Should I Stay or Should I Go? The Role of Daily Presenteeism as an Adaptive Response to Perform at Work Despite Somatic Complaints for Employee Effectiveness

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Presenteeism – defined as the behavior of attending work in the state of ill-health

(Aronsson et al., 2000) – has been labeled as an “800-Pound Gorilla” due to the tremendous
costs for employees and organizations alike (Farrell, 2013). These costs are reflected by
increases in burnout, impaired work-ability, and productivity loss (Johns, 2010; Miraglia &
Johns, 2016; Ruhle et al., 2020; Skagen & Collins, 2016). Previous research has contributed to
our understanding of presenteeism as a macro-level phenomenon by examining its prevalence
across longer timeframes such as several months or years (Miraglia & Johns, 2016; Skagen &
Collins, 2016). This research has identified global determinants (i.e., job demands and job
resources) and consequences (i.e., long-term impairments in mental and physical health as well
as sickness absence and impaired employee effectiveness) of presenteeism (Luksyte et al., 2015;

Going beyond relevant insights provided by previous macro-level research, recently
scholars proposed that studying presenteeism through a dynamic person-centered lens may
contribute to a holistic understanding of this phenomenon. More specifically, applying a so far
largely neglected process view of presenteeism can help to identify the intraindividual
determinants and consequences of within-person fluctuations in presenteeism (Karanika-Murray
& Biron, 2020; Lohaus & Habermann, 2019; Ruhle et al., 2020). The present micro-level study,
which focuses on dynamic daily within-person fluctuations thus complements previous macro-
level research on presenteeism (Lohaus & Habermann, 2019; McGregor et al., 2018; Miraglia &
Johns, 2016; Ruhle et al., 2020). In this micro-level study, we empirically test the theoretical
proposition that presenteeism is “… an adaptive response to the need to meet work commitments
during compromised health” (Karanika-Murray & Biron, 2020, p. 245) through examining somatic complaints (i.e., an indicator of compromised health) and work-goal progress (i.e., an indicator of the subjective need to meet work commitments) as joint determinants of presenteeism. Due to dynamic fluctuations of these two core determinants across days (Downes et al., 2020; Repetti, 1993; Wolff et al., 2012), we argue that our proposed daily micro-level focus is most suitable to empirically test this theoretical proposition. Moreover, while previous macro-level research has highlighted that presenteeism is predominantly associated with negative consequences for employees and organizations such as reduced work effectiveness and associated productivity loss (Karanika-Murray et al., 2015; Karanika-Murray & Biron, 2020; Miraglia & Johns, 2016), our proposed micro-level framework can help disentangle the psychological mechanisms underlying these effects, which are not well understood yet (Whysall et al., in press). Finally, focusing on daily within-person fluctuations in presenteeism has the potential to broaden the scope of presenteeism research beyond general attendance behaviors (i.e., whether employees did or did not physically attend their workplace when ill; Johns, 2010; Lohaus & Habermann, 2019) by introducing this concept to work environments such as flexible work arrangements and particularly teleworking were attending one’s workplace is not required anymore (Malhotra, 2021; Whysall et al., in press).

The present study thus aims to add to our scholarly understanding of presenteeism by proposing a dynamic within-person conceptualization of daily presenteeism, exploring its within-person determinants, and the psychological mechanisms underlying its potentially harmful effects for employee effectiveness. We develop our research model by integrating the health-performance framework of presenteeism (Karanika-Murray & Biron, 2020) and the model of the decision-making process for presenteeism (Whysall et al., in press) with ego-depletion theory
(Baumeister et al., 2000). Specifically, we examine the interplay of daily somatic complaints and work-goal progress as predictors of daily fluctuations in presenteeism. We argue that on days with higher work-goal progress, employees are less likely to engage in presenteeism when experiencing somatic complaints. In contrast on days with lower work-goal progress, employees are more likely to engage in presenteeism when experiencing somatic complaints. This is because according to the model of the decision-making process for presenteeism (Whysall et al., in press) employees' engagement in presenteeism is contingent on the perceived value of this behavior. We thus propose that increased work-goal progress reduces the perceived value of engaging in presenteeism because employees have less to gain by continuing work despite ill health as they have already for the most part delivered on their daily performance requirements.

We further integrate this notion with ego-depletion theory, which proposes that self-regulation (i.e., the regulation of cognition, behavior, and emotion for successful goal achievement) is an effortful cognitive process that draws on and depletes regulatory resources (Muraven & Baumeister, 2000). As presenteeism reflects an adaptive behavior to balance performance against limitations due to ill-health (Karanika-Murray & Biron, 2020), it requires employees’ self-regulation to suppress their acute complaints and instead engage in work tasks for satisfactory work performance. Hence, we expect that presenteeism requires self-regulation, which impairs employees’ functioning on the next workday through the depletion of employees’ regulatory resources (cf. Figure 1). Corresponding with our micro-level within-person focus on daily presenteeism, we examine the proposed research model in a daily diary study. We focus on next-day work engagement and task performance as indicators of employee effectiveness, which have been suggested to rely on the availability of regulatory resources (Diestel et al., 2015; Gerpott et al., 2021).
Our research offers three contributions to the presenteeism literature. First, we contribute to an integrative view on presenteeism by complementing the well-established macro-level between-person focus (Karanika-Murray & Biron, 2020; Miraglia & Johns, 2016; Ruhle et al., 2020; Skagen & Collins, 2016) through a micro-level within-person perspective on dynamic daily fluctuations of presenteeism (Whysall et al., in press). Therefore, we develop a within-person conceptualization and operationalization of daily presenteeism, which allows us to introduce a process view to presenteeism by investigating within-person fluctuations in presenteeism across workdays. This complementary perspective can help to move presenteeism research beyond mere attendance behaviors and examine this phenomenon in flexible work contexts where employees can decide to continue or abstain from working at any time during the day (i.e., teleworking, flexible working arrangements; Kniffin et al., 2021; Whysall et al., in press). Furthermore, our focus on daily fluctuations in presenteeism reduces potential recall bias, which may have affected previous findings of studies on presenteeism across longer timeframes (Bolger et al., 2003; Ruhle et al., 2020). Second, we advance our understanding of the core determinants of daily within-person fluctuations in presenteeism, that is, the factors that contribute to employees' engagement in daily presenteeism. Drawing on the health-performance framework of presenteeism (Karanika-Murray & Biron, 2020) and the model of the decision-making process for presenteeism (Whysall et al., in press) the present study examines day-specific interactions between momentary somatic complaints and daily work-goal progress on presenteeism to explain when and how employees engage in presenteeism. Given that task- or goal-related processes are suggested to have a strong impact on employees’ attendance behavior (Whysall et al., in press) such evidence provides novel and nuanced insights into how the
subjective assessment of daily work goal achievement shapes presenteeism behavior. Third, we seek to expand our understanding of the underlying mechanisms of the harmful impacts of daily presenteeism on employee effectiveness by integrating the health-performance framework (Karanika-Murray & Biron, 2020) with ego depletion theory (Muraven & Baumeister, 2000). Based on this theoretical integration, we argue that self-regulation and associated ego depletion represent crucial psychological mechanisms that underly the harmful short-term impact of presenteeism on employees’ performance. By extending the time frame of our study across two consecutive working days we provide a thorough test of the duration of the potential effects of presenteeism on outcomes, which are not only highly contingent upon the momentary availability of resources but also reflect the core dimension of employee effectiveness, which have also been demonstrated as relevant determinants of organizational effectiveness (Call & Ployhart, 2021). Expanding our understanding of these psychological mechanisms also offers practical contributions as it informs the development of interventions that can target ego depletion to reduce the detrimental impact of presenteeism on employees daily effectiveness (Sonnentag et al., 2020).

**Presenteeism as a Daily Phenomenon**

In this study, going beyond previous research, we focus on day-to-day fluctuations of presenteeism as well as its daily determinants and consequences. On the between-person level, presenteeism research has already demonstrated its relevance for employees and organizations alike (Johns, 2010; Karanika-Murray & Biron, 2020; Lohaus & Habermann, 2019; Miraglia & Johns, 2016) with estimated costs of presenteeism potentially exceeding absenteeism (Farrell, 2013; Hemp, 2004). Presenteeism affects a wide range of relevant individual and organizational outcomes such as employees’ physical and mental health as well as sickness absence because it
not only directly impairs the ability to work (i.e., making more errors because of the inability to concentrate while working) but can also compromise physical and psychological recovery processes (Skagen & Collins, 2016; Sonnentag et al., 2017; Whysall et al., in press). Examining between-person differences in presenteeism (Miraglia & Johns, 2016; Skagen & Collins, 2016), this macro-level approach offers important insights into individual and organizational factors that contribute to presenteeism and its consequences. However, this research is also limited in several ways: First, cross-sectional and longitudinal studies implicitly assume that presenteeism is a relatively stable phenomenon that only fluctuates over longer time frames such as months or years. This assumption is challenged by more recent theoretical advancements. For example, the health-performance framework of presenteeism, as well as the model of the decision-making process for presenteeism view presenteeism as an adaptive dynamic behavior and thereby, imply that its determinants and consequences can exhibit considerable intraindividual fluctuations (Karanika-Murray & Biron, 2020; Whysall et al., in press). Second, although evidence indicates that presenteeism impairs employee effectiveness over longer periods (Skagen & Collins, 2016), the more immediate consequences of presenteeism and the psychological mechanisms responsible for these consequences remain unexplored (Lohaus & Habermann, 2019; Ruhle et al., 2020). Finally, the longitudinal time frames across which presenteeism has been examined raise the concern of recall bias that leads people to over-or underreport presenteeism (Ruhle et al., 2020; Skagen & Collins, 2016). Research in related areas (i.e., sickness absence) has indeed suggested that for time frames beyond two months recall bias can threaten the validity of study results (Severens et al., 2000; van Poppel, 2002; Voss et al., 2008).

To address these limitations, we develop and test a micro-level within-person model of presenteeism that is based on integrating the health-performance framework of presenteeism
(Karanika-Murray & Biron, 2020) and the associated model of the decision-making process for presenteeism (Whysall et al., in press) with ego-depletion theory (Muraven & Baumeister, 2000). The starting point for our theorizing draws on the aforementioned proposition that “(...) presenteeism is an adaptive behavior that serves the purpose of balancing health constraints and performance demands” (Karanika-Murray & Biron, 2020, p. 244). This proposition implies that presenteeism is a dynamic behavior that can fluctuate across shorter time frames such as days. To illustrate, during the workday an employee may experience a health complaint in the form of a headache. This in turn requires them to consider whether they continue working despite being affected by ill health and thereby engage in presenteeism, which is dynamic as one may or may not decide to continue working for example depending on the nature of the headache (Whysall et al., in press). The dynamic nature of presenteeism can be further illustrated if we consider that the employee decides to engage in presenteeism by continuing to work. After a few hours, their headache may either have gotten worse or it has gotten better. In both cases, this is likely to reduce presenteeism as either the employee stops working due to a continued prevalence of the health complaint (i.e., resulting in absenteeism) or continues working without experiencing ill health. As this dynamic nature of presenteeism cannot be captured by some of the widely used operationalizations of presenteeism, which have been used in previous macro-level research (i.e., the number of days one has gone to work even though the state of one's health should have implied taking sick leave; Lohaus & Habermann, 2019), we propose to extend the measurement of presenteeism to the day level by asking employees on a certain workday about the number of hours they spent working despite not feeling well enough to work. This dynamic conceptualization strongly aligns with recent theoretical developments, which consider presenteeism as a dynamic process (Karanika-Murray & Biron, 2020; Whysall et al., in press)
and thus not only allows to accurately capture shorter daily episodes of presenteeism but also to
examine presenteeism in more flexible work contexts (i.e., flexible work and telework; Malhotra,
2021; Whysall et al., in press). Such work settings do not require the decision to attend or not
attend work for the whole workday but rather allow to determine work attendance flexibly
(Whysall et al., in press). In light of the increased flexibility of occupational contexts associated
with the Covid-19 pandemic (Kniffin et al., 2021), our proposed conceptualization and
operationalization of daily presenteeism can pave the way to expand research on presenteeism to
a variety of occupational contexts to which a traditional view of presenteeism as an attendance
behavior may not be applicable.

Performing at Work Despite Ill Health – Somatic Complaints and Work-Goal Progress as

Core Determinants of Presenteeism

Previous research has identified several macro-level determinants of presenteeism at the
individual-, job-, and organizational level (for an overview, see Johns, 2010; Lohaus &
Habermann, 2019; Miraglia & Johns, 2016). For example, at the individual level studies have
demonstrated that a person’s physical and mental health are negatively associated with
presenteeism. At the job level, work demands such as role demands, long work hours, and time
pressure positively relate to presenteeism. Finally, organizational-level factors such as working in
the private sector and organizational size are negatively linked to presenteeism. However, this
rich understanding of more general between-person differences associated with presenteeism
cannot contribute to explaining within-person fluctuations in this phenomenon (Ruhle et al.,
2020). That is, while an employee who suffers from chronic health complaints compared to
another employee who is less affected by such complaints may be more likely to engage in
presenteeism because across longer timeframes it is the only way to maintain adequate work
performance, it is not clear whether this relationship also materializes at the within-person level. For example, it is also possible that daily health complaints are only associated with daily presenteeism if there are outstanding performance demands that require an employee to engage in presenteeism on a specific day (Karanika-Murray & Biron, 2020; Whysall et al., in press). The functional equivalence of relations between levels of analysis (i.e., between- compared to within-person) is referred to as homology, which according to Chen et al. (2005, see also Gabriel et al., 2019) cannot be automatically inferred but rather must be empirically examined.

Based on propositions to focus on the dynamic nature of presenteeism as an adaptive behavior to deliver work performance despite limitations due to ill health (Karanika-Murray & Biron, 2020; Ruhle et al., 2020), the present research draws on theoretical notions of the health-performance framework (Karanika-Murray & Biron, 2020) and the model of the decision-making process for presenteeism (Whysall et al., in press) to conceptualize the interplay of health complaints and work-goal progress as core determinants of presenteeism. Whereas health complaints reflect the extent to which an employee’s ill health compromises the ability to perform at work, work-goal progress represents a subjective assessment of the extent to which employees have yet to meet their performance requirements.

We propose that health complaints reflect one of the two core determinants of presenteeism because they are a sine qua non for presenteeism to occur. That is, the occurrence of ill health is a requirement for the consideration of whether one should engage in presenteeism absenteeism (Whysall et al., in press). In consideration of the micro-level within-person focus of our study we examine fluctuating acute or episodic complaints such as having a headache, upper- and lower back pain, or neck- and shoulder pain as indicators of ill health. These temporally transient states of ill-health have been previously demonstrated to considerably vary across days
(Hahn, 2000; Repetti, 1993; Wolff et al., 2012). In line with our initially presented example, on some days the experience of an acute headache may lead to more presenteeism as the employee continues working for the rest of the day while on other days they may engage in less presenteeism as they work for another hour but then stop working due to the persistent nature of the complaint. In assuming within-person daily variations, we still acknowledge that in some cases complaints can be so severe that continuing work is impossible. Yet, the relatively low means of daily complaints reported in previous studies (Hahn, 2000; Repetti, 1993; Wolff et al., 2012) suggest that in most cases daily fluctuations in health complaints rather reflect mild symptoms than severe health impairments.

Furthermore, drawing on Whysall et al’s (in press) proposition that presenteeism can also be contingent on work-related factors, we argue that the extent to which an employee is still required to perform at work represents a crucial contingency that determines presenteeism. This is because employees are less likely to perceive value in continuing working without any major remaining performance goals, which in turn reduces the need to engage in presenteeism. Accordingly, we propose that employees’ daily work-goal progress reflects a subjective assessment of the remaining performance goals that an employee aims to fulfill on a certain day (Wanberg et al., 2010). Accordingly, low daily work-goal progress indicates that employees still have outstanding performance goals that they must complete on a focal day whereas high work-goal progress signals that satisfactory work performance has already been delivered.

In line with the proposition that the purpose of presenteeism is to balance performance goals against limitations due to ill health (Karanika-Murray & Biron, 2020), we argue that presenteeism is more likely to occur on days when employees experience high somatic complaints and at the same time low work-goal progress because on these days adaptive
engagement in presenteeism can help to deliver employees remaining performance goals. In
contrast, when both somatic complaints and work-goal progress are high, we propose that there
is no need to engage in presenteeism as employees as the perceived value of engaging in work
while not having their full ability to work (i.e., presenteeism) decreases. This proposition
corresponds with the model of the decision-making process for presenteeism, which suggests
that besides ill-health the decision to engage in presenteeism is contingent on the perceived value
of the presenteeism behavior (Whysall et al., in press). Accordingly, as daily work goal progress
increases, there is a lesser perceived value associated with presenteeism because employees have
for the most part already delivered on their performance goals. Finally, we expect lower levels of
presenteeism on days with low somatic complaints independent of work-goal progress. This is
because as previously suggested somatic complaints are a sine qua non for presenteeism to occur
because of the seminal definition of presenteeism as working in the state of ill health (Aronsson
et al., 2000).

**Hypothesis 1: Day-specific somatic complaints interact with day-specific work-goal
progress in predicting day-specific presenteeism on the same day. The relationship between
somatic complaints and presenteeism will be stronger on days with lower as compared to days
with higher work-goal progress.**

**Ego Depletion as a Mediator Linking Presenteeism to Employee Effectiveness on the Next
Workday**

The proposition that presenteeism reflects an adaptive response to deliver adequate work
performance despite ill health underpins the integration of the health-performance framework
(Karanika-Murray & Biron, 2020) with ego-depletion theory (Muraven & Baumeister, 2000).
This theory implies that acts of self-regulation draw on and deplete individuals’ regulatory
resources and thus result in a state of diminished regulatory resources coined as ego depletion (Muraven & Baumeister, 2000), which are associated with a reduced ability or willingness to engage in further self-regulation. Previous research has convincingly demonstrated the crucial role of self-regulation and associated ego depletion when individuals engage in adaptive behaviors to cope with work demands that inhibit goal pursuit (Lian et al., 2017; Schmidt & Diestel, 2015; Schmidt & Neubach, 2007). These demands include but are not limited to work-related smartphone use (Gombert et al., 2018; Lanaj et al., 2014), aversive commute experiences (Zhou et al., 2017; Gerpott et al., 2021), time pressure (Diestel & Schmidt, 2009; Prem et al., 2016) emotional labor (Diestel et al., 2015; Konze et al., 2019), and injustice (Matta et al., 2017). The proposition that self-regulation plays a crucial role in adapting ones behaviors can be directly applied to the conceptualization of presenteeism as an adaptive behavior to achieve the goal of delivering a satisfactory work performance despite the reduction in one’s ability to perform at work due to ill health proposed by the health-performance framework (Karanika-Murray & Biron, 2020). That is when engaging in presenteeism employees must self-regulate to inhibit their attention to the aversive sensations associated with their health impairments, and instead upregulate cognitions and behaviors that help support fulfilling their work commitments. Accordingly, presenteeism requires employees to cognitively suppress or distract themselves from their complaints and refrain from initiating actions to tend to those complaints (i.e., take a break and rest, contact the doctor). Instead, employees must self-regulate to focus their attention and behaviors on their work goals as they continue working. Drawing on these arguments, we propose that engaging in presenteeism depletes employees’ regulatory resources as it requires self-regulation.
Previous research has established the crucial role of ego depletion for employees’ work engagement and task performance on a focal day (Lian et al., 2017; Schmidt et al., 2016). This is because staying engaged at work and successfully completing work tasks requires employees’ self-regulation to overcome motivational resistances when working on unattractive tasks, resist distractions, and maintain a high motivation when persisting with a work task (Gerpott et al., 2021; Rivkin et al., 2021). However, much less is known about the potential spillover of the harmful effects of ego depletion across days. That is, whether ego depletion before bedtime on one day affects work-related functioning on a subsequent day. In the present research, we expand notions on ego depletion by examining the spillover of evening ego depletion to next-day employee effectiveness. We argue that this spillover occurs because bedtime ego depletion represents a baseline for employees’ next-day availability of regulatory resources notwithstanding recovery processes in the evening or during the night (Sonnentag & Fritz, 2015). More specifically, while previous research has supported the role of the recovery process in the evening after work for employees’ availability of regulatory resources (i.e., sleep; psychological detachment; Germeys & de Gieter, 2018; Gombert et al., 2020; Rivkin et al., 2021), these recovery processes restore one’s regulatory resources starting from a baseline. We argue that evening ego depletion represents such a baseline for the availability of regulatory resources. That is if, on a certain day an employee had to engage in high levels of self-regulation at work resulting in high levels of evening ego depletion, these levels will at least partially spill over to the next day. This is because even if recovery processes occur, the probability of full recovery is dependent on baseline levels of regulatory resources as represented by bedtime ego depletion. Accordingly, if bedtime ego depletion is high, it will be less likely that a full recovery of an employee’s regulatory resources is possible. We thus expect that having high ego depletion at
Hypothesis 2: Day-specific presenteeism and associated ego depletion mediate the within-person indirect negative relationships between somatic complaints and next-day (a) work engagement as well as (b) task performance.

Integrating our previous hypotheses, we also propose that the interplay of somatic complaints and work-goal progress spills over to employees’ next-day work engagement and task performance through presenteeism and associated ego depletion at bedtime. This is because, on days when employees perceive higher as compared to lower work-goal progress, they do not see the need to engage in presenteeism as a result of suffering from acute or episodic somatic complaints. Refraining from daily presenteeism, in turn, reduces ego depletion, which helps employees to be effective at work on the next workday. Based on these arguments, we delineate the following hypothesis:

Hypothesis 3: Day-specific work-goal progress moderates the within-person indirect relationships between somatic complaints and employees’ (a) work engagement and (b) task performance on the next workday via daily presenteeism and ego depletion. The relationships become stronger on days with lower as compared to higher work-goal progress.

One potential reason for the scarcity of research on the spillover of ego depletion on employees’ work-related functioning across days is the dominant role of sleep for the recovery of
regulatory resources. More specifically, as sleep affects physiological processes in the prefrontal
cortex, it has been theoretically suggested and empirically demonstrated as a process that
recovers regulatory resources (Barnes, 2012; Diestel et al., 2015; Gombert et al., 2018; Rivkin et
al., 2021). While we concur with previous evidence on the restorative function of sleep for
regulatory resources, we also propose that previous day levels of regulatory-resource availability
at bedtime remain a relevant determinant of employees’ work effectiveness on the next workday
above and beyond the quality and duration of one’s sleep. Thus, when investigating the proposed
daily spillover of ego depletion to employees’ work effectiveness we also control for sleep
quality and duration during the previous night to account for the unique role of evening levels of
ego depletion in the relation between daily presenteeism to next-day work engagement and task
performance. Finally, to demonstrate that bedtime ego depletion predicts next-day employee
effectiveness over and beyond general health impairments on the next day we also control for
next-day somatic complaints when predicting employee effectiveness.

Method

Participants and Procedure

We conducted a daily diary study to test the proposed moderated-mediation model. Ethical approval for the study was obtained by the ethics commission of [removed for blind peer review]. The data were collected in the United Kingdom during a period in which many people worked from home due to governmental COVID-19-related lockdown regulations. Participants were recruited through Prolific Academic, which offers access to high-quality data (Palan & Schitter, 2018; Peer et al., 2017). To ensure consistency among our participants, we applied a prescreening to exclusively select employees who worked from home during the study period.
After giving their informed consent, participants received a pre-survey, which measured demographic characteristics. Starting on the following Monday after completing this pre-survey, participants received daily surveys on 15 workdays. We extended the length of our diary study beyond the recommended 10 workdays (Gabriel et al., 2019) to compensate for the potential data loss associated with investigating next-day spillover effects. That is, when examining next-day effects, the last study day is automatically removed from the data. We also excluded employee effectiveness (i.e., work engagement and task performance) data from the second and third Monday during the study period as we did not expect spillover effects of ego depletion at bedtime on next-day employee effectiveness to occur over the weekend (i.e., from Friday to Monday).

To determine the times at which surveys were distributed, we asked participants to indicate their estimated time at which they start work and go to bed. Participants received two surveys each day at the following times: noon survey – 4 hours after the start of work, bedtime survey – 2 hours before bedtime. If participants did not respond to a survey, they received a reminder after an hour. Each survey was active for 2 hours to be completed by participants. Participants received £0.50 for each completed survey. Moreover, they were awarded a bonus of £5.00 if they completed all daily surveys on 9 or more study days (Gabriel et al., 2019).

The initial sample of participants who completed the pre-survey consisted of N = 138 individuals. We excluded participants who did not complete any daily diary surveys throughout the study period, which resulted in a sample of N = 126 (person-level response rate: 91%) who completed 995 out of 1512 (12 workdays per individual, which accounts for the exclusion of two Mondays and the last study day due to the focus on daily spillover effects) possible daily surveys (day-level response rate: 66%). These response rates correspond with previous daily-diary
studies (Fisher & To, 2012). To assess whether any factors affected the response rates we
conducted t-tests to examine differences between participants who only completed the pre-survey
but did not engage in the daily diary study ($N = 12$) and those who took part in the daily diary
study ($N = 126$) in gender, age, general somatic complaints, weekly work time according to
contract, and actual work time as a reflection of how demanding participants' jobs. These t-tests
did not indicate any differences between respondents and non-respondents (gender: $[t = -0.91, df
= 13.27, p = .38]$, age: $[t = 0.19, df = 12.78, p = .85]$, general somatic complaints: $[t = 1.06, df =
11.64, p = .31]$, weekly work time according to contract: $[t = 1.55, df = 17.59, p = .14]$, and
actual work time: $[t = -0.43, df = 12.90s, p = .67]$, which suggests that the dropout was neither
related to general demographics not to health- or work-related factors. We also tested the
assumption whether workers facing the worst working conditions may be less likely to respond to
the daily surveys by computing correlations between the number of daily surveys a participant
has completed over their study period (i.e., 2 surveys per day) and their general somatic
complaints, weekly work time according to contract, and actual work time. These correlations
range from $r_{\text{min}} = -.06$ to $r_{\text{max}} = .05$ with $p$-values ranging from $p_{\text{min}} = .47$ to $p_{\text{max}} = .62$ and were
all non-significant, which again suggests that the engagement of participants in the daily part of
our study was not dependent on their health or work conditions. The average completion times
for daily surveys were 2:06 pm for the noon and 9:26 pm for the bedtime surveys, respectively.
Participants were employed in different sectors (17% IT and communication, 13% public
administration, 13% teaching, and education, 11% finance and insurance, and 46% in other
sectors), their age ranged from 20 to 61 years ($M = 36.56; SD = 9.55$), and the rate of female
participants was 53%. Participants indicated that their dominant types of work were knowledge
work (indicated by 98% of all participants), followed by interacting with customers (indicated by
33% of all participants), and creative work (indicated by 16% of all participants; selection of more than one option was possible).

**Measures and Control Variables**

At noon, we measured *somatic complaints* through a list developed by von Zerssen et al. (1970). We presented participants with a list of ten complaints and asked to what extent they experienced each complaint in the last few hours on a 4-point Likert scale (1 = *Rarely or never*; 4 = *Most if not all the time*). Some exemplary complaints are: Having a headache, heavy- or tired legs, upper- and lower back pain, neck- or shoulder pain. We obtained an overall measure of somatic complaints by computing the mean across all complaints. Also, at noon, we assessed *work-goal progress* with six items (Wanberg et al., 2010). Participants were asked to rate the extent to which they achieved their work goal on a 5-Point Likert scale (1 = *Strongly disagree*; 5 = *Strongly agree*).

An example is: “In the last few hours, I made good progress on my work goals.”

Before bedtime, we measured *presenteeism*. Following recommendations to assess presenteeism as the number of workdays one has worked despite being unwell during a certain period (i.e., a month or a year; Johns, 2010; Lohaus & Habermann, 2019), we adopted this measure to reflect a micro-level within-person daily assessment by asking participants “How many hours did you work today, even though you did not feel well enough to work?” Participants were asked to indicate the respective number of hours (e.g., 2.5 hours). Also, before bedtime, we measured *ego depletion* with a scale developed by Bertrams et al. (2011) with a 5-point rating format (1 = *Strongly disagree*; 5 = *Strongly agree*). The scale measures feelings of diminished regulatory resource availability (i.e., “Right now, I feel like my willpower is gone.”).

On the next workday at noon, *work engagement* was assessed on a 7-point Likert scale (1 = *Strongly disagree*; 7 = *Strongly agree*) with nine items from the Utrecht Work Engagement
Scale (Schaufeli et al., 2006), which is composed of three dimensions: vigor (i.e., “Today, I felt strong and vigorous at my work.”), dedication (i.e., “Today, I was enthusiastic about my job.”), and absorption (i.e., “Today, I was immersed in my work.”). As suggested by Xanthopoulou et al. (2009), we aggregated the three dimensions into overall work engagement. We also measured day-specific task performance with four items (Williams & Anderson, 1991). Participants assessed their level of engagement in their core job activities on a 5-point Likert rating scale (1 = Not at all; 5 = A great deal). An example is “Today, I did my tasks well.”

The omega reliabilities (operationalized as internal consistencies: Lai & Lai, 2020) are reported in the diagonal of Table 1. While most of the reported reliabilities are above recommendations of .70 (Nunnally, 1978), the reliability for somatic complaints is below .70. This is because compared to the other scales, which represent reflective measurements, somatic complaints are measured through a formative scale. Formative scales assume that each item represents a fundamental and irreplaceable part of the construct (Markus, 2018). As items in formative scales are not conceptualized to correlate highly (i.e., as each item represents a unique rather than a common part of a latent construct; Markus, 2018) this explains the lower internal consistency of the scale to measure somatic complaints. Nevertheless, the within-person reliability of somatic complaints is \( \omega_w = .65 \) and thus despite being measured with a formative scale approximates the suggested threshold of .70 (Nunnally, 1978).

**Control Variables**

First, to ensure that our relations are not biased by the overall number of hours participants worked on a certain day, we controlled for participants’ daily *work hours*. Moreover, as sleep has been identified as a strong determinant of employees’ energy and associated effectiveness (Litwiller et al., 2017), we controlled for *sleep quality* and *sleep duration* when
predicting next-day work engagement and task performance to demonstrate that the effects of ego depletion are independent of how well or how much an employee slept in the previous night. In line with Sonnentag and Binnewies (2013), sleep quality and sleep duration were each measured with one item each from the Pittsburgh Sleep Quality Index (i.e., sleep quality: “How would you rate the quality of your previous night’s sleep?”; [0 = Very bad; 3 = Very good]; sleep duration: “How many hours of actual sleep did you get in the last night?”; Buysse et al., 1989). Moreover, to demonstrate that ego depletion is a unique predictor of next-day employee effectiveness beyond general health complaints we controlled for next-day somatic complaints. Finally, to account for changes in work effectiveness outcomes from one day to another we controlled for work engagement and task performance on the previous day when predicting next-day work engagement and task performance, respectively.

Data Analysis

Because of the nested structure, we used multilevel modeling to examine our hypotheses. All models were specified with the software Mplus 8.2 (Muthén & Muthén, 1997-2017) using Maximum Likelihood estimation with robust standard errors and Monte Carlo integration. We tested the proposed hypotheses by specifying a 1-1-1-1 moderated-mediation model (Preacher et al., 2010). In this model on the within-person level, we first specified direct paths linking somatic complaints and work-goal progress with presenteeism. Further, the interaction (product term) of somatic complaints and work-goal progress was entered as a predictor of presenteeism to account for the proposed moderation effect. Furthermore, we added paths from somatic complaints and presenteeism to predict ego depletion and finally, somatic complaints, presenteeism, and ego depletion were specified to predict next-day work engagement and task performance to test the proposed mediation effect. We controlled for overall work time by adding
it as a predictor of all endogenous variables in our model. When predicting our outcomes next-
day work engagement and task performance, we also controlled for next-day sleep quality and -
duration as well as -somatic complaints. We also controlled for previous day work engagement
and task performance (Gabriel et al., 2019). In our analyses, all variables were group-mean
centered, which allowed us to exclusively focus on within-person relations (Enders & Tofghi,
2007; Ohly et al., 2010).

Because the conventional bootstrapping method of re-sampling cannot be applied to
multilevel modeling (Leeden et al., 2008; Preacher & Selig, 2012), we utilized a Monte Carlo
approach of re-sampling to estimate the confidence intervals for the 1-1-1-1 moderated-mediation
model (Preacher & Selig, 2012). Specifically, we computed bias-corrected 95% confidence
intervals for the indirect effects based on 20,000 re-samples using the software provided by Selig
and Preacher (2008). For testing moderated indirect effects, we followed Hayes and Preacher’s
(2010) recommendation and computed conditional indirect effects at lower (−1 SD) and higher (+1
SD) levels of work-goal progress. A presence of an indirect effect is indicated if the confidence
interval of the indirect effect does not include zero (Preacher et al., 2007).

Measurement Models

We conducted multilevel confirmatory factor analyses (MCFAs) to assess the
psychometric distinctiveness of our day-level measures. As we were predominantly interested in
within-person relations, all models were specified on the within-person level, and all indicators
were group-mean centered to remove between-person variance. The goodness of fit was assessed
based on recommended cut-offs by Hu and Bentler (1999) of the following fit indices: Root
Mean Square Error of Approximation (RMSEA) < .08, Tucker–Lewis index (TLI) > .90,
Comparative Fit Index (CFI) > .90, and Standardized Root Mean Square Residual (SRMR)
<.06. We examined the difference in model fit with the Satorra-Bentler (S-B) scaled $\chi^2$
difference test (Satorra & Bentler, 2001).

In line with our proposed theoretical model, we first examined a 5-Factor Model in which
each variable is represented by one factor (i.e., somatic complaints, work-goal progress, ego
depletion, work engagement, and task performance). This model yielded a satisfactory fit ($\chi^2$
[551] = 1346.70; RMSEA = .038; TLI = .934; CFI = 939; SRMR = .044). We also specified an
alternative model to examine the distinctiveness of work engagement and task performance (i.e.,
a 4-Factor Model: $\chi^2$ [555] = 2269.51; RMSEA = .056; TLI = .859; CFI = 769; SRMR = .051),
which performed worse than our hypothesized model (S-B scaled $\chi^2 \& (4) = (456.71), p < .01$).

Results

Table 1 displays the descriptive statistics, internal consistencies, and correlations among
all variables of our study.

– Please insert Table 1 about here –

Before testing our hypotheses, we examined the amounts of within- and between-person
variance in all study variables by computing interclass correlation coefficients (Castro, 2002) and
examining the proportion of variance at the within-person level. The amount of within-person
variance in our variables ranges from 41% to 70%. In particular, and in line with our theoretical
arguments, the proportion of within-person variance in presenteeism was 60%. These high
proportions within-person level variance justify the application of multilevel analyses.

Figure 1 provides an overview of the conceptual model, and the results are presented in
Table 2. Our results indicate that the specified model yielded a good data fit ($\chi^2$ [48] = 190.27;
RMSEA = .046; TLI = .900; CFI = 939; SRMR = .069). Hypothesis 1 predicts that somatic
complaints and work-goal progress interact to predict presenteeism. More specifically, on days
with high work-goal progress, the relation between somatic complaints and presenteeism should become weaker. Our data indicate that the interaction between somatic complaints and work-goal progress is significantly related to presenteeism ($\gamma = -0.77, p = .03$). To explore the pattern of this within-person interaction, we plotted the relationship between somatic complaints and presenteeism at conditional values of work-goal progress ($\pm 1 SD$; Cohen et al., 2003). Figure 2 demonstrates that the pattern of the interaction corresponds with our prediction. That is, on days when work-goal progress was lower than a person’s average, there was a stronger positive relation between somatic complaints and presenteeism, whereas this relation was weaker on days with higher work-goal progress.

Hypothesis 2 suggests that presenteeism and ego depletion mediate the relation between somatic complaints and (a) work engagement as well as (b) task performance on the next workday. Our results indicate that somatic complaints were positively related to presenteeism ($\gamma = 1.78, p < .01$), which in turn was positively related to ego depletion ($\gamma = 0.03, p = .03$). After controlling for the respective outcomes on the previous day, sleep quality and duration, and next-day somatic complaints ego depletion was significantly negatively related to next-day work engagement ($\gamma = -0.12, p < .01$) and task performance ($\gamma = -0.09, p < .01$), which provides initial support for Hypothesis 2. We further examined the 95% CIs of the proposed indirect effects. Our data supports Hypothesis 2a) and 2b) as the 95% CIs for the indirect effects for both outcomes did not include zero (Work engagement: $\gamma = -.007, p = .04$; 95% CI [-.020, -.000]; Task performance: $\gamma = -.005, p = .04$; 95% CI [-.019, -.000]; cf. Table 2).

Moreover, we predicted that the daily indirect effects of somatic complaints on
employees’ next-day work engagement (Hypothesis 3a) and task performance (Hypothesis 3b) via presenteeism and ego depletion are moderated by work-goal progress. To test these hypotheses, we examined conditional indirect effects for the sequential mediations via each outcome at high (+1 SD) and low (-1 SD) levels of work-goal progress. Our results indicate that work-goal progress moderates both proposed indirect effects on both outcomes. More specifically, for both work engagement ($\gamma = -.009, p = .04; 95\% \text{ CI } [-.026, -.000]$) and task performance ($\gamma = -.007, p = .04; 95\% \text{ CI } [-.09, -.000]$), we found a statistically significant indirect effect of somatic complaints through presenteeism and associated ego depletion on days with lower work-goal progress, whereas there were no significant indirect effects on days with higher work-goal progress (Work engagement $\gamma = -.005, p = .08; 95\% \text{ CI } [-.016, .000]$; Task performance: $\gamma = -.004, p = .08; 95\% \text{ CI } [.012, .000]$; cf. Table 2).

To estimate the effect strength of our model, we calculated the amounts of variance in the outcomes variables explained by the proposed predictors. For that, we followed recommendations by Snijders and Bosker (2011) to compute the explained variance, which was 22.1% for work engagement and 12.7% for task performance. These proportions of explained variance not only support the theoretical- but also the practical relevance of our study.

Discussion

Our research set out to contribute to theorizing in the area of presenteeism by developing and testing a micro-level within-person daily conceptualization of presenteeism and expanding our understanding of its daily determinants and next-day consequences. Drawing on the health-performance framework (Karanika-Murray & Biron, 2020) and the model of the decision-making process for presenteeism (Whysall et al., in press), our study identified somatic complaints and work-goal progress as joint core determinants of presenteeism. That is, on days
with higher work-goal progress, employees are less likely to engage in presenteeism as a consequence of higher daily somatic complaints than on days with lower work-goal progress. Furthermore, the proposition that presenteeism is an adaptive behavior to deliver performance requirements despite limitations due to ill health (Karanika-Murray & Biron, 2020) informed the theoretical integration of ego-depletion theory (Muraven & Baumeister, 2000). Specifically, that engaging in presenteeism requires employees’ self-regulation, which depletes their regulatory resources and reduces their work effectiveness on the following day. Our daily-diary study supports this proposition as ego depletion mediates the relationship between daily somatic complaints and associated presenteeism to employees’ next-day work engagement and task performance. In sum, our research demonstrates that on days with higher somatic complaints, higher daily work-goal progress can help employees to protect and preserve their work engagement and task performance on the following day by reducing presenteeism and associated ego depletion.

Our study contributes to the literature on presenteeism in three ways. First, it expands theorizing on presenteeism by complementing previous macro-level between-person research (Miraglia & Johns, 2016; Ruhle et al., 2020; Skagen & Collins, 2016) through a micro-level within-person lens on presenteeism (Whysall et al., in press). We draw on recent theoretical advancements that consider presenteeism as a dynamic adaptive behavior to deliver on work requirements despite performance limitations due to ill health (Karanika-Murray & Biron, 2020; Whysall et al., in press) to develop a micro-level conceptualization of daily presenteeism. We further propose to operationalize daily presenteeism as the number of hours an employee worked during the day despite not feeling well enough to work. Our study supports the theoretical proposition that presenteeism is an adaptive behavior as it exhibits considerable within-person
variation across days. Specifically, more than half (60%) of the variation in presenteeism occurs on the within- as compared to between-person level day level. This variation has, however, been overlooked by previous presenteeism research, which has argued that in the short-term (i.e., daily or weekly) presenteeism has a relatively low prevalence and thus has exclusively focused on between-person differences in presenteeism across time periods starting from a few months to several years (Lohaus & Habermann, 2019; Miraglia & Johns, 2016; Ruhle et al., 2020; Skagen & Collins, 2016). Our micro-level focus also allowed us to examine presenteeism in a sample of teleworkers during the pandemic as one of the work settings to which previous macro-level conceptualizations of presenteeism were not applicable. This is because teleworkers do not have to physically attend work and can flexibly adapt their attendance behavior (Ruhle et al., 2020; Whysall et al., in press). Accordingly, we argue that our study may pave the way for research on presenteeism in light of contemporary changes in the workplace, which were at least partially triggered through the COVID-19 pandemic and will become more widespread in the working world of the future such as tele- and hybrid working ((Kniffin et al., 2021; Ruhle et al., 2020; Whysall et al., in press). Furthermore, the proposed operationalization of daily presenteeism also has methodological implications as it reduces recall bias—a major concern of past presenteeism research (Lohaus & Habermann, 2019; Miraglia & Johns, 2016; Ruhle et al., 2020; Skagen & Collins, 2016). We propose to use this measure alongside the total number of hours an employee has worked that day, which can help to increase the accuracy of the assessment of presenteeism by comparing it to the overall number of hours people worked that day.

Second, our study also extends recent theoretical frameworks that adopt a dynamic view of presenteeism by exploring its day-to-day determinants (Karanika-Murray & Biron, 2020; Whysall et al., in press). More specifically, to the best of our knowledge, our research is the first
to empirically examine the theoretical notion that presenteeism is an adaptive behavior to
balance work performance requirements against limitations due to ill health (Karanika-Murray &
Biron, 2020). In doing so we were able to also offer initial support for the model of the decision-
making process for presenteeism (Whysall et al., in press) by demonstrating that day-specific
somatic complaints interact with work-goal progress to predict day-to-day fluctuations in
presenteeism. The present interaction patterns clearly show how and when employees engage in
daily presenteeism, which results from an imbalance between the progress made at work and the
extent of experienced ill health. This in turn offers support for Whysall et al's (in press)
proposition that the decision to engage in presenteeism is contingent on the perceived value of
presenteeism among other factors. Accordingly, our focus on work-goal progress sheds light on
the important but so far neglected role of individuals’ subjective assessments of their daily work
progress as a core contingency, which determines whether the occurrence of work performance
impairments due to ill health will result in presenteeism. This also implies that employees will
likely not engage in presenteeism as a consequence of experiencing somatic complaints during
the workday if they made sufficient progress to achieve their daily work goals and thus do not
see much value of engaging in presenteeism.

Third, our study also deepens our understanding of the harmful impact of presenteeism
on employee effectiveness. Whereas previous research has demonstrated deleterious impacts of
presenteeism on employee effectiveness (Luksyte et al., 2015; Miraglia & Johns, 2016, 2021),
our research expands on ego depletion as one of the key mechanisms responsible for these
harmful effects. Our theoretical integration of the health performance framework with ego
depletion theory (Muraven & Baumeister, 2000) provides novel insights into how and why day-
specific presenteeism harms work engagement and task performance on the following day. By
identifying self-regulation and associated ego depletion as crucial mechanisms responsible for
the harmful consequences of presenteeism, we also challenge anecdotal evidence that
presenteeism may have short-term benefits in terms of higher effectiveness. While this may
apply for effectiveness on the day employees engage in presenteeism, our findings indicate that
the drawbacks of presenteeism manifest on the following day as reduced work engagement and
task performance as it depletes employees’ regulatory resources. In regard to this finding,
controlling for daily work hours, previous day outcomes, and sleep quality and -duration helps to
rule out various alternative mechanisms and to substantiate the crucial mediating role of ego
depletion in linking presenteeism to employee effectiveness on the next workday.

**Practical Implications**

Our study also offers some practical implications. First and foremost, we present
evidence that underlines the necessity to prevent presenteeism when it happens, that is during
regular workdays. Organizations and managers do not only have a moral obligation to safeguard
the health of their employees but there is also a business case for ensuring that employees refrain
from working when ill because presenteeism reduces work effectiveness further down the line
(Farrell, 2013). To prevent presenteeism, we propose strategies for employees and their
managers. *Employees* may find it eye-opening to learn that day-level presenteeism is related to
poorer work engagement and task performance on the next workday. Thus, what might look like
an incongruence between health- and work commitments may be no trade-off at all: When ill,
protecting and preserving one’s health today means avoiding negative work-related
consequences tomorrow. *Managers* should monitor whether staff members continue working
when experiencing somatic complaints and instruct them to stop working if it becomes evident
that employees are engaging in presenteeism. We show that increasing employees’ work-goal
progress is particularly effective in reducing the relation between somatic complaints and
presenteeism and its spillover to employee effectiveness on the next workday. Accordingly,
managers might offer their targeted support to employees who feel unwell to improve their work-
goal progress by, for example, giving positive feedback about employees’ achievement of daily
work goals. Furthermore, managers should be aware that not all somatic complaints and
presenteeism are plainly visible and apparent. Consequently, they should highlight that
presenteeism is not rewarded but in fact, disapproved. How managers deal with colleagues’
episodes of ill-health is informative in this respect (e.g., do they call out the presenteeism
behavior or remain quiet, thereby indirectly accepting it?). Managers should also avoid working
when ill themselves as they would represent negative role models undermining their previous
activities to prevent presenteeism (Dietz et al., 2020).

Second, our study demonstrates that presenteeism has negative effects on employees’
work engagement and task performance via self-regulation processes and associated ego
depletion. As preventing presenteeism may not always be possible, organizations can further
support employees’ functioning by targeting the self-regulatory processes associated with
presenteeism. For example, we expect that the self-regulatory requirements of presenteeism can
be reduced if employees engage in functional presenteeism (Karanika-Murray & Biron, 2020).
For example, if managers are aware that employees experience certain performance impairments
due to somatic complaints they may adapt performance requirements so that these remain
attainable for employees. Another possibility is to encourage employees to only work on
inherently enjoyable work tasks when engaging in presenteeism as these tasks are unlikely to tax
additional self-regulation processes as employees do not need to overcome motivational barriers
when completing such tasks (Rivkin et al., 2018).
Limitations and Suggestions for Future Research

Besides the theoretical and practical contributions, our research is also subject to some limitations. First, we examined a within-person framework of presenteeism in a sample of white-collar employees who worked from home during the COVID-19 pandemic, which from our view provides a rather conservative test of presenteeism and its correlates. This is because participants in our sample may have enjoyed privileges beyond those of blue-collar or office-based employees (i.e., working from home, flexible work schedules; Bapuji et al., 2020). The base rate of daily somatic complaints and presenteeism should differ between employees who can work from home and employees who must attend their workplace given that the former group is protected by telework policies aimed at preserving employees’ and associated public health during the COVID-19 pandemic (Widera et al., 2010). Thus, future research may focus on blue-collar and office-based employees to reliably estimate the “true” costs of the presumable “800-pound gorilla of [daily] presenteeism” (Farrell, 2013).

Second, because our study is based exclusively on self-reports its results may have been subject to common-method variance problems (Podsakoff et al., 2003). However, this issue is alleviated by demonstrating an interaction effect between somatic complaints and work-goal progress on presenteeism as common method variance reduces the likelihood of detecting interaction effects (Siemsen et al., 2010). Considering the focus of our study, external ratings (i.e., one’s partner, -colleagues, -supervisor) of presenteeism or somatic complaints would also be deficient as complaints and ill health are not always observable by others (Gabriel et al., 2019). However, future studies could obtain more objective measures of regulatory resource availability by using cognitive (i.e., a Stoop-Test; Gino et al., 2011) or physiological (i.e., heart-rate variability; Zahn et al., 2016) assessments.
Third, the relations proposed in our model (i.e., the determinants and consequences of presenteeism) may be subject to heterogeneity, that is a considerable variability depending on between-person characteristics. Drawing on previous research, employees' age, gender or profession, or income (Böckerman et al., 2012) may affect the interplay of somatic complaints and work-goal progress in predicting presenteeism as well as the effect of presenteeism on next-day employee effectiveness through ego depletion. Accordingly, our micro-level within-person operationalization of daily presenteeism paves the way for future studies to explore between-person characteristics that moderate the proposed relations and thereby further expand our understanding of the boundary conditions that affect the determinants and consequences of presenteeism.

Finally, future studies may go beyond the scope of our research by examining further mediators of the relation between presenteeism and impaired employee effectiveness. More specifically, theoretical arguments suggest that the interruption or absence of recovery processes is at least partially responsible for the negative consequences of presenteeism on employee well-being and associated work-related functioning (Johns, 2010). Moreover, depending on the nature of work fatigue may be yet another mechanism that links presenteeism to next-day employee effectiveness (Aronsson et al., 2000). Accordingly, future research on presenteeism could focus on impaired recovery processes (i.e., psychological detachment, relaxation, mastery, and control; Sonnentag & Fritz, 2007) and fatigue as additional mechanisms, which underlie the costs of presenteeism. Moreover, future research could also go beyond work-related functioning by exploring how daily presenteeism affects employees’ daily well-being.

Conclusion
In a nutshell, our study expands presenteeism research through a micro-level within-person perspective by demonstrating that daily presenteeism is determined by balancing the requirement to adhere to work commitments despite limitations in work performance due to illness. Accordingly, work-goal progress attenuates the relation between somatic complaints and presenteeism because it reduces the perceived necessity to engage in presenteeism. Finally, our study indicates that presenteeism reflects an act of effortful self-regulation, which impairs employees’ next-day effectiveness through the depletion of regulatory resources.
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Table 1
Means, Standard Deviations, Internal Consistencies (Cronbach’s Alpha), and Intercorrelations

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Somatic complaints - Noon (t)</td>
<td>.65</td>
<td>-0.11</td>
<td>0.22</td>
<td>0.16</td>
<td>-0.01</td>
<td>-0.02</td>
<td>0.19</td>
<td>0.01</td>
<td>0.09</td>
<td>-0.25</td>
<td>-0.18</td>
<td>-0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Work goal progress - Noon (t)</td>
<td>0.00</td>
<td>0.87</td>
<td>-0.09</td>
<td>-0.10</td>
<td>0.06</td>
<td>0.05</td>
<td>-0.04</td>
<td>0.05</td>
<td>0.01</td>
<td>0.55</td>
<td>0.52</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Presenteeism - Bedtime (t)</td>
<td>0.11</td>
<td>-0.14</td>
<td>-</td>
<td>0.08</td>
<td>-0.03</td>
<td>-0.04</td>
<td>-0.05</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.10</td>
<td>-0.08</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ego depletion - Bedtime (t)</td>
<td>0.15</td>
<td>-0.16</td>
<td>0.06</td>
<td>.92</td>
<td>-0.09</td>
<td>-0.11</td>
<td>0.02</td>
<td>0.06</td>
<td>0.02</td>
<td>-0.22</td>
<td>-0.20</td>
<td>-0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Work engagement - Noon (t+1)</td>
<td>0.03</td>
<td>0.68</td>
<td>-0.05</td>
<td>-0.21</td>
<td>.95</td>
<td>0.67</td>
<td>-0.29</td>
<td>0.40</td>
<td>0.31</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Task performance - Noon (t+1)</td>
<td>0.02</td>
<td>0.65</td>
<td>-0.10</td>
<td>-0.21</td>
<td>0.67</td>
<td>.92</td>
<td>-0.19</td>
<td>0.31</td>
<td>0.21</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Somatic complaints - Noon (t+1)</td>
<td>0.97</td>
<td>0.02</td>
<td>0.08</td>
<td>0.09</td>
<td>0.03</td>
<td>0.03</td>
<td>.65</td>
<td>-0.19</td>
<td>-0.11</td>
<td>-0.06</td>
<td>-0.05</td>
<td>0.03</td>
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<tr>
<td>8. Sleep quality - Noon (t+1)</td>
<td>-0.24</td>
<td>0.37</td>
<td>0.02</td>
<td>-0.28</td>
<td>0.48</td>
<td>0.34</td>
<td>-0.25</td>
<td>-</td>
<td>0.55</td>
<td>-0.02</td>
<td>-0.06</td>
<td>-0.03</td>
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<tr>
<td>9. Sleep duration - Noon (t+1)</td>
<td>-0.18</td>
<td>0.08</td>
<td>-0.12</td>
<td>-0.15</td>
<td>0.22</td>
<td>0.14</td>
<td>-0.19</td>
<td>0.46</td>
<td>-</td>
<td>-0.03</td>
<td>-0.05</td>
<td>0.01</td>
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<tr>
<td>10. Work engagement - Noon (t)</td>
<td>-0.02</td>
<td>0.74</td>
<td>-0.12</td>
<td>-0.24</td>
<td>0.94</td>
<td>0.63</td>
<td>0.01</td>
<td>0.44</td>
<td>0.20</td>
<td>.95</td>
<td>0.71</td>
<td>0.13</td>
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<tr>
<td>11. Task performance - Noon (t)</td>
<td>-0.01</td>
<td>0.67</td>
<td>-0.19</td>
<td>-0.20</td>
<td>0.58</td>
<td>0.92</td>
<td>0.02</td>
<td>0.27</td>
<td>0.11</td>
<td>0.63</td>
<td>.92</td>
<td>0.13</td>
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<tr>
<td>12. Work hours - Bedtime (t)</td>
<td>0.01</td>
<td>0.15</td>
<td>-0.17</td>
<td>0.16</td>
<td>0.10</td>
<td>0.04</td>
<td>-0.04</td>
<td>0.10</td>
<td>-0.06</td>
<td>0.05</td>
<td>-0.01</td>
<td>-</td>
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</tr>
<tr>
<td>13. Age</td>
<td>-0.01</td>
<td>0.31</td>
<td>0.03</td>
<td>-0.22</td>
<td>0.23</td>
<td>0.32</td>
<td>0.03</td>
<td>0.08</td>
<td>-0.15</td>
<td>0.28</td>
<td>0.31</td>
<td>-0.06</td>
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<tr>
<td>14. Gender</td>
<td>-0.16</td>
<td>0.07</td>
<td>-0.16</td>
<td>-0.15</td>
<td>0.06</td>
<td>0.11</td>
<td>-0.13</td>
<td>0.16</td>
<td>0.05</td>
<td>0.03</td>
<td>0.06</td>
<td>0.21</td>
<td>0.06</td>
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<td>$M$</td>
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<td>1.11 3.17 0.57 2.85 4.29 4.03 1.10 2.93 7.17 4.25 4.00 7.97 36.56 1.47</td>
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<tr>
<td>$SD$                                                                    0.17 0.26 1.22 0.84 1.16 0.70 0.17 0.55 0.84 1.17 0.71 1.01 9.55 0.50</td>
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</tbody>
</table>

Note. Omega within values (ωω) for within-person reliability were computed in line with recommendations from Lai and Lai (2020) and are presented in the diagonal. Correlations below the diagonal are person-level correlations (N = 126). Correlations above the diagonal are day-level correlations (N = 995).

Numbers in bold p < .05
Table 2
Unstandardized coefficients from the MSEM model and conditional indirect effects.

<table>
<thead>
<tr>
<th></th>
<th>Presenteeism - Bedtime (t)</th>
<th>Ego depletion - Bedtime (t)</th>
<th>Work engagement- Noon (t+1)</th>
<th>Task performance- Noon (t+1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>SE</td>
<td>z</td>
<td>Estimate</td>
</tr>
<tr>
<td>Within-level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work engagement - Noon (t)</td>
<td>0.003</td>
<td>0.032</td>
<td>0.088</td>
<td></td>
</tr>
<tr>
<td>Task performance - Noon (t)</td>
<td>-0.005</td>
<td>0.031</td>
<td>-0.162</td>
<td></td>
</tr>
<tr>
<td>Work time - Bedtime -(t)</td>
<td>0.051</td>
<td>0.029</td>
<td>1.740</td>
<td>-0.001</td>
</tr>
<tr>
<td>Somatic complaints - Noon (t+1)</td>
<td>-1.794</td>
<td>0.297</td>
<td>-6.037**</td>
<td>-0.731</td>
</tr>
<tr>
<td>Sleep quality - Noon (t+1)</td>
<td>0.380</td>
<td>0.070</td>
<td>5.405**</td>
<td>0.220</td>
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<tr>
<td>Sleep duration - Noon (t+1)</td>
<td>0.135</td>
<td>0.049</td>
<td>2.729**</td>
<td>0.037</td>
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<tr>
<td>Somatic complaints - Noon (t)</td>
<td>1.776</td>
<td>0.532</td>
<td>3.340**</td>
<td>0.892</td>
</tr>
<tr>
<td>Work goal progress - Noon (t)</td>
<td>-0.087</td>
<td>0.053</td>
<td>-1.640</td>
<td>-0.024</td>
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<tr>
<td>Presenteeism - Bedtime (t)</td>
<td>0.033</td>
<td>0.015</td>
<td>2.161*</td>
<td>-0.120</td>
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<tr>
<td>Ego depletion - Bedtime (t)</td>
<td>-0.766</td>
<td>0.362</td>
<td>-2.116*</td>
<td>-0.554</td>
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<tr>
<td>Somatic complaints x Work goal progress</td>
<td>-0.268</td>
<td>0.031</td>
<td>8.582**</td>
<td>0.268</td>
</tr>
<tr>
<td>Residual variance</td>
<td>1.390</td>
<td>0.238</td>
<td>5.840**</td>
<td>5.579</td>
</tr>
</tbody>
</table>

Indirect effects

<table>
<thead>
<tr>
<th>Outcome:</th>
<th>Moderator: Work goal progress</th>
<th>Estimate (SE)</th>
<th>p</th>
<th>95% CI indirect effect:</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>-.007 (.005)</td>
<td>.036</td>
<td>-0.0204 -0.0002</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-.005 (.004)</td>
<td>.080</td>
<td>-0.0162 0.0003</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>-.009 (.007)</td>
<td>.035</td>
<td>-0.0257 -0.0003</td>
</tr>
<tr>
<td>Work engagement</td>
<td>Mean</td>
<td>-.005 (.004)</td>
<td>.035</td>
<td>-0.0148 -0.0002</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-.004 (.003)</td>
<td>.079</td>
<td>-0.0117 0.0002</td>
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<tr>
<td></td>
<td>Low</td>
<td>-.007 (.005)</td>
<td>.035</td>
<td>-0.0186 -0.0003</td>
</tr>
<tr>
<td>Task performance</td>
<td>Mean</td>
<td>-.005 (.004)</td>
<td>.035</td>
<td>-0.0148 -0.0002</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-.004 (.003)</td>
<td>.079</td>
<td>-0.0117 0.0002</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>-.007 (.005)</td>
<td>.035</td>
<td>-0.0186 -0.0003</td>
</tr>
</tbody>
</table>

Note. Estimates are unstandardized, resulting from one overall analysis including the prediction of all outcomes in one model.
*p < .05. **p < .01. Controlling for previous-day lagged values for each endogenous variable did not affect the results.
Figure 1. Theoretical model.

Note: Main control variables in grey.
Figure 2. Day-specific interaction of work-goal progress and somatic complaints predicting presenteeism.