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Sometimes here, sometimes there—Differential effects of social challenge and hindrance stressors depending on the work location

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Introduction: As a result of the COVID-19 pandemic, the number of employees working from home has more than tripled in Germany from 2019 to 2022. While earlier research on remote work primarily focused on discerning variations among employee groups, this study delves into the realm of intra-individual effects. Specifically, we investigate how social stressors relate to exhaustion and positive affect at the end of the day within the context of different work settings.

Methods: This research draws insights from a sample comprising 99 employed individuals who diligently responded to surveys over a span of up to 10 working days (with an average of 6 days) after work and prior to bedtime.

Results: Although the absolute level of encountered social stressors exhibited no noteworthy difference between working at home or the premise of the employer, the relationship to exhaustion was moderated by the work location. Remarkably, the positive link between challenge-oriented social stressors and exhaustion manifested solely on days spent working from home. In contrast, social hindrance stressors exhibited a positive association with exhaustion exclusively on days when employees were operating within the organizational premise.

Discussion: These findings offer preliminary indications that the significance of specific stressors might indeed fluctuate based on the physical location of work. In essence, this study sheds light on the nuanced interplay between stressors and employee wellbeing, thereby adding depth to our comprehension of the remote work landscape.

KEYWORDS

remote work, telework, challenge stressors, social stressors, diary study

1 Introduction

The COVID-19 pandemic has accelerated the transformation of work, especially regarding the flexibility in terms of work location (e.g., [Silver, 2023](#)). While numerous studies have examined the impact of working from home on employees' work-life balance and wellbeing (e.g., [Standen et al., 1999](#); [Anderson et al., 2015](#)), the majority of these studies compared employees who regularly work at home with employees who primarily work at the premise of their employer. As remote work before the pandemic has been mostly a privilege of highly educated employees and a free choice of those ([Rigotti et al., 2021](#)), between-person comparisons may be confounded by interindividual third variables that

account for the overall positive empirical evidence regarding higher job satisfaction (e.g., Nakrošiene et al., 2019), increased job performance (Gajendran and Harrison, 2007), and reduced exhaustion (Golden, 2006) among employees that regularly work from home. Thus, these between-person studies do not offer a comprehensive assessment of whether the work location significantly influences intraindividual experiences at the day level. In this study, we employ a within-person approach to shed light on how work-related experiences affect workers differently depending on the work location, controlling for interindividual differences, for example, in terms of flexibility preferences. This approach should contribute to a deeper understanding of how remote or hybrid work should be designed to mitigate adverse and foster positive effects.

Beyond the positive aspects of working from home (e.g., Gajendran and Harrison, 2007), research has identified certain risks, such as limited interaction with colleagues, lower frequency of social contacts, disengagement, lack of a sense of belonging, potential career growth impediments (Lim and Teo, 2000), and negative emotional impact (Mann and Holdsworth, 2003). It may also result in the blurring of boundaries between work and personal life, leading to challenges in work-life balance and increased domestic responsibilities (Hilbrecht et al., 2008; Lapierre et al., 2015). In this article, we focus on the role of work-related social interactions, as this is the most obvious proximal difference between working from home or at the office. However, social interactions can have both positive and negative effects on individuals' wellbeing (Peeters et al., 1995; Lincoln, 2000). On the one hand, positive social interactions can serve as valuable resources for employees, providing essential elements like appreciation or social support (Semmer et al., 2019), which has been linked to reduced cardiovascular stress reactivity (Baethge et al., 2020) and improved physical and mental health (Schwarzer and Leppin, 1989). Conversely, social interactions can also induce social stressors, such as interpersonal conflict or social exclusion. In this study, we focus on the effects of social stressors on employees' daily wellbeing.

Aligning with recent developments in the conceptualization of social stressors, we distinguish between social hindrance and social challenge stressors (Kern et al., 2021). Social hindrance stressors are consistent with the traditional understanding of social stressors in that they threaten an individual's social self-esteem and are therefore straining and obstructive events (e.g., Bruk-Lee et al., 2013). In contrast, social challenge stressors represent demanding social situations or requirements that involve adept social interactions. These interactions encompass high effort but are seen as integral, legitimate components of the work process and contribute to the attainment of meaningful goals. Kern et al. (2021) demonstrated that while both challenge and hindrance social stressors are positively associated with exhaustion, they exhibit differential relationships with outcomes such as professional efficacy or work engagement. Following the work of Kern et al. (2021), we likewise distinguish between social challenge and social hindrance stressors and propose that the within-person effects of these stressors on employee wellbeing vary depending on the work location. Specifically, we expect that on days working at the organization, social hindrance stressors will be more positively related to exhaustion and more negatively related to positive affect, whereas social challenge stressors will better unfold their

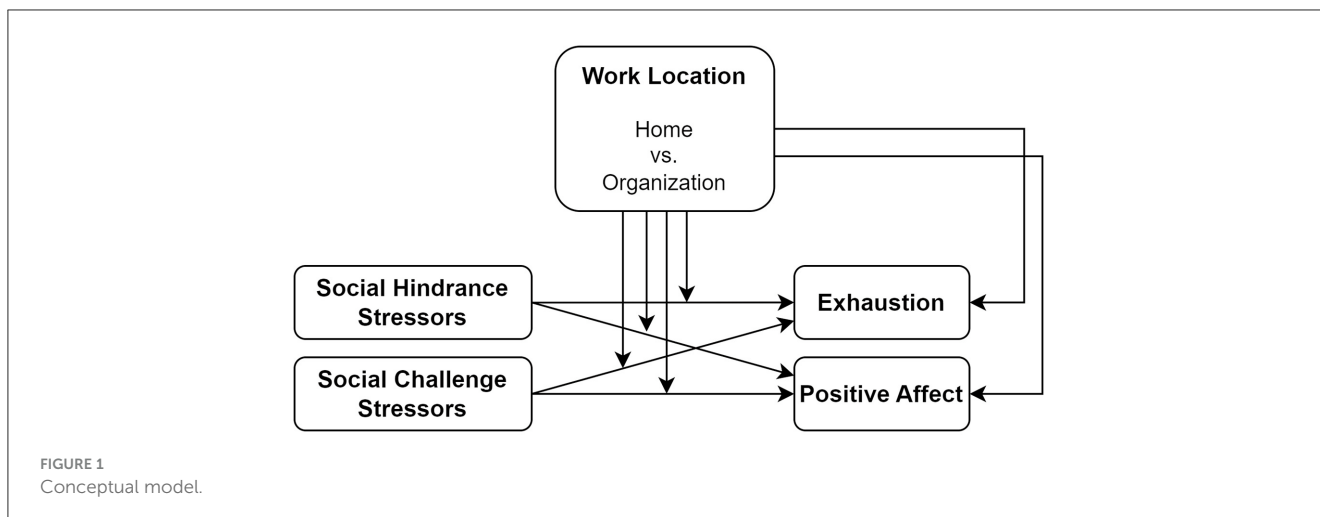
challenging potential. We argue that challenging social interactions are related to more positive outcomes when there is more opportunity for informal feedback through face-to-face contact in the office. In contrast, the straining effect of social hindrance stressors might be diminished on days working from home, as there are more opportunities for taking a break, and distance oneself from these social interactions (for our conceptual model, see Figure 1).

This study offers several noteworthy contributions to the existing body of knowledge. First, we advance the literature on working from home by employing a within-person approach, adding evidence how the work location might be relevant for employee strain and mood in response to work stress. Second, we add further evidence to the delineation of challenge and hindrance social stressors, which has only recently been proposed by Kern et al. (2021), and add further evidence on the within-person level. Distinguishing between challenge and hindrance social stressors refines our understanding of the impact of social interactions at work. The third contribution is maybe the most crucial one. By combining the literature strands on challenge and hindrance stressors and working from home, we move beyond most studies that solely focused on main effects of work location. We rather suggest that particularly social work characteristics may show differential effects, contingent upon work location.

2 Theory

2.1 Different work locations—Different outcomes

Researchers who have previously conducted within-person studies comparing days spent working from home with those spent at the organization's office have predominantly found that remote work is associated with more favorable outcomes for employees. For instance, positive within-level effects on job performance and job satisfaction have been reported (Vega et al., 2015; Müller and Niessen, 2019), along with negative effects on daily stress levels (Delanoeije and Verbruggen, 2020) and on the need for recovery (Biron and van Veldhoven, 2016). These findings can be explained by the preservation of resources when working from home, as postulated within the conservation of resources theory (COR; Hobfoll, 1989; Hobfoll et al., 2018). At its core, COR theory postulates that people experience stress when their resources are threatened, lost, or cannot be replenished/augmented after resource investments. When employees work from home, they may have to spend fewer resources or may even succeed to gain additional resources via more efficient resource investments, which should in turn relate to higher wellbeing at the end of the workday. This may be explained by the following two aspects: First, employees can save energy resources and time which they would spend on commuting to and from work on office days. Commuting time has considerably increased over the last years (e.g., Murphy et al., 2023) and has been identified as a resource draining demand which positively relates to time-based work-family conflict (e.g., Elfering et al., 2020) and levels of exhaustion (e.g., De Reuver and Biron, 2024). Second, employees may be required to schedule tasks and meetings which they deem to be particularly important



and for which they want to be most visible in the limited time available during office days. This may create additional time and performance pressures and thus, a greater expenditure of resources on office days compared to days when working from home (see also [Biron and van Veldhoven, 2016](#)). Considering these potential resource savings on days working from home, employees may opt to invest them into other work-related tasks, thereby facilitating efficient resource use and, consequently, the perception of task progress and mastery. These experiences are in turn essential to generate additional personal resources such as self-efficacy (e.g., [Bandura, 1977](#)) and therefore, to enhance wellbeing.

Empirical evidence supports this line of reasoning. For example, [Biron and van Veldhoven \(2016\)](#) compared diary data from employees on three home days and three office days and found that the ability to concentrate was higher on home days than on office days. In addition, [Delanoëje et al. \(2019\)](#) found that on days where individuals worked from home, they reported more work-to-home transitions, which were related to lower work-to-home conflict (but higher home-to-work conflict). [Delanoëje and Verbruggen \(2020\)](#) further reported findings of a quasi-experimental study that investigated the effects of working from home on employee stress, work-to-home conflict, work engagement, and job performance. The study was conducted in a Belgian company that implemented a pilot telework initiative, with employees in the intervention group allowed to work from home on at most two days a week, while employees in the control group were not. Data were collected before teleworking was introduced and at the end of the pilot, as well as daily on 13 consecutive workdays after the onset of the pilot. The results showed that there was no significant interaction effect between group and measurement occasion, but employees in the teleworking group had less stress at the end of the pilot compared to before teleworking was introduced. However, there were no significant differences in work-to-home conflict, work engagement, or job performance over time.

In our study, we chose exhaustion and positive affect at the end of the day as daily indicators of wellbeing because they (a) have been shown to be sensitive to daily fluctuations in numerous diary studies (e.g., [Hülshager et al., 2013](#); [Schilbach et al., 2023c](#)) and (b) can be positioned on different ends within the affective circumplex model ([Russell, 1980](#)). Whereas exhaustion reflects an emotional state of low activation and negative valence, positive

affect is an emotional state with positive valence and characterized by high activation. By accounting for affective states of negative low and positive high activation, we are able to gain a more nuanced understanding of the daily affective experiences of employees.

Consistent with the resource-saving premise derived from COR theory and existing empirical work, we expect that employees report less exhaustion and more positive affect on days working from home as compared to days working at the office.

H1: On days when employees work from home, they report less exhaustion compared to days when they work at the organization.

H2: On days when employees work from home, they report higher positive affect compared to days when they work at the organization.

2.2 Challenge and hindrance social stressors

Stressors are typically seen as risk factors that hinder goal attainment, entail threats to the self by anticipating harm or loss of resources, and require effort to cope with ([Semmer, 1996](#)). The exclusive negative perspective on stressors has been challenged by accumulating empirical evidence indicating that certain types of stressors, while indeed straining, also present opportunities for motivational gains or enhanced performance. These observations have resulted in the development of the challenge-hindrance stressor framework and thus, a conceptual distinction between two types of stressor, namely challenge and hindrance stressors ([Cavanaugh et al., 2000](#); [LePine, 2022](#)). The challenge-hindrance stressor framework has been a highly influential theoretical model over the past approximately 20 years and since its introduction has considerably shaped stress research in work and organizational psychology ([Horan et al., 2020](#)). Consistent with other stress-related models (e.g., the job demands-resources theory, [Bakker and Demerouti, 2014](#)), the framework proposes that both stressor types positively relate to employee strain (e.g., [Cavanaugh et al., 2000](#); [Crawford et al., 2010](#)). However, only challenge stressors are expected to entail a potential for mastery, goal attainment and personal development (e.g., [Cavanaugh et al., 2000](#); [Kern](#)

et al., 2021). Put differently and to use the terminology of COR theory (Hobfoll, 1989), challenge stressors are expected to result in a net gain of resources (see also Schilbach et al., 2023b). In contrast, hindrance stressors are expected to lack the potential for such personal accomplishments. They either prevent goal attainment (e.g., ambiguous tasks) or make progress toward goals unnecessarily complicated (e.g., frequent software outages), inhibit personal development, and further relate to the experience of frustration and disengagement (e.g., Cavanaugh et al., 2000; Crawford et al., 2010). Therefore, hindrance stressors should be associated only with resource loss.

Despite that an a priori categorization of stressors as either challenge or hindrance raised criticism (e.g., Mazzola and Disselhorst, 2019; Schilbach et al., 2023a), a large body of research shows that certain stressors (e.g., time pressure, work complexity) encompass a clear challenging tendency and therefore positively relate to outcomes such as thriving (Prem et al., 2017), resilience (e.g., Crane and Searle, 2016), or positive affect (Sawhney and Michel, 2022). These effects are particularly apparent when considering concurrent other stressors (Kronenwett and Rigotti, 2019; Schilbach et al., 2023a), controlling for strain (Widmer et al., 2012), or taking cognitive appraisal into account (Kronenwett and Rigotti, 2022; Kern et al., 2023). In contrast, other stressors (e.g., role ambiguity, daily hassles) seem to have a clear hindering potential, positively relating to strain and negative affect while negatively relating to work engagement (e.g., Crawford et al., 2010), resilience (Crane and Searle, 2016), or self-efficacy (e.g., Webster et al., 2010).

Social stressors have been mostly attributed a clear hindering potential (e.g., Bruk-Lee et al., 2013; Dawson et al., 2016). Drawing upon the challenge-hindrance-framework, Kern et al. (2021), however, questioned the view that social stressors at work are exclusively detrimental phenomena and thus introduced the distinction between social challenge and hindrance stressors. According to Kern et al. (2021), social challenge stressors are well perceived as stress-inducing and, consequently, are associated with strain. However, beyond their strain effect, social challenge stressors should have the potential to experience success and competence because they occur in situations that necessitate skillful social action to ensure the successful completion of collaborative tasks. Thus, they arise in situations in which discussions have to be moderated, different interests sensitively considered, or limited resources fairly distributed. These demands apply to the majority of knowledge workers, for whom collaborative tasks with high social demands are not just an occasional occurrence but rather the prevailing norm. In accordance with this rationale, Kern et al. (2021) identified positive associations between social challenge stressors and employee wellbeing across four independent samples. With respect to COR theory (Hobfoll et al., 2018), these findings suggest that social challenge stressors result in a net gain of resources subsequent to resource investment, thereby fostering wellbeing. Conversely, social hindrance stressors are either unrelated to work tasks (e.g., interpersonal conflict because colleagues dislike each other) or are perceived as illegitimate (e.g., some sorts of task conflicts and incivility; Dawson et al., 2016; Kern et al., 2021). They threaten valued resources of an individual by being demanding, frustrating, and frequently offending the self, thus exclusively triggering detrimental consequences.

Consistent with their definition as stressors, both types of social stressors were associated with increased levels of emotional exhaustion in three independent samples in the work of Kern et al. (2021). However, only between-person level associations were examined. We anticipate that these effects will also manifest at the within-person level, as supported by prior research on other challenge stressors (e.g., Baethge et al., 2019; Schilbach et al., 2023a). Thus, within-person fluctuations in social stressors are expected to correspond with concurrent intraindividual variations in strain, which can be explained by the increased effort required to cope with them and the associated emotional stress reaction associated with heightened social stressors. With respect to positive affect, it is posited that social challenge stressors, given their potential to promote goal achievement and personal development (Kern et al., 2021), should be associated with enhanced positive work experiences on days when employees encounter more social challenge stressors (see also Rodell and Judge, 2009; Tadić et al., 2015). In contrast, given their goal-preventive and illegitimate nature, we expect that being confronted with more social hindrance stressors compared to the rest of their week will more likely prevent employees from experiencing positive emotional states (see also Tadić et al., 2015). We therefore hypothesize the following:

- H3: Social challenge stressors are (a) positively related to emotional exhaustion and (b) positively related to positive affect.
- H4: Social hindrance stressors are (a) positively related to emotional exhaustion and (b) negatively related to positive affect.

2.3 Work location as a boundary condition

Given that work-related social interactions can also be stressful, working from home may have the potential to influence their consequences. Biron and van Veldhoven (2016), for instance, suggested that social interactions could be burdensome due to the time, attention, and effort required to establish and maintain social connections with colleagues. Windeler et al. (2017) expected that working from home serves as a strategy for individuals to manage and reduce the exhaustion caused by social interactions and provided empirical support for such a moderating effect. When working from home, individuals may have more opportunities to recover from demanding social interactions. From the perspective of COR theory, this finding suggests that when stressful social interactions are avoided, resources are less likely to be threatened, leading to higher levels of wellbeing.

However, applying this proposition to social challenge stressors may necessitate consideration of a second pathway proposed in COR theory. As outlined above, social challenge stressors should be associated with positive outcomes for the individual because there is a net gain in resources. According to Kern et al. (2021), this resource gain from social challenge stressors stems from, e.g., demonstrating competence, experiencing success, and strengthening team cohesion, which outweighs the costs in terms of effort. This net resource gain may be jeopardized when there are fewer opportunities for direct social interaction and

informal feedback, which applies to days when employees work remotely. Although there may be the same frequency of social communication when employees work from home, the quality of social interactions may suffer from the reduced richness of digital communication channels (Dennis and Kinney, 1998). Indeed, data shows that the time spent in social interactions is generally not less when working from home (van Triest, 2023). However, interactions tend to be more formal, task-related, scheduled, and of course take place via phone, e-mail, or video meetings. These interactions provide fewer social cues in terms of emotions and moods (Wang et al., 2020), especially in settings with more than two interaction partners. The reduced quality of communication may compromise one core aspect of social challenge stressors, namely the social aspect. Kern et al. (2021) defined social stressors as encompassing both an interpersonal and a task-related component. The interpersonal component involves aspects such as establishing common values, making commitments to plans, or maintaining group cohesion (Kern et al., 2021). In face-to-face interactions, these requirements are directly associated with fulfilling one's need for a sense of belonging (see also Albrecht, 2015), albeit demanding effort. In contrast, online communication when working from home can remove this challenging component of social challenge stressors, as the positive (social) events that trigger need satisfaction after successful coping may be absent (see also Schade et al., 2021). For this reason, we hypothesize that the ratio between resource investment and resource output should be less positive when working from home, so that social challenge stressors have a negative impact on wellbeing. At the same time, we posit that dealing with social challenge stressors requires more effort when working from home. Employees may have to wait for feedback, ascertain the meaning of a statement, clarify misunderstandings that arise due to technical problems in virtual communication (Lal et al., 2021; Maurer et al., 2022), all of which involve additional regulation costs that are likely to result in a negative ratio of resource investment and resource gain, leading to increased exhaustion. We therefore expect:

H5: On days when employees work from home, the relationship between social challenge stressors and (a) emotional exhaustion is stronger, (b) positive affect is weaker compared to days when they work at the organization.

Conversely, it can be argued that social hindrance stressors should be especially problematic when social interactions cannot be avoided, which is more likely the case when working in the office (see also Biron and van Veldhoven, 2016). Social hindrance stressors pose a direct threat to people's self-esteem through relational devaluation (Hershcovis, 2011; Semmer et al., 2019), and threats to the self are directly related to impaired wellbeing (Semmer, 2020; Kern et al., 2021). Thus, social hindrance stressors should have a stronger negative effect when the situation cannot easily be changed. In contrast, when employees work from home, direct confrontation with conflicting parties can be reduced to formal task coordination, and negative social behavior such as bullying become less likely (Bollestad et al., 2022). With respect to COR theory, this reasoning implies that the threat to valued resources is reduced, leading to less negative outcomes. Thus, we expect that social hindrance stressors are less straining when the social situation can easily be left.

H6: On days when employees work from home, the relationship between social hindrance stressors and (a) emotional exhaustion is weaker, (b) positive affect is stronger (i.e., less negative) compared to days when they work at the organization.

3 Method

3.1 Design and procedure

An online-based diary study was conducted in Germany over a span of ten working days with two measurement points per day, during the months of April and May 2021. During this period, Germany experienced the onset of the third wave of COVID-19, leading to the implementation of measures such as social distancing and curfews. Participants were recruited by students of a master's course using a snowball system and could choose the starting point of the diary. To enhance motivation, for each participant a donation of two euros was made to a charity organization supporting the mental health of young people. During the data collection period, the study participants received two surveys by mail every day. The first survey was sent out at 12 p.m. with the instruction to complete it directly after work. The second survey was sent to the participants at 8 p.m. with the instruction to respond to the survey before going to bed.

3.2 Sample

The initial sample comprised 99 participants. Due to missing values and participants that did not work complete days either at home or the organizational site, the final sample for data analysis included 94 employees, 49 (52.7%) of which were men and 44 (47.2%) of which were women (one response missing). Participants came from various occupational domains including health care, IT, education, industry, and trade. The age was provided by 64 individuals and ranged between 22 and 64 years with a mean age of 42.3 years (SD = 15.4 years). With an average contractual weekly working duration of 36.02 h (SD = 6.25), and regularly working from home as well as at the organizational premises, the sample exhibits a cross-section of modern workforce dynamics. Among the participants, 26 (28.0%) held leadership positions, while 67 (71.3%) did not (one response missing). Participants filled out 312 surveys (58.5%) on days they worked at home, and 221 (41.5%) surveys on days they worked in the organization.

3.3 Instruments

3.3.1 Work location

Each day, we asked participants whether they worked exclusively at home or at the organization or in both locations. As we were interested in clearly distinguishing between the work locations, we only included days on which employees worked exclusively at the employer's site (0) or at home (1).

TABLE 1 Items adapted from Kern et al. (2021) to measure social challenge and social hindrance stressors.

| German | English (not validated) |
|---|---|
| Social challenge stressors | |
| Haben Sie heute zwischen Kollegen vermitteln müssen, um den Arbeitsablauf zu gewährleisten? | Did you have to mediate between colleagues today to keep the work flowing? |
| Haben Sie heute eine Diskussion moderieren müssen, da es keine klare Lösung für ein Problem gab? | Did you have to moderate a discussion today because there was no clear solution to a problem? |
| Haben Sie heute hitzige Diskussionen führen müssen, um ein besseres Arbeitsergebnis zu erzielen? | Did you have to lead heated discussions today to attain a better outcome of work to be done? |
| Haben Sie heute bei der Koordination von Arbeitsaufgaben viel Feingefühl zeigen müssen? | Did you have you to show sensitiveness and tact when coordinating tasks today? |
| Social hindrance stressors | |
| Ist es heute in Ihrem Arbeitsumfeld zu persönlichen Konflikten gekommen, weil sich jemand übergangen gefühlt hat? | Has there been any personal conflict in your work environment today because someone felt left out? |
| Ist es heute zu Konflikten wegen unterschiedlichen, individuellen Arbeitsauffassungen gekommen? | Did conflicts arise today because of different, individual views of work? |
| Haben heute sachliche Fehler im Arbeitsablauf zu Konflikten geführt? | Did factual errors in the workflow lead to conflicts today? |
| Ist heute Arbeitszeit wegen Auseinandersetzungen über die Aufteilung von Mitteln (finanziellen und personelle) verloren gegangen? | Was working time lost today because of disputes over the allocation of resources (financial and personnel)? |

3.3.2 Social challenge and hindrance stressors

Social challenge and hindrance stressors were measured with four items each, developed by Kern et al. (2021). A sample item for social challenge stressors is “Did you have to mediate between colleagues today to keep the work flowing?”, and for social hindrance stressors “Has there been any personal conflict in your work environment today because someone felt left out?” The full list of items can be seen in Table 1. Response options were provided on a five-point Likert scale from 1 = not true at all to 5 = completely true. In a multilevel confirmatory factor analysis, a two-factor model showed a better fit [$\chi^2 = 59.08$, $df = 38$, Comparative Fit Index (CFI) = 0.97, Tucker-Lewis Index (TLI) = 0.96, Within-level Standardized Root Mean Square Residual (SRMRw) = 0.04, Root Mean Square Error of Approximation (RMSEA) = 0.03] than a single factor model ($\chi^2 = 71.92$, $df = 40$, CFI = 0.96, TLI = 0.94, SRMRw = 0.04, RMSEA = 0.04). In the two-factor model, all items showed significant factor loadings on their respective latent factor with standardized values >0.40 at the within-person level, and >0.75 at the between-person level. We calculated McDonald's (1999) omega at the within- and between-person level to estimate scale reliability. Although within-person omegas of 0.64 for social challenge stressors, and of 0.67 for social hindrance stressors do not pass the common threshold of 0.70, they are still acceptable, taking into account that distinct aspects of these measures are less likely to co-occur on a daily basis (cf., Nezlek, 2017).

3.3.3 End-of-day exhaustion

To measure exhaustion before going to bed, we used three items of the Maslach Burnout Inventory (Maslach and Jackson, 1986), which have been used in numerous diary studies (e.g., Kinnunen et al., 2014; Kronenwett and Rigotti, 2019). A sample item is “I felt emotionally drained”. Participants

indicated their responses on a scale from 1 = not at all to 7 = extremely.

3.3.4 Positive affect

We measured positive affect at the end of the workday using ten items (e.g., interested, excited, proud, attentive) of the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988; Thompson, 2007). Response options ranged from 1 = not at all to 5 = extremely. In a partially saturated multilevel confirmatory factor analysis, a one-factor model revealed acceptable fit statistics ($\chi^2 = 179.13$, $df = 35$, CFI = 0.93, TLI = 0.81, SRMRw = 0.06, RMSEA = 0.08).

3.4 Statistical analysis

Given the hierarchical structure of our data, with days nested within individuals, we performed multilevel analyses to examine our hypotheses. Specifically, we employed multilevel structural equation modeling (MSEM), which involved the latent decomposition of between- and within-person variance. Thus, effects could be tested simultaneously at the within-person and between-person level. To assess the proposed interactions between the within-person constructs of social stressors and location of work, we followed the guidelines provided by Preacher et al. (2016), who detailed the procedures for testing interactions across levels within an MSEM framework. The use of MSEM helps to address issues related to conflated multilevel effects and reduces bias in parameter estimates (Preacher et al., 2016). Note that social challenge, and social hindrance stressors were further centered at the grand mean to ease interpretation of the interaction plots. The syntax for the latent interaction analysis can be found via the following link on OSF: https://osf.io/ex4sz/?view_only=ec5423561f9e4c20afb6aadedf7faa18.

4 Results

Table 2 depicts the descriptive statistics, correlations among the study variables, and internal consistencies measured with McDonald's (1999) omega at the within-person and between-person level. The ICC values indicate that the total variance is more or less equally divided between and within persons, supporting the use of multilevel analysis.

Notably, work location was not significantly correlated to social challenge and social hindrance stressors at both levels of analyses, indicating that neither on days, when employees work at home, nor when working at the organization social stressors were more or less prevalent. Social challenge stressors were positively related to exhaustion as well as to positive affect, whereas social hindrance stressors were only positively correlated to exhaustion, which provides a first indication that they both match with the instrumental definition of challenge and hindrance stressors.

In support of H1 (Table 3, Model 1) participants reported less exhaustion on days working at home. However, there was no significant effect of work location on positive affect (Model 4) so that H2 was not supported. Aligning with H3 and H4, social challenge stressors were positively related to exhaustion as well as to positive affect, whereas social hindrance stressors were positively related to exhaustion, and negatively related to positive affect (Models 2, 5).

Furthermore, we proposed that work location moderates the relationship between social challenge and hindrance stressors with the two outcomes. The results provided support for H5a and H6a referring to differential effects on exhaustion. The significant interactions are shown in Figures 2, 3. For social challenge stressors, there was a positive and significant relationship with exhaustion when individuals worked from home and a non-significant relationship with exhaustion when they worked in the office. However, the moderation pattern was different than expected in that the slopes converged with increasing social stressors. Thus, when social challenge stressors were higher than usual, there was no difference in exhaustion levels by work location. Only when the social challenge stressors were less severe than usual was exhaustion higher for on-site work. Conversely, social hindrance stressors showed a strong positive relationship with exhaustion when individuals worked on site and no relationship when they worked from home. This relationship pattern is in line with our expectation. Overall, H5a, and H6a are supported.

Regarding positive affect, no interactions were identified, even though the simple slope for days working at the organization was significant ($b = -0.17$, $SE = 0.08$, $p = 0.036$), whereas it was not significant on days working at home ($b = -0.15$, $SE = 0.09$, $p = 0.085$). Thus, counter to the expectations formulated in H5b and H6b, the direct associations of social challenge and hindrance stressors with positive affect were not qualified by work location.

5 Discussion

In this study, our objective was to expand existing research on social stressors by examining the distinctions between social challenge and social hindrance stressors at a daily level. A key focus was comparing their effects on exhaustion and positive

affect as a function of the work location, specifically to examine their influence when working from home vs. in the organization's office. Our findings reinforce the recently proposed differentiation between social challenge and social hindrance stressors by Kern et al. (2021). We observed that daily social challenge stressors were positively linked to both exhaustion and positive affect, whereas daily social hindrance stressors were solely associated with increased exhaustion. Notably, employees reported higher levels of exhaustion on days when they worked at the office, but there was no significant difference in positive affect between office and remote workdays. Furthermore, we discovered that social challenge and hindrance stressors had distinct relationships with exhaustion depending on the work location. Social challenge stressors were more strongly and positively related to exhaustion on days spent working from home, while social hindrance stressors exhibited a stronger positive association with exhaustion on days when employees worked at the office.

5.1 Theoretical implications

In alignment with previous studies on remote work (e.g., Sardeshmukh et al., 2012; Biron and van Veldhoven, 2016), we found evidence that employees report less exhaustion on days working at home as compared to days working at the organizational office. In contrast to Anderson et al. (2015), however, participants in our study, on average, did not report differences in their positive affect when comparing work locations. These findings do not align with the proposition maintained in this study, as well as in previous works (e.g., Golden, 2006), that resources can be conserved when working from home. Thus, our findings stress the importance of exercising caution when portraying home office work in a positive light, as benefits or resource gains might be contingent upon individual as well as contextual aspects. For example, with increasing levels of responsibility, employees working from home reported more family to work conflict in a study by Solis (2017). Another example is a study by Junça Silva et al. (2022), in which self-leadership emerged as a moderator in the telework-emotional exhaustion relationship. Specifically, it amplified the negative indirect impact of work overload, particularly for individuals with higher self-leadership scores. An important context factor to consider may be the frequency of working from home. For example, Bentley et al. (2016) found that negative effects of working from home outweighed the positive effects for employees working more than 2.5 days per week on average at home. As working from home transforms from a unique advantage into a commonplace practice, working from home normativity increases. Gajendran et al. (2015) reported a more robust connection between the frequency of working from home, task accomplishment, and autonomy when working from home was considered less common as opposed to when it was widely accepted. Based on these insights, it can be concluded that when the majority of coworkers also engage in remote work, individuals working from home might no longer perceive themselves as having a special privilege, potentially leading to a decrease in the advantages associated with working from home.

Moreover, we add to our understanding of social challenge and hindrance stressors and support the validity of the distinction

TABLE 2 Descriptives and correlations of study variables.

| | | M | SD | ICC(1) | ω_w | ω_b | 1 | 2 | 3 | 4 | 5 |
|---|----------------------------|------|------|--------|------------|------------|--------|---------|---------|----------|----------|
| 1 | Work location ^a | 0.60 | 0.49 | – | | | – | 0.11 | –0.04 | –0.25* | –0.23 |
| 2 | Social challenge stressors | 1.82 | 0.87 | 0.45 | 0.64 | 0.91 | –0.01 | – | 0.76*** | 0.18 | 0.12 |
| 3 | Social hindrance stressors | 1.62 | 0.81 | 0.46 | 0.67 | 0.95 | –0.13 | 0.61*** | – | 0.30* | 0.15 |
| 4 | Exhaustion | 2.50 | 1.57 | 0.56 | 0.86 | 0.94 | –0.13* | 0.24*** | 0.24*** | – | –0.44*** |
| 5 | Positive affect | 2.58 | 0.81 | 0.55 | 0.87 | 0.97 | –0.12 | 0.10* | –0.01 | –0.32*** | – |

N_{Day-level} = 638, N_{Person-level} = 99. Standardized correlation coefficients at the within-person level are presented in the lower diagonal, at the between-person level at the upper diagonal.

^awork location: 1 = home office, 0 = organizational premise.

*p < 0.05. ***p < 0.001 (two-tailed).

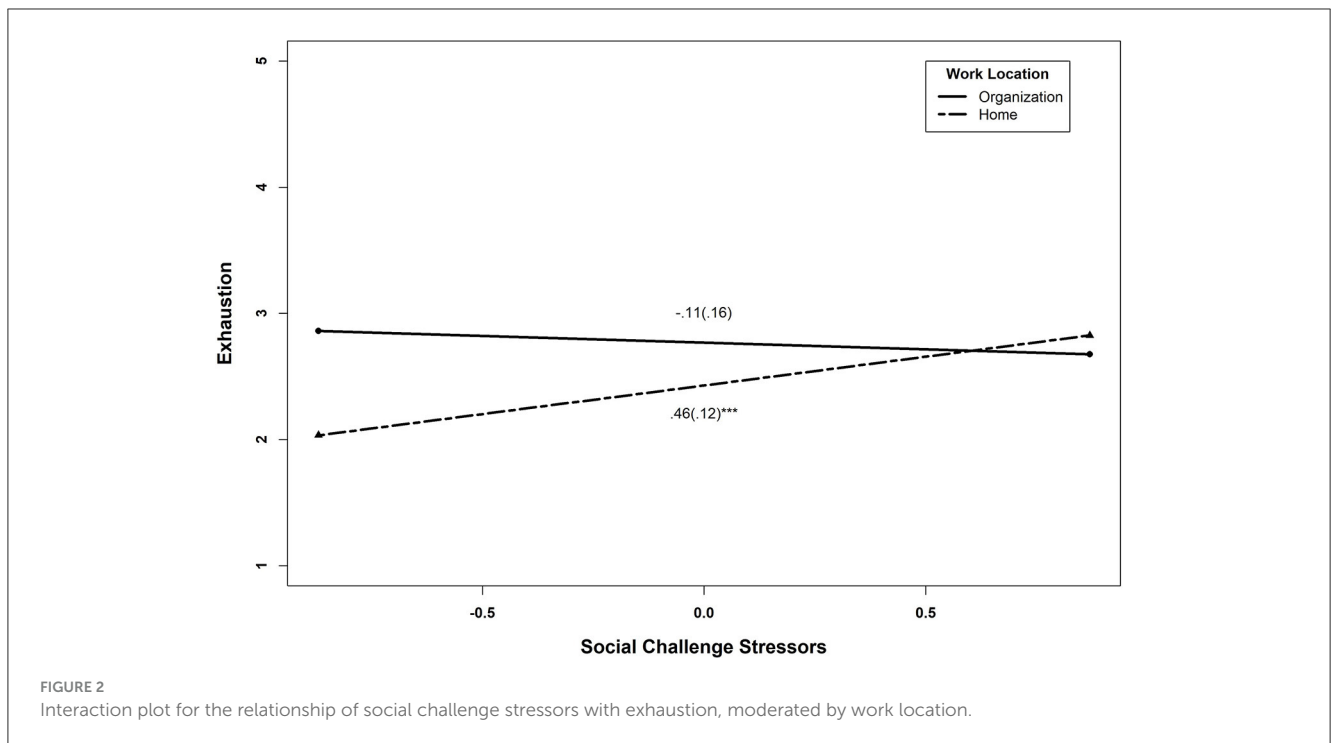
TABLE 3 Results of multilevel analyses.

| | Emotional exhaustion | | | Positive affect | | |
|--|----------------------|--------------|----------------|-----------------|----------------|----------------|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Work location ^a | –0.45 (0.20)* | –0.36 (0.20) | –0.34 (0.15)* | –0.17 (0.12) | –0.16 (0.12) | –0.16 (0.10) |
| Social challenge stressors | | 0.21 (0.10)* | –0.11 (0.16) | | 0.21 (0.05)*** | 0.32 (0.08)*** |
| Social hindrance stressors | | 0.26 (0.11)* | 0.56 (0.15)*** | | –0.15 (0.06)* | –0.17 (0.08)* |
| Work location x social challenge stressors | | | 0.56 (0.22)* | | | –0.16 (0.10) |
| Work location x social hindrance stressors | | | –0.56 (0.20)** | | | 0.03 (0.12) |

Unstandardized regression coefficients and standard errors in brackets, N_{Day-level} = 555, N_{Person-level} = 94.

^aWork location: 0 = organizational premise, 1 = home office.

*p < 0.05. **p < 0.01. ***p < 0.001 (two-tailed).



between the social stressor types not only at the between- (see Kern et al., 2021) but also at the within-person level: on the one hand, multilevel confirmatory factor analysis supported the two-factor structure of social stressors. On the other hand, Kern et al. (2021) showed that both social stressor types positively related to strain but exhibited differential relationships with, for example, professional efficacy or affective commitment at the between-person level. By

using a daily diary design and by focusing on within-person effects, we provide further evidence that social challenge stressors and social hindrance stressors match the instrumental definitions provided in the challenge-hindrance framework (LePine, 2022). This further adds to the challenge-hindrance framework in general, emphasizing that its core assumptions can also be applied to social stressors at the day level: on days when employees experienced

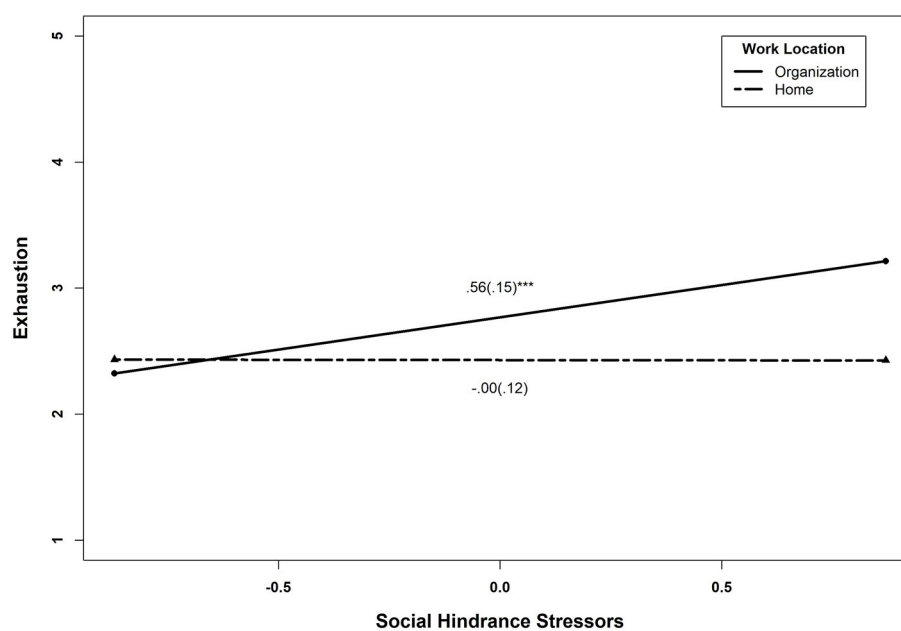


FIGURE 3
Interaction plot for the relationship of social hindrance stressors with exhaustion, moderated by work location.

more hindrance stressors than usual, they felt more exhausted and reported less positive affect. Social challenge stressors, despite showing their straining character, as indicated by a positive relationship to exhaustion, showed a positive relationship with positive affect, reflecting that they may relate to net resource gains and therefore, are worth dealing with. Thus, our findings emphasize that intraindividual variations in social challenge and hindrance stressors have timely effects on employees' daily wellbeing. At the same time, they outline the need for future research that addresses day-specific resources (e.g., autonomy and social support) or task characteristics that explain the daily positive effects of social challenge and the (strain-related) negative effects of both social challenge and hindrance stressors.

Finally, a major contribution of this study refers to the work location as a relevant contextual characteristic that determines the effects of challenge and hindrance stressors at work. We focused on social stressors because working at home restricts social interactions to be indirect via media, mostly via phone and video calls as compared to face-to-face interactions when working together with colleagues at the organizational site. Media richness theory (Dennis and Kinney, 1998) suggests that face-to-face interactions provide the richest form of communication, allowing for a wide range of subtle nonverbal cues. But there is also evidence that communication with coworkers and supervisors can be more effective in a virtual as opposed to a face-to-face setting (Ter Hoeven and van Zoonen, 2015). In line with our predictions, we found social challenge stressors to be less positively associated with exhaustion on days when employees were working at the organization. It seems to be necessary to receive immediate feedback to foster a sense of prosocial achievement that seems to help mitigating the strain effects of social challenge stressors. When working at home, social interactions tend to be more formal, usually scheduled in advance, providing less

opportunities for informal feedback. Additionally, social cues may be important for tense social situations, where even subtle nuances in behavior or emotional reactions of interaction partners can be important in mastering the situation. Such social interactions are at the heart of the social challenge stressor concept (Kern et al., 2021) and, according to our results, appear to be more difficult to manage (i.e., require more effort) when communication is mediated through technology. Additional demands such as clarifying misunderstandings caused by technical problems are likely responsible for this extra effort required, leaving employees increasingly strained (e.g., Maurer et al., 2022).

Social hindrance stressors showed a different pattern, with stronger positive effects on exhaustion on days when employees worked at the organization. Social hindrance stressors are characterized by directly threatening people's need to be valued (Semmer et al., 2019), while also being perceived as an obstacle, barrier, or impediment to one's goals, wellbeing, or personal development (Kern et al., 2021). Unlike challenge stressors, which may be seen as opportunities for growth or skill development, hindrance stressors are typically viewed as threats and can hinder an individual's progress or cause distress (Dawson et al., 2016). Working at home may provide opportunities to distance oneself from such encounters, and it might be easier to more immediately talk to others about the stressful experience, seeking for emotional support, for example, from a family member or friend. This is an option which might be restricted when working in the organization due to privacy restrictions.

We did not find any significant interactions regarding positive affect. This suggests that, regardless of the location of work, social challenge stressors are (need-)satisfying, while social hindrance stressors prevent positive emotional experiences. One possible explanation for these results can be drawn from the gains that challenge stressors typically hold. Regardless of whether social

challenge stressors occur when working remotely or in the organization's office, personal accomplishments are likely when the situation is successfully met. When working from home, social challenge stressors may well be more straining, but still encompass a motivational potential because of their relationship to valued goals.

Regarding social hindrance stressors, they should be frustrating whether they occur at home or in the office. Employees can withdraw and limit themselves to formal communication when conflicts occur when working from home, which reduces the stress consequences and regulation costs, but the offense to the persons' social self remains regardless of where the employee works (see also Semmer et al., 2019). A second explanation might be that employees can still experience a sense of mastery or goal attainment despite facing these hindrance stressors. Mastery and goal attainment, in turn, are crucial predictors of positive affect and may act as buffers against the detrimental effects of hindrance stressors (Kronenwett and Rigotti, 2022). Whether other sources of mastery exist may not systematically vary depending on the location of work, and this could have affected the results of the proposed interaction.

5.2 Limitations and further research

When interpreting the findings of this study, we need to consider some limitations. First, we cannot make any causal inferences based on this study. For instance, we cannot rule out that employees deliberately chose to work at home on a specific day to avoid face-to-face interactions with colleagues and supervisors. Also, reciprocal effects between stressors and strain are likely (Guthier et al., 2020), as on days when employees feel exhausted, demanding social interactions might be perceived as more stressful, or employees simply lack resources to cope with these situations.

Second, we cannot rule out a selection bias in our sample, which consisted of mostly higher educated employees. This could be particularly relevant for the findings on social challenge stressors, where Kern et al. (2021) already pointed out that they may not have the same relevance for work in all occupations. Nevertheless, the present sample covered a wide range of occupations and sectors.

Third, data were collected between April and May 2021. During that time, Germany was hit by the third COVID-19 wave, with incidence rates of well above 100 infections per 100,000 citizens (RKI, 2021). Employers were therefore obligated to provide opportunities to work from home, although it was not mandatory to exclusively work remotely, allowing hybrid work schedules. Nevertheless, employees might have felt less discretion in deciding whether they work at home or at the office, providing a potential bias to our results.

Finally, a strict, and a priori classification of stressors into either challenge or hindrance stressors has been criticized (Mazzola and Disselhorst, 2019) based on inconsistent evidence regarding the potential positive effects of stressors, claimed to be challenging. Over the past decade, evidence has accumulated that certain stressors encompass a challenging potential by showing positive relationships with thriving, work engagement, or self-esteem particularly under the consideration of third variables, like concurrent hindrance stressors (Kronenwett and Rigotti, 2019; Schilbach et al., 2023a), the availability of resources (Tadić et al.,

2015), or cognitive appraisal (Kronenwett and Rigotti, 2022). Despite adding work location as a relevant boundary condition, we did not consider any of these aspects in our study. Yet, future research might delve further in studying underlying mechanisms (e.g., cognitive appraisals or psychological detachment), as well as additional boundary conditions (e.g., occupations, illegitimacy, telework normativity) to provide more fine-grained evidence when and how challenge stressors unfold their positive potential.

5.3 Practical implications

The empirical findings provide several practical implications for both employers and employees, especially considering the growing prevalence of remote work. For organizations with both remote and in-office work options, this study suggests that the physical work location can influence how social stressors impact employee wellbeing. Employers may consider designing office spaces that mitigate the negative effects of social hindrance stressors or may provide flexible office options such that employees can choose where they work based on their preferences and stressors they may encounter. Companies can further revise their remote work policies based on our nuanced findings. If challenge-oriented stressors are more likely to lead to exhaustion when employees work from home, employers may want to provide additional resources or interventions to help remote workers manage these stressors effectively. In addition, this study highlights the importance of employee training and awareness regarding the potential stressors associated with remote work. Employees can benefit from learning how to recognize and manage stressors specific to their work location, helping them maintain a better work-life balance and overall wellbeing (Krick et al., 2024).

Parker and Grote (2022) proposed four ways of designing work in virtual work environments, which also provide good guidance in light of the present findings. Specifically, they suggest to (a) proactively design work roles when implementing technology, (b) consider human-centered principles in the development, design, and procurement of technology, (c) apply policy-level changes to support better work design, and (d) educate and train employees' digital skills and job crafting (cf. Hardwig and Boos, 2023).

Furthermore, co-working spaces close to home can help mitigate common challenges of remote work by providing a social environment to reduce isolation and foster community. They minimize distractions to enhance productivity and focus, while their proximity reduces commute times, combining the benefits of remote work with a structured, professional environment (Lara-Pulido and Martinez-Cruz, 2023). These spaces also provide flexibility and social interaction, revitalizing remote workers' energy and creativity by addressing the need for a professional routine and a positive work environment.

5.4 Conclusion

Taken together, our study shows that social challenge and hindrance stressors may affect the same individual differently on different days depending on their location of work. Specifically, social challenge stressors were more straining when employees

worked at home, whereas social hindrance stressors only related to strain when employees worked on site, at their organization. We would like to highlight that there is still much to learn about the interplay between stressors and remote work, especially at the within-person level. Therefore, we encourage researchers and organizations to conduct further studies to explore these dynamics in more detail, potentially leading to more refined and effective interventions and policies.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The study received approval from the Ethics Committee at the Institute for Psychology at the Johannes Gutenberg-University Mainz. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

TR: Conceptualization, Formal analysis, Investigation, Methodology, Visualization, Writing—original draft. MS: Formal analysis, Methodology, Writing—review & editing. MK: Formal analysis, Writing—review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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