working from home and innovative work behaviour?

We assume working from home to be positively related to all three dimensions of job flexibility. Additionally, we hypothesise that spatial and temporal flexibility are negatively related to innovative work behaviour, while task-related flexibility is positively related to it. We use structural equation modelling to test our hypotheses, based on survey data collected from knowledge workers across various German organisations.

Our results indicate that working from home is positively related to spatial, temporal and task-related flexibility. Further, spatial flexibility and task-related flexibility are positively related to innovative work behaviour, while temporal flexibility is negatively related to innovative work behaviour. This study makes several contributions to the current literature. First and foremost, it contributes to the ongoing debate concerning working from home and its implications for innovative work behaviour by shedding new light on the role of job flexibility. In addition, the study contributes to self-determination theory and the literature on job crafting and the job demands-resources model. It challenges the widespread assumption that autonomy is beneficial in all its forms. Instead, a multidimensional view of job flexibility is needed. Accordingly, organizations should carefully design work-from-home policies by leveraging the benefits of spatial and task-related flexibility while mitigating the potential downsides of temporal flexibility through structured overlapping work hours and regular team interactions to support innovative work behaviour.

2 | Literature Review and Development of Hypotheses

The shift toward working from home has sparked considerable interest in its relationship with innovative work behaviour, yet existing research presents conflicting findings, which are displayed in the following (Wang and Xie 2023). A few studies

TABLE 1 | Previous literature.

Authors	Year	Title	Results of interest
De Spiegelaere et al.	2016	Not all autonomy is the same. Different dimensions of job autonomy and their relation to work engagement & innovative work behavior	Working from home → innovative work behaviour (+)
Mutmainnah et al.	2020	The impact of leadership and motivation on innovative work behavior/is working from home really more innovative?	Working from home → innovative work behaviour (n.s.)
Almahamid and Ayoub	2022	A predictive structural model of new ways of working on innovative work behaviour: Higher education perspective in the Gulf Cooperation Council	Workplace design at home → innovative work behaviour (+)
Azeem and Kotey	2023	Innovation in SMEs: the role of flexible work arrangements and market competition	Working from home → innovation breadth (n.s.) Working from home → goods or services innovation (n.s.) Working from home → operational process innovation (n.s.) Working from home → organizational/ managerial innovation (n.s.) Working from home → marketing innovation (n.s.)
Lucius et al.	2023	Internal corporate social responsibility in times of uncertainty: does working from home harm the creativity link?	Working from home → creativity (–)
Gibbs et al.	2024	Employee innovation during office work, work from home and hybrid work	Working from home → employee innovation (–)
Lucius and Damberg	2024	Why we need employees back at the office: The effect of workplace design on creativity in organizations	Workplace adjustment → creative problem-solving capacity (+)

Note: (+), significant positive relationship; (–), significant negative relationship; (n.s.), no significant relationship.

show a positive relationship (Almahamid and Ayoub 2022; De Spiegelaere et al. 2016), while there is also research indicating non-significant relationships between working from home and innovative work behaviour (Mutmainnah et al. 2020). Regarding the relationship between working from home and innovation, some studies find a negative relationship (e.g., Gibbs et al. 2024), while others find a non-significant one (e.g., Azeem and Kotey 2023). When taking a look at the literature about the relationship between working from home and creativity, which can be defined as employees' ability to solve problems creatively (Woodman et al. 1993) and is shown to be a strong predictor of innovative work behaviour (El-Kassar et al. 2022), a similar ambiguous picture emerges. A nuanced analysis of the influence of workplace design on creativity found that workplace adjustment promotes creativity (Lucius and Damberg 2024). However, another study found that working from home negatively impacts employees' creativity (Lucius et al. 2023). In sum, research has produced no general agreement about these relationships, underscoring the need for further investigation to understand better the conditions under which working from home promotes or hinders innovative work behaviour. Table 1 shows the results of crucial studies that examined the relationship between working from home and innovative work behaviour, innovation, or creativity.

This study addresses perceived job flexibility (Kossek et al. 2006) as a possible mediator in the relationship between working from home and innovative work behaviour. Perceived job flexibility assesses employees' perceptions of their freedom to choose where (spatial flexibility), when (temporal flexibility) and how (task-related flexibility) to work (Kossek et al. 2006). Our basic assumption is that these individual perceptions differ between teleworkers and non-teleworkers.

Spatial flexibility usually plays a central role in discussions about working from home because—simply stated—the work model changes where work is done (Biron et al. 2023; Collins et al. 2016). Employees who work from home can usually organise their workplace as they wish, whether at a desk, on the sofa, on a bed, or in the garden (Guler et al. 2021; Ruhle and Schmoll 2021), rather than being consigned to a particular desk, cubicle, or office. These employees might convert part of their living space, such as kitchens, guest rooms, or living rooms, into temporary workspaces. The ability to fluidly change the purpose of a space—for example, turning a dining table into a work desk or working in a communal household space—further emphasises the spatial flexibility inherent in working from home (Gajendran and Harrison 2007). As such, employees also have control over the environment in terms of, for example, lighting,

temperature, and ergonomic design, which may increase their perceptions of spatial flexibility (Dettmers and Plückhahn 2022; Onken-Menke et al. 2018).

This perception is reinforced by the fact that employees working from home—at least in some cases—might even be able to move to different cities or even countries as long as they have the necessary digital tools and connectivity (Felstead and Henseke 2017). Many who work from home also have the option for mobile work, such as at coffee shops, in libraries, or in rented spaces (Messenger and Gschwind 2016), options that further increase the perception of spatial flexibility. Additionally, employees working from home oftentimes can effortlessly combine their personal and professional obligations because they are not restricted to a single physical location. For example, they can manage household chores or take care of family members while working from home. By eliminating the need for strict borders between work and living locations, the integration of personal and professional spaces may further improve employees' perceptions of spatial flexibility (Kossek et al. 2012). Therefore, we propose:

Hypothesis 1. *There is a positive relationship between working from home and spatial flexibility.*

Many employees who work from home are also given temporal flexibility (Dilmaghani 2021; Martínez Sánchez et al. 2007), the advantage of working from home that is cited most often (Sullivan and Lewis 2001; Thompson et al. 2015). Temporal flexibility provides the ability to set the beginning and end of one's own workday, as well as its breaks, in accordance with one's individual needs and circumstances, such as schedules related to childcare (Jogulu et al. 2023; Kossek and Thompson 2016) and individual biorhythms (Wey et al. 2016). Furthermore, working from home allows employees to manage unforeseen events, such as family emergencies or medical appointments, without taking formal leave (Troup and Rose 2012). It allows employees to adjust their work hours to accommodate such events, thereby reducing disruptions to their work and personal lives and enhancing perceived temporal flexibility (Gajendran and Harrison 2007).

Also, employees working from home benefit from avoiding commuting, which can greatly increase the amount of usable time each day (Felstead and Henseke 2017). Employees save time that can be used for both work and leisure activities when they do not have to commute. As workers may more effectively plan their workday and incorporate breaks or personal duties without being constrained by strict commute timetables, this extra time likely promotes perceived temporal flexibility (Choudhury et al. 2021). Therefore, we propose:

Hypothesis 2. *There is a positive relationship between working from home and temporal flexibility.*

Another characteristic of working from home is that employees are more self-regulated in the way they organize their work (Metselaar et al. 2023; Raghuram et al. 2003), as it allows them to work outside the traditional norm (Schall 2019). While working from home, employees can manage assigned work according to their individual preferences (Jaafar and Rahim 2022). This enables them to prioritize their activities according to their level of urgency, complexity, or personal productivity peaks. Because they are not monitored closely by their supervisors or co-workers (Khan et al. 2018; Rupietta and Beckmann 2018; Sewell and Taskin 2015), their sense of autonomy grows, often increasing self-confidence and their ability to work independently. Also, the lacking physical presence of supervisors when working from home could lead to employees looking at taking on new responsibilities or working in various ways. The opportunity to work on a range of tasks might emphasize the relationship between working from home and task-related flexibility. There is also meta-analytic evidence for the positive relationship between working from home and autonomy, a construct that also includes task-related flexibility (Gajendran and Harrison 2007). Therefore, we propose:

Hypothesis 3. *There is a positive relationship between working from home and task-related flexibility.*

We also investigate the relationship between perceived job flexibility and innovative work behaviour. There are some studies indicating a positive relationship between spatial flexibility and innovative work behaviour (De Spiegelaere et al. 2016; Wang and Xie 2023). Anyhow, the literature also shows that regular physical interaction with co-workers is beneficial to creativity and innovation (Tripathi and Burleson 2012), so despite its advantages, working from home provides limited access to the physical resources or materials that support innovation and innovative work behaviour in the first place (Schall and Chen 2022). Employees working from home are more likely to interact with the same co-workers in controlled, task-focused digital sessions. This decreased exposure to a range of perspectives might hinder the ability to think creatively or challenge existing processes. Working from home also reduces opportunities for informal gatherings that can lead to useful exchanges of information; the digital communication one uses when one works from home is less suitable for communicating in groups as it can lead to fragmented conversations, misunderstandings, and a lack of immediacy that diminishes the depth of creative discussions (Viererbl et al. 2022). So, working from home might negatively affect the knowledge transfer between employees, which is necessary for innovative work behaviour (Taskin and Bridoux 2010).

The digital environment can also undermine enthusiasm and engagement (Sardeshmukh et al. 2012) and make it difficult for teams to understand each other's shared values and goals (Morrison-Smith and Ruiz 2020), which might reduce extra-role behaviour like innovative work behaviour (Farrukh et al. 2023). Furthermore, innovative work behaviour is also driven by employees' feelings of identity and belonging to their organization (De Spiegelaere et al. 2016). However, working from home is positively associated with perceived isolation (Gajendran et al. 2024), which may diminish feelings of emotional belonging to the organization (Wang et al. 2020). Therefore, we propose:

Hypothesis 4. *There is a negative relationship between spatial flexibility and innovative work behaviour.*

Because of temporal flexibility, asynchronous and overlapping working hours can occur within a team (Kossek and Thompson 2016; Leonardi et al. 2010; O'Leary and

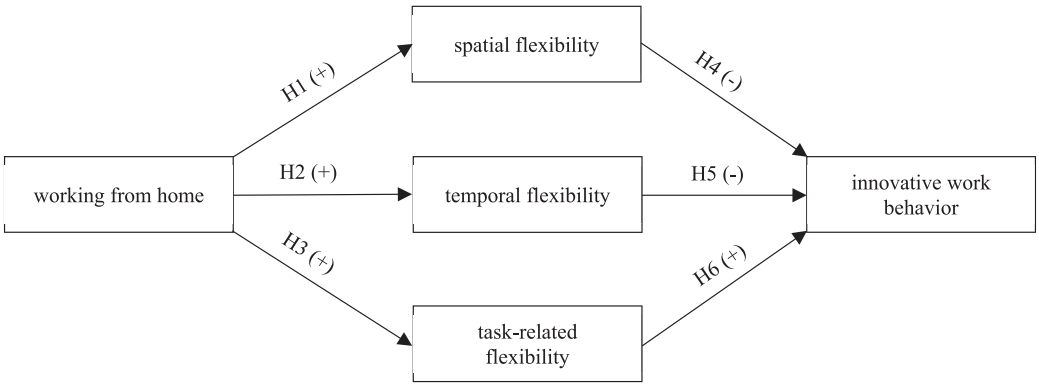

FIGURE 1 | Research model.

Cummings 2007). As asynchrony increases, the opportunities for spontaneous interaction with co-workers and supervisors decrease (Morganson et al. 2010). Group synergy, in which members build on one other's ideas in a dynamic, participatory process, frequently fosters innovative work behaviour. Nevertheless, this synergy can be disrupted and a cohesive, collaborative environment is more difficult to establish when team members work at different hours. Temporal misalignment can reduce the richness of creative discussions and inventive problem-solving by slowing down the iterative process of idea development (Riedl and Woolley 2017). In addition, temporal asynchrony limits opportunities for the immediate or near-immediate feedback that is often necessary for innovative behaviour and enthusiasm to take hold (Lee et al. 2021). Employees with high degrees of scheduling flexibility may find it challenging to collaborate with co-workers or participate in collective brainstorming sessions, hindering the exchange of innovative ideas. Since temporal flexibility can make the exchanges that are required for innovation more difficult, we propose:

Hypothesis 5. *There is a negative relationship between temporal flexibility and innovative work behaviour.*

Task-related flexibility allows employees to experiment with alternative procedures and methods (De Spiegelaere et al. 2016) and is a decisive predictor of creativity (Liu et al. 2011; Sia and Appu 2015). As the literature shows, the flexibility to decide how work is done promotes critical thinking and challenging the status quo, stimulating the creation of new ideas (Shakil et al. 2023). Also, task related-flexibility increases individual support for organizational change that results from innovation (Hornung and Rousseau 2007) and provides opportunities for employees to be innovative outside their strategic scope (Globocnik and Salomo 2015). The literature also shows that competence in making autonomous decisions leads to innovative work behaviour (Li and Hsu 2016). Furthermore, employees can better match their creative endeavours with the objectives and difficulties of the organization when they have task-related flexibility. They can better create innovative solutions that satisfy their organization's specific needs when they can modify their methods to suit those needs. A meta-analysis confirms the positive relationship between task-related flexibility and innovative work behaviour (Hammond et al. 2011). Therefore, we hypothesize:

Hypothesis 6. *There is a positive relationship between task-related flexibility and innovative work behaviour.*

Figure 1 summarizes the research model.

3 | Method

3.1 | Sample and Procedures

We conducted an online survey to answer our research question. We did so because surveys provide a structured way to test hypotheses, which helps us to validate or disprove our hypotheses using empirical data. In collecting data in June 2023, we used a convenience sample of knowledge workers from German organizations, which allowed us to cover a wide range of work-from-home contexts (e.g., Bhartia and Vijayalakshmi 2019; Gajendran et al. 2015). In line with Landers and Behrend (2015), we assume that a convenience sample may be more representative of German knowledge workers than a sample of employees from one particular organization. Participants were invited via personal networks and social media platforms (LinkedIn and Facebook) to participate in the study. To reduce potential selection bias, participants were invited to participate in a study about 'the organization of work'. They were assured that their data would be treated anonymously and only for scientific purposes. We used Tivian's survey software, Unipark, for data collection.

The initial sample consisted of 193 participants. To improve the data quality, we conducted an attention check using an instructed response item ('Please choose strongly disagree for this item.') and a bogus item ('My left hand has twelve fingers.'), both of which detect a lack of attention to a survey (DeSimone et al. 2015; Meade and Craig 2012) without negatively affecting response behaviour (Gummer et al. 2021). This resulted in the exclusion of 20 participants that failed to answer the attention checks correctly. We applied this strict exclusion criteria in order to safeguard the integrity of research conclusions (Meade and Craig 2012). The final sample consisted of 173 participants, of which 57% were women. None of the subjects indicated that they were non-binary. The average age of the sample was 37.4 years (SD = 11.4); the participants had an average of 8.97 years of tenure in their current organization (SD = 8.96), and 27.7% of the participants held a leadership position.

TABLE 2 | Measurement items.

Measurement items	Factor loadings	α	CR	AVE
Spatial flexibility		0.97	0.976	0.932
• I can choose at which location I work.	0.964			
• I can decide where I work.	0.987			
• I can work at locations that are convenient to me.	0.943			
Temporal flexibility		0.92	0.921	0.794
• I can decide myself as to when I begin the workday.	0.894			
• I can work at a time schedule that I plan myself.	0.890			
• I can decide the time slots I work in.	0.890			
Task-related flexibility		0.83	0.836	0.632
• I can decide the content of my work.	0.726			
• I have the freedom over how I do my job.	0.741			
• I can decide myself as to which work tasks I focus on.	0.905			
Innovative work behaviour		0.80	0.817	0.530
• I usually introduce small innovations into my practice.	0.600			
• I often develop new procedures to improve my everyday practice.	0.791			
• I often succeed in transforming my innovative ideas into practical solutions.	0.768			
• I often develop new solutions to solve problems.	0.738			

Note: All latent constructs were measured using multi-item Likert scales ranging from 1 ('strongly disagree') to 5 ('strongly agree').
Abbreviations: α, Cronbach's alphas; AVE, average variance extracted; CR, composite reliability.

3.2 | Measures

We drew all measures from validated scales that have good psychometric properties. We assessed whether participants engaged in working from home (1 = yes, 0 = no), following established practice in prior studies (e.g., Allen et al. 2015). This approach allows for a clear comparison between employees working from home for at least part of their working hours and those exclusively on-site. We measured all latent constructs using multi-item Likert scales that ranged from 1 ('strongly disagree') to 5 ('strongly agree').

We used new ways of working scale (Ten Brummelhuis et al. 2011) to capture the perceived degree of job flexibility, measuring each dimension (spatial flexibility, temporal flexibility and task-related flexibility) with three items each. Innovative work behaviour was measured with four items that capture how frequently employees perceive to engage in developing micro-innovations to improve their practice (Radaelli et al. 2014). The underlying items as well as Cronbach's α, CR, and AVE are reported in Table 2.

In addition to the latent constructs, we collected demographics and other variables of interest. We captured whether the subjects were telecommuters and whether they held a leadership position (both coded as 0 = no and 1 = yes). Based on previous telework research (e.g., Golden and Raghuram 2010), we also assessed gender (coded as 1 = female, 2 = male), age (in years), and tenure in the current organisation (in years).

3.3 | Data Analysis

Before choosing our analytical approach, we conducted Mardia's test (Mardia 1970) on multivariate skewness ($p = 0.12$) and kurtosis ($p = 0.45$). The null hypothesis of multivariate normality is not rejected, which indicates that the data conforms to a multivariate normal distribution. Therefore, we were able to use covariance-based structural equation modelling (CB-SEM) to test the hypotheses. For the analysis, we used IBM SPSS AMOS 29. CB-SEM provides model quality heuristics that can detect a misspecified model and assess the overall model fit (Rönkkö and Evermann 2013), enabling the rejection of incorrect models (Evermann and Tate 2010). CB-SEM allows for a comprehensive evaluation of measurement validity. It also provides accurate parameter estimates by accounting for measurement errors and ensuring that latent variables reflect their theoretical constructs. To assess the validity of the measurement model, we ran confirmatory factor analyses (CFA) before testing the structural model (Anderson and Gerbing 1988).

We also checked for common method bias (CMB) by testing multivariate assumptions using a CFA marker technique (Williams et al. 2010). Two items referring to civil rights ('It is okay to criticize the government' and 'There should be complete freedom of speech even for those who criticize the country') were used (Kosterman and Feshbach 1989), which are theoretically unrelated to the constructs of the study. Furthermore, we performed Harman's single-factor test (Podsakoff et al. 2003). The first factor accounts for 29.85% of the variance among variables, which is below the

50% cut-off value. The tests indicate that CMB does not affect the model. A check for multicollinearity revealed VIF values of 1.24 and 1.63, indicating no multicollinearity problems (Kim 2019).

4 | Results

Exploratory factor analysis (EFA) suggests a model with four latent factors, and the results of CFA suggest that this factor solution is likely to be the best representation of the data structure. The CFA results show an adequate fit between the model and the data, with χ^2 (59) = 91.61, p = 0.004, CFI = 0.981, TLI = 0.975, SRMR = 0.042, RMSEA = 0.056, and significant loadings for all standardized factors. We tested whether the average variance extracted (AVE) for each construct was higher than the squared correlation between the constructs to assess discriminant validity, and whether it was higher than 0.5 to address convergent validity. Table 3 displays the variables' means (M), standard deviations (SD), Cronbach's alphas (α), composite reliability (CR), AVE and the latent factor correlation matrix with the square root of the AVE on the diagonal. None of the results shown in Table 3 raised any concerns about validity.

TABLE 3 | Descriptive statistics and zero-order correlations.

	M	SD	(1)	(2)	(3)	(4)
(1) Spatial flexibility	3.05	1.18	**0.965**			
(2) Temporal flexibility	3.49	1.08	0.546	**0.891**		
(3) Task-related flexibility	3.17	0.88	0.329	0.496	**0.795**	
(4) Innovative work behaviour	3.21	0.89	0.189	0.032	0.184	**0.728**

Note: Alpha reliabilities are bolded on the diagonal.
Abbreviations: M, means; SD, standard deviations.

We specified the structural equation model (SEM) as a full mediation model with correlated errors among the flexibility constructs to account for omitted common causes of these variables (Steinmetz et al. 2021). The model shows a good fit to the data, with χ^2 (93) = 127.24, p = 0.011, CFI = 0.982, TLI = 0.977, SRMR = 0.051, RMSEA = 0.045. The *R*-squared value indicates that the predictive variables explain 11.2% of variance in innovative work behaviour.

The results, depicted as standardised path coefficients in Figure 2, largely support our hypotheses.

As expected, working from home is positively related to spatial flexibility (β = 0.509, p = 0.000), temporal flexibility (β = 0.416, p = 0.000) and task-related flexibility (β = 0.198, p = 0.014), providing support for Hypotheses 1, 2, and 3, respectively. Contrary to our expectations, spatial flexibility is positively related to innovative work behaviour (β = 0.218, p = 0.030), so Hypothesis 4 is rejected. However, temporal flexibility is negatively related to innovative work behaviour (β = −0.192, p = 0.092), and task-related flexibility is positively related to innovative work behaviour (β = 0.204, p = 0.049), lending support to Hypotheses 5 and 6, respectively.

In addition to the results shown in Figure 2, we conducted mediation analyses to test the three indirect paths between working from home and innovative work behaviour (see Table 4). The bootstrapping results indicate that spatial flexibility (β = 0.152, p = 0.053; CI 0.021 to 0.345), temporal flexibility (β = −0.113, p = 0.086; CI −0.304 to −0.004), and task-related flexibility (β = 0.060, p = 0.040; CI 0.009 to 0.169) mediate the relationship between working from home and innovative work behaviour. As the direct effect of working from home on innovative work behaviour is not significant, the mediational mechanisms can be classified as 'full mediations' or rather 'indirect-only' (Nitzl et al. 2016; Zhao et al. 2010). In addition, we tested if the indirect effects of the three paths are significantly different from each other using pairwise comparisons of the indirect effects. Results show that path 1 (WFH → spatial flexibility → IWB) and path 2 (WFH → temporal flexibility → IWB) show a significant difference, suggesting that these two mediators have distinct effects on innovative work behaviour.

With regard to the control variables, we found a significant negative relationship between participants' age and innovative work behaviour (β = −0.265, p = 0.016) and a positive relationship

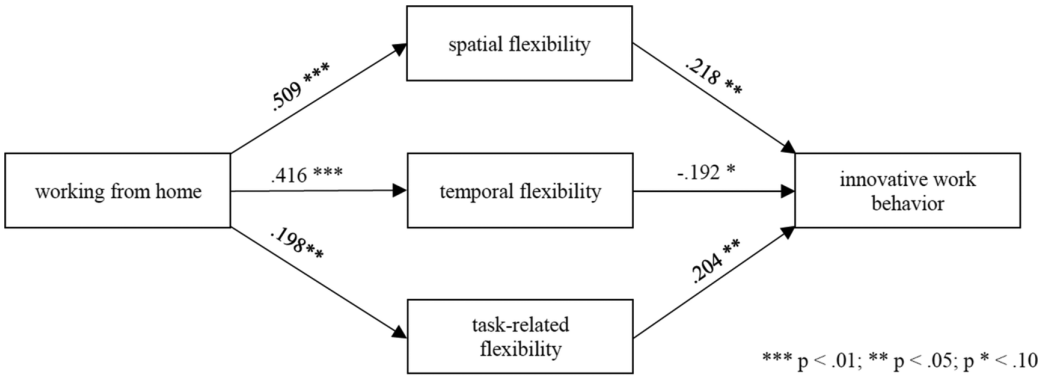

FIGURE 2 | Results. *Note:* Specified as a full mediation model due to the non-significant direct effect of working from home on innovative work behaviour; significant controls: age (−0.265**) and organizational tenure (0.220**); non-significant controls: working hours, gender, leadership position (see detailed description below).

TABLE 4 | Mediation analyses.

Relationship	Direct effect	Indirect effect	Confidence interval		*p*-value	Conclusion
WFH → spatial flexibility → IWB	n.s.	0.152	0.021	0.345	0.053	Full mediation
WFH → temporal flexibility → IWB	n.s.	−0.113	−0.304	−0.004	0.086	Full mediation
WFH → task-related flexibility → IWB	n.s.	0.060	0.009	0.169	0.040	Full mediation

Abbreviations: IWB, innovative work behaviour; n.s., not significant; WFH, working from home.

between organizational tenure and innovative work behaviour ($\beta = 0.220$, $p = 0.043$). The amount of working hours was not significant ($\beta = 0.065$, $p = 0.419$). To check further for the model's robustness, we conducted multiple-group analyses to determine whether the model differs with regard to gender and leadership position. The changes in the chi-square statistic indicate that the model remains robust regardless of gender ($p = 0.369$) and leadership position ($p = 0.259$).

5 | Discussion

The aim of the present study was to investigate the relationship between working from home and innovative work behaviour by considering perceived job flexibility. The results show a positive relationship between working from home and all three of flexibility's dimensions, supporting conceptual notions in the flexibility literature (Messenger and Gschwind 2016). Contrary to our hypothesis, the results indicate a positive relationship between spatial flexibility and innovative work behaviour. As hypothesised, the results show a negative relationship between temporal flexibility and innovative work behaviour and a positive relationship between task-related flexibility and innovative work behaviour.

Overall, our results show that a more differentiated view of job flexibility is necessary. So far, job flexibility associated with working from home is often described as a 'win–win situation' from which employees and organizations benefit equally (Perrigino et al. 2018). In terms of innovative work behaviour, our study provides clues that this only applies to spatial and task-related flexibility. By detecting the negative effect of temporal flexibility on innovative work behaviour, our study also extends the knowledge about the downsides of job flexibility (Bourdeau et al. 2019; Perrigino et al. 2018).

5.1 | Theoretical Contributions

Our results contribute to the literature in four ways. First and foremost, our study contributes to the literature on job flexibility by demonstrating that different types of flexibility have different effects on innovative work behaviour. This highlights the importance of disaggregating flexibility into its spatial, temporal, and task-related dimensions. While task-related flexibility shows a positive relationship with innovative work behaviour—supporting previous findings that such flexibility fosters dedication and encourages employees to generate novel ideas (De Spiegelaere et al. 2016; Hammond et al. 2011)—temporal flexibility is negatively related, challenging recent claims that flextime fosters innovation through increased mental space (Azeem and Kotey 2023). Our findings suggest that innovative work behaviour may rely on synchronous interaction, aligning with previous studies emphasising the role of timely collaboration (De Spiegelaere et al. 2016; Eva et al. 2019; Hammond et al. 2011). Interestingly, contrary to our expectations, spatial flexibility had a positive effect on innovation. This may be due to the creativity-enhancing potential of varied work environments, which foster disruptive thinking and broaden perspectives (Jia et al. 2009; Lucius and Damberg 2024; Oksanen and Stahle 2013). These mixed results could explain the non-significant total effect of working from home on innovation, as opposing indirect effects may cancel each other out. Our findings reinforce the idea that treating job flexibility as a unidimensional construct—as done in prior studies (e.g., Almahamid and Ayoub 2022)—risks masking opposing effects. By isolating flexibility types, our study supports recent calls for a multidimensional view of job flexibility (Allen et al. 2013; Dilmaghani 2021; Giménez-Nadal et al. 2020).

Second, we contribute to the literature on self-determination theory by offering a more nuanced view on the role of autonomy in relation to innovative work behaviour. Self-determination theory emphasizes the importance of autonomy, defined as the level of independence and flexibility a job offers, such as in scheduling and task-related aspects of work (Hackman and Oldham 1976), as a universal psychological need, suggesting that its fulfilment fosters intrinsic motivation, thereby yielding positive work-related outcomes (Deci et al. 2017; Gagné and Deci 2005). Scholars have argued that working from home enhances autonomy and is thus beneficial for performance and well-being (e.g., Wang et al. 2021). However, our results challenge the assumption that autonomy is universally beneficial and contribute to the discussion of autonomy as a double-edged sword (Kubicek et al. 2017; Lu et al. 2017). Hence, our findings reveal a more nuanced perspective, suggesting that temporal flexibility may hinder innovative behaviour under certain conditions.

Third, our findings contribute to the job crafting literature (Wrzesniewski and Dutton 2001), suggesting that employees may craft their roles in response to the flexibility of working from home. Job crafting behaviours, for example, adapting tasks and seeking new challenges, may be influenced by the degree and type of flexibility, which in turn impacts innovative work behaviour (Khan et al. 2021; Uen et al. 2021). In particular, task-related flexibility may encourage such proactive behaviours by giving employees the freedom to shape how and what they work on. Spatial flexibility ensures that employees can choose where they work, ensuring that workplaces are suitable for current tasks. So, job flexibility may act as a catalyst for job

crafting processes. This may result in a context-specific variant of job crafting that involves reflection on the tasks, location, and timing of work (Wessels et al. 2019). Fourth, based on the job demands–resources model (Bakker and Demerouti 2007), our results indicate that while spatial and task-related flexibility may serve as work resources that promote innovative work behaviour, temporal flexibility also has the potential to serve as a job demand that limits employees' potential for innovative work behaviour. Thus, as confirmed by recent research (Wang and Xie 2023), examining the intricate roles that various types of flexibility play in the interplay between demands and resources in the context of innovative work behaviour could be considered in studies based on the job demands–resources model. Future research could further explore how employees perceive and manage different types of job flexibility, potentially uncovering strategies to mitigate the demanding aspects while enhancing the resourceful ones.

5.2 | Managerial Contributions

Our study has several implications for managerial practices. The results indicate that companies that offer their employees the opportunity to work from home promote employees' perceptions of their job flexibility. As it is known, perceived job flexibility is associated with various positive outcomes, including greater work engagement (Derks et al. 2015; Salanova and Schaufeli 2008), increased productivity (Giovanis 2018), increased well-being (Nordenmark et al. 2012), and reduced stress (Jensen et al. 2013). Accordingly, our results show that working from home offers the opportunity to create a flexible work environment that benefits both employees and employers.

Nevertheless, to optimize the positive effects of working from home on innovation and mitigate the potential negative effects, organizations may need to consider carefully whether to implement one kind of flexibility in the context of working from home. While spatial and task-related flexibility may promote innovative working behaviour, temporal flexibility has the potential to dampen innovativeness. In response to this concern, organizations that offer employees the chance to work from home could require a minimum amount of work time that overlaps the work time of teams and departments. Regular (digital) exchanges within the group should be encouraged and institutionalized during these overlapping periods.

Moreover, based on the study's results, organizations should disregard concerns about the negative effects of spatial and task-related flexibility on innovative work behaviour, as these concerns are shown to be unfounded.

5.3 | Limitations and Future Research

This study has some limitations that open avenues for future research. First, the results are based on cross-sectional survey data, so no causal conclusions can be drawn. Our data may also suffer from response bias. Future research may use quasi-experimental longitudinal designs to analyse the effects in terms of causality and to minimise potential response bias. Second, working from home is treated as a binary variable in our model. Although this has been done in many other studies (Allen et al. 2015), the comparisons of telecommuters versus non-telecommuters may mask some differences based on the intensity of working from home. This approach does not account for potential non-linear or threshold effects, where increased working from home may not necessarily lead to greater perceived flexibility. Accordingly, future studies may consider variations in the extent of working from home to determine whether the relationships with the three flexibility dimensions remain consistent across different levels of working-from-home intensity. Third, the measurements of job flexibility and innovative work behaviour are based on self-assessment, which reflects individuals' perceptions. These perceptions could differ from their actual work circumstances and behaviour. Future research could, for example, address this limitation by measuring innovative work behaviour more objectively by extending the survey to include the direct supervisor's assessment. Fourth, although this study found support for the hypothesised negative relationship between temporal flexibility and innovative work behaviour, a detailed explanation of the relationship's underlying mechanisms is beyond the study's scope. Future qualitative research could delve deeper into this issue to address the limitation.

Moreover, this research does not consider team characteristics, which can be a predictor of team members' innovative work behaviour (Schippers et al. 2015). Future research could explore innovative work behaviour at the team level and consider teams' levels of flexibility. Additionally, this study uses a German sample, which could have produced a national bias through cultural particularities. Future research could examine the relationships we analysed with an international sample to determine any country-specific influences (Afota et al. 2023). Finally, we do not have information on the types of German organizations our participants work for. Accordingly, the generalisation of the results is limited. Future research might include participants' branches when examining the relationship between working from home and innovative work behaviour to uncover potential branch-typical specialties. Regardless of this study's limitations, its results show that a more nuanced approach is needed when analysing flexibility in relation to innovative work behaviour in future research. Job flexibility should not be viewed as a single construct, but should be broken down into its different sub-dimensions, which potentially have different effects.

6 | Conclusion

Following the research question of which role spatial, temporal, and task-related flexibility play in the relationship between working from home and innovative work behaviour, the study found that working from home is positively linked to different types of job flexibility—spatial, temporal and task-related flexibility. Each of these dimensions affects innovative work behaviour differently. Spatial and task-related flexibility enhance innovative behaviour by exposing employees to diverse environments and empowering them to experiment with their work routines. On the other hand, temporal flexibility, such as the freedom to choose work hours, negatively impacts innovative work behaviour, likely because it reduces synchronous collaboration and communication, which are crucial for innovative

work behaviour. To optimise the benefits of working from home on innovative work behaviour, organisations might encourage structured overlap in work hours to ensure better collaboration. They could focus on maximising the positive effects of spatial and task-related flexibility while addressing the potential downsides of temporal flexibility. The findings challenge the assumption that autonomy (resulting from flexible work) is universally beneficial. Instead, the study argues that job flexibility's impact on innovative work behaviour is complex and varies across its different dimensions.

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Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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