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Abstract

Based on conservation of resources (COR) theory, we tested a moderated mediation model of presenteeism. We hypothesized that heavy workload would precipitate sickness presenteeism, which would lead to elevated exhaustion and hampered job performance (mediation). We further hypothesized that proactive personality and work reward would mitigate the positive "presenteeism-exhaustion" and the negative "presenteeism-performance" relationships (moderation on the second-stage of the mediation). We conducted a two-wave panel study (with one year interval), collecting data from 218 employees working in diverse industries in Taiwan. We found significant moderating effects of proactive personality and work reward on the indirect effect of workload on job performance via presenteeism over the span of one year. Contrary to our hypotheses, workload related positively and indirectly (via presenteeism) to job performance, but only for those high in proactive personality and work reward. Although the moderating effects of proactive personality and work reward on the "workload-presenteeism-exhaustion" link were insignificant, results did support the buffering role of proactive personality on the positive relationship between presenteeism and exhaustion. Namely, this relationship was found to be positive only for employees with lower levels of proactive personality, whilst the relationship was not significant for employees higher in proactive personality. These results tentatively suggest that resources have different functions for the outcomes of presenteeism. The possibility to integrate the buffering role of resources against the deleterious effects of presemteeism with the enabling role of resources to support functional presenteeism is not only of theoretical interest, but also of important practical implications for better managing the presenteeism behavior.

Keywords: sickness presenteeism, the COR theory, proactive personality, work reward

In the post-pandemic era, facing unprecedented upheavals and uncertainties, raising inflation and imminent recession, organizations have to adopt strategic choices like downsizing, restructuring, and layoffs. All this translates into fewer choices, less control, increased workload and job insecurity for the employees (Cigna, 2020; Sharma, Cooper, & Pestonjee, 2021). With increased work intensity, a particular behavior dubbed sickness presenteeism (SP, or presenteeism, hereafter used interchangeably) has reached epidemic proportion in the past decade, as reported at 30% to 90% worldwide (Lohaus & Habermann, 2019). One recent study found that over a quarter of academic staff committed "virtual presenteeism", while working from home during the pandemic (Van Der Feltz-Cornelis, Varley, & Allgar, 2020). Presenteeism refers to 'going to work or continuing to work from home at home (virtual presenteeism) while ill' (Johns, 2010; Karanika-Murray & Cooper, 2018; Van Der Feltz-Cornelis et al., 2020). While empirical studies on SP have grown rapidly in recent years, the bulk of the literature focuses on identifying the antecedents and correlates of the behavior (Ruhle et al., 2020), and tends to view SP as a negative behavior harmful to employees' health, attitudes and performance (Johns, 2010; Miraglia & Johns, 2016).

Systematic reviews of the literature, however, suggest that the evidence supporting the damaging impacts of presenteeism on future health and performance is inconsistent (Cooper & Lu, 2019; Lohaus & Habermann, 2019; Ruhle et al., 2020; Skagen & Collins, 2016). For example, Lu and colleagues showed that presenteeism was negatively related to concurrent mental and physical health and exhaustion, but not future well-being three months later for Chinese and Taiwanese workers (Lu et al., 2014). Another study in Taiwan, however, did find that presenteeism had negative relations with well-being, but not with job performance in a two-month time lag (Lu, Lin & Cooper, 2013). Presenteeism was found to have a short-term (6-month) positive relationship with exhaustion (Demerouti et al., 2009), and a long-term (18-month and 3-year) detrimental effect on physical health (Bergström, Bodin, Hagberg, Lindh, Aronsson, & Josephson, 2009). The equivocal evidence seems to suggest that presenteeism may not have a long-lasting negative effect on *all* the

behavioral indicators and/or *all* the well-being and performance outcomes. It is thus imperative to look at "boundary conditions" for the link between SP and various employee outcomes (Cooper & Lu, 2019; John, 2010; Ruhle et al., 2020). Karanika-Murray and Biron (2020) went further to propose that presenteeism may even be enacted as a purposeful and adaptive behavior when presentees aim at simultaneously balancing health constraints and performance demands. They offered initial insights into the conditions/resources enabling the emergence of functional presenteeism, which supports the view that presenteeism does not necessarily result in lower performance for all the presentees (Johns, 2010). In our research, we explore both the internal (proactive personality) and external (organization endowed work reward) resources as the "boundary conditions" that mitigate the negative impacts of presenteeism on future well-being and performance, in the high workload context. That is, in developing our hypotheses, we take the view that resources can mitigate negative presenteeism (Cooper & Lu, 2016, 2019; Ruhle et al., 2020).

The thrust of the present study is thus twofold. First, we examine the indirect relationship between workload to health (exhaustion) and job performance through presenteeism, looking at the whole process of "antecedent-SP-outcomes". As the positive link between heavy work demands and the preponderance of presenteeism is one of the most robust findings in the SP literature, we focus on identifying the moderation effects of proactive personality and work reward in the second leg of the mediation (i.e. presenteeism-outcomes). Specifically, we adopt the resource loss-gain dynamic view of conservation of resources (COR) theory (Hobfoll, 2011; Hobfoll, Halbesleben, Neveu, & Westman, 2018, pp.105-106), to examine whether resource gains (i.e., personal/organizational drives to accomplish work) can protect employees' well-being and task performance in the context of resource depletion (i.e., working when ill due to heavy workload). In the SP context, people with proactive personality could make the most use of available resources to them (Greenglass et al., 1999), to better compensate for the serious resource depletion caused by working through illness under high work demands. For instance, Wang et al. (2022) found that proactive coping employees were more favorably evaluated by their supervisors when they committed sickness presenteeism

under high work demands. It is thus probable that proactive employees obtain social approval and tangible support from supervisors as resource gains to combat the stress of working in illness. Socio-structural/external resources available in the workplace are viewed as incentives to encourage employees to work while ill (Johns, 2010; Miraglia & Johns, 2016). When employees exert high efforts (working under illness), they expect adequate rewards in return from their employers to sustain the effort-reward balance. The provision of work rewards by the organization can thus be seen as a reciprocation and goodwill from the employer to honor the psychological contract. Work rewards such as monetary compensations, job security, and promotion prospects are thus resource gains for employees to protect their sense of worthiness and to procure aids to alleviate the strains of working in illness.

In terms of functional presenteeism, Karanika-Murray and Biron (2020) also proposed that the effects of presenteeism on job outcomes could be contingent upon the availability of internal and external resources. The internal resources are the individual's capacities, referring to the mental, physical, or physiological capabilities afforded by the health condition, while external resources are the flexible work resources that the presentee has access to and can draw from when enacting the presenteeism behavior. Whilst the pivotal role of resources is agreed by researchers in both the positive and negative presenteeism camps, past research has mostly focused on investigating the moderation effects of motivation and intangible work resources on the impacts of presenteeism. For instance, evidence suggests that personal motives such as self-efficacy (Lu, Peng, Lin & Cooper, 2014), positive reasons for enacting presenteeism (Fan & Lu, 2020), intrinsic work value orientation (Lu & Cooper, 2022), and intangible work resources such as supervisor and colleague support (Chen, Lu & Cooper, 2021; Wu & Lu, 2022) can buffer the damaging effects of presenteeism on employees' health and performance.

Over and beyond the motivations and reasons for 'working while ill', how to effectively cope with resource depletion in the highly demanding scenario of sickness presenteeism is of paramount importance for the presentees' well-being and work performance. Although both self-efficacy and

proactive personality are intrapersonal resources, proactive personality is preponed for active and constructive coping behaviors to combat stress which often leads to better adjustment in highly demanding circumstances (Fuller & Marler, 2009; Tett & Burnett, 2003; Wang, Zhang, Thomas, Yu, & Spitzmueller, 2017). As coping behaviors are amendable through training, managers can look to enhance employees' proactive coping by introducing various cognitive behavioral programs in the organization (Tiwari, 2021). We thus focused on proactive personality, as those with such a trait are more active to gain resources to reduce the deleterious effects of presenteeism on health and performance.

Past studies have investigated the protective effect of certain socioemotional aspects of the work environment such as supervisor and colleague support (Chen, Lu & Cooper, 2021; Wu & Lu, 2022) on the outcomes of presenteeism. However, the structural aspects of the work environment such as organization endowed rewards for pay, recognition, promotion, and job security (Siegrist, 1996) have rarely been explored in the context of presenteeism. We thus focus on these work rewards, expecting that employees with tangible external resources are better able to mitigate the negative impacts of presenteeism on their health and performance (Cooper & Lu, 2019).

Second, due to the scarcity of longitudinal studies in the extant literature, claims of negative consequences for presenteeism are often made without a rigorous scientific basis (Karanika-Murray & Cooper, 2018; Lohaus & Habermann, 2019). In their review of the longitudinal studies, Skagen and Collins (2016) noted that the inconsistent findings pertaining to the lasting impacts of presenteeism on health and workability were probably due to different timeframes adopted in different studies. While there is a constant call for more longitudinal studies, there is thus far no consensus for the optimal time lag in organizational research. Most longitudinal studies of SP adopted short time frames ranging from 1 week to 6 months. Although some researchers examined longer time lapse of more than 12 months (Dellve, Hadzibajramovic, E., Ahlborg Jr., 2011; Demerouti, Blanc, Bakker, Schaufeli, & Hox, 2009; Gustasfsson & Marklund, 2013), evidence for the lasting effects of presenteeism on employee outcomes is mixed, and the temporal effects of

presenteeism still need to be disentangled (Skagen & Collins, 2016). We decided, therefore, to conduct a two-wave panel study with a longer timeframe of one year to clarify the lasting effects of presenteeism on employee outcomes. The one-year lapse from the initial behavior (presenteeism) to the subsequent outcomes, allows sufficient time for presenteeism to incubate its effects on employees' well-being and job performance while taking into account the level of employees' well-being and job performance at the time of enacting the presenteeism behavior. Controlling for the baseline levels, gives us a more robust test of causal relations with a prospective research design, which is rare in the SP literature. We, therefore, assessed whether the resources depletion (working while ill) has long-lasting detrimental effects on well-being and performance; furthermore, whether the resources gains (proactive personality and work reward) can mitigate the damaging effects of presenteeism triggered by high work demands. Below (Figure 1) is the graphical representation of our research model.

Insert Figure 1 here

Hypothesis Development

Presenteeism as the linchpin in the relationship between demanding work and employee outcomes

The concerted research has revealed that a distinctive feature of presenteeism is its robust positive associations with a wide range of job demands, especially heavy workload (Ruhle et al., 2020). A meta-analysis has clearly demonstrated that heavy workload is the most salient predicator of presenteeism (Miraglia & Johns, 2016), suggesting that individuals tend to attend 'work while ill' under high work demands. Furthermore, previous research has found that presenteeism is associated with poor health, burnout, impaired workability, productivity loss, or lower performance (Johns, 2010; Knani, Fournier & Biron, 2021). Another distinct feature of the presenteeism literature is that most studies look at the "work demands-presenteeism" relationship, and/or the "presenteeism-outcomes " relationship; few studies have examined the *entire* process of

"antecedents-SP-outcomes", while incorporating the conditioning effects of resources (Baeriswyl, Krause, Elfering, & Berset, 2017; Lu & Cooper, 2022; Wu & Lu, 2022).

Reviews of the presenteeism literature note that the mediation effect of presenteeism between work demands and well-being and/or performance has been largely overlooked (Lohaus & Habermann, 2019; Ruhle et al., 2020). Although cross-sectional studies are not the best way to test mediation models, some tentative evidence indicated that higher job demands were positively related to poor metal health and burnout through presenteeism (McGregor, Magee, Caputi, & Iverson, 2016; Nair, McGregor, & Caputi, 2020). Another cross-sectional study also found that the impact of workload on exhaustion was partially mediated by presenteeism (Baeriswyl et al., 2017). Recently the mediation role of presenteeism has been examined in longitudinal studies. For example, Lu and Cooper (2022) found that high work demands (i.e. long working hours) precipitated the presenteeism behavior, which then led to damaged well-being and job performance five months later. Another study on nurses also found that high work demands triggered the presenteeism behavior, which led to elevated turnover intention assessed four months later (Wu & Lu, 2022).

From the perspective of COR theory (Hobfoll, 2011), when employees face resource depletion caused by high work demands, they will strive to gain other available resources to replenish this loss of physical and psychological resources, including continuing to work while ill, though using the health resource may lead to further draining on one's resource reservoir (Demerouti et al., 2009). One possible mechanism for the mediation effect of SP, therefore, is the flow of events as follows: In high-demand work settings, employees commit sickness presenteeism to avoid excessive in-trays of work, striving to keep up with the work schedule (Johansen, Aronsson, & Marklund, 2014; Lu et al., 2013). Working through illness then results in an aggravated state of exhaustion (Chou & Mach, 2021), a lowered level of cognitive functioning, and poorer work performance (Hansen & Andersen, 2008; Meerding, IJzelenberg, Koopmanschap, Severens, & Burdorf, 2005). Another possible mechanism for the mediation effect of SP is that employees may commit SP as a 'heroic' behavior, to reduce the burdens placed on others who are required to cover the absentee's work (Caverley,

Cunningham, & MacGregor, 2007; Johansen et al., 2014), or in the absence of a replacement option (Lu et al., 2013; Vinberg, Landstad, Tjulin, & Nordenmark, 2021). According to the resources loss perspective of the COR theory (Hobfoll, 2001), work demands caused the loss of individual resources. Heavy workloads request more physical and psychological efforts of employees such as cognitive and emotional resources and this leads to certain physiological or psychological costs (Demerouti et al., 2009). Working while ill, for whatever reasons, thus deprives the presentees opportunities of recovery and recuperation, which through accumulating effects in the lapse of time results in worsening health and elevated exhaustion (Conway, Hogh, Rugulies, & Hansen, 2014; Lu et al., 2013; Lu & Chou, 2020), productivity loss (Johns, 2010), and poorer overall quantity and quality of work produced (Ammendolia et al., 2016; Block et al., 2008; Chen et al., 2021; Chou & Mach, 2021; Lu & Chou, 2020; Lu & Cooper, 2022). In sum, viewed from the COR perspective, high work demands compel employees to commit sickness presenteeism, which over an extended period of time, can lead to exhaustion and productivity loss in the ensuing resource-loss cycle (Hobfoll et al., 2018). We thus hypothesized that:

H1a: Presenteeism (T1) mediates the positive relationship between workload (T1) and exhaustion (T2), that is, workload relates positively to presenteeism that in turn relates positively to exhaustion.

H1b: Presenteeism (T1) mediates the negative relationship between workload (T1) and job performance (T2), that is, workload relates positively to presenteeism that in turn relates negatively to job performance.

Mobilizing resources to counter the continuous depletion caused by working while ill

In the scenario of continuous resource depletion triggered by working under illness in high-demand conditions, mobilizing, obtaining, or retaining available resources to cope with both high work demands and suboptimal health is of paramount importance for employees to minimize the adverse effects on their well-being and performance (Ferreira, 2018; Hobfoll, Halbesleben, Neveu, & Westman, 2018). Viewed from the COR perspective of resources-loss and resources-gain

(Hobfoll et al., 2018), high work demands would put more pressure on employees not to take a legitimate sick leave when they are ill. While presentees push themselves to work in suboptimal health, they need to gain more resources to replenish the continuous loss of physical and psychological resources, in order to maintain a desired level of performance. Though with different origins, personal resources and supportive work environment are arguably the most important conditional factors that could mitigate the negative effects of sickness presenteeism on employees' health and performance (Cooper & Lu, 2019; Karanika-Murray & Biron, 2020; Ruhle et al., 2020). For example, Brunner, lgic, Keller, and Wieser (2019) found that job and personal resources buffered the negative effects of job stressors (time pressure, performance constraints, work overload or task uncertainty) on productivity losses caused by presenteeism. Lu, Cooper, and Lin (2013) found that supervisor support alleviated the negative impact of sickness presenteeism on exhaustion for both British and Chinese employees. Extending the above line of research, we focused on proactive personality trait as a personal resource and work reward as a structural/external resource, which are so far overlooked in the presenteeism literature. In line with the COR proposition of resources-loss and resources-gain (Hobfoll1, 2011), we examined both the internal and external resources as moderators on the second-leg of the mediation model ("work demands-SP-outcomes"), namely, the links between presenteeism and exhaustion/performance.

Proactive personality as an intrapersonal/internal resource against the detrimental effects of presenteeism

According to trait activation theory (Tett & Burnett, 2003), behavior is an expression of a certain trait that is activated by trait-relevant situational cues. Thus, when confronted with challenging conditions of high demands and working through sickness, those who hold positive expectations for changing and mastering their environments will fare better in well-being and performance. This is because that individual's coping styles (e.g., proactive coping) have important bearings on successful adjustment in demanding work context (Reuter & Schwarzer, 2009; Wang et al., 2022). The aforementioned findings that self-efficacy and intrinsic work motivations could

mitigate the deleterious effects of presenteeism on health and performance, support the value of intrapersonal factors in coping with sickness presenteeism (Lu et al., 2014; Lu & Cooper, 2022). We purport that proactive personality is one such factor.

'Proactive personality' refers to a dispositional individual difference in people's proclivity to take personal initiatives in acting to influence their environments in a broad range of activities and situations (Bateman & Crant, 1993). People with a strong proactive personality recognize opportunities, take proactive actions to cope with environmental challenges (Gan, Hu, & Zhang, 2010; Greenglass, 2002). Research has shown that those with proactive trait tend to take positive attitudes and proactive coping strategies to cope with high work demands, then fare better well-being and performance (Reuter & Schwarzer, 2009; Wang et al., 2022). In the SP context, people with proactive personality may garner more resources to cope with presenteeism under the high-demand situation. First, people with a proactive personality have positive outlooks or positive expectations toward the future (Reuter & Schwarzer, 2009). They thus tend to expect potential benefits or gains of presenteeism. For instance, when employees view SP as a show of personal strength and professionalism, they prioritize work over health and are less worried about the loss incurred by presenteeism (Lu et al., 2013). Such positive conviction towards presenteeism is associated with more positive rather than negative outcomes in terms of well-being and performance (Cooper & Lu, 2016; Fan & Lu, 2020). Second, people with the characteristic of proactive personality are proactive, rather than reactive. When coping with sickness while working, they try harder to get control over their performance, because they believe they can make positive things happen (Greenglass, 2002; Greenglass, Schwarzer, Jakubiec, Fiksenbaum, & Taubert, 1999). As shown by a recent study, presentees momentarily increased their effort exertion at work to sustain performance (Chou & Mach, 2021). Third, people with proactive personality could make the most use of available resources to them (Greenglass et al., 1999), to better compensate for the serious resource depletion caused by working through illness under high work demands. Research has found that to prevent burnout, individuals engage in proactive behaviors such as maintaining

and/or increasing resources and/or reducing demands in the work, home, and personal domains (Otto, Hoefsmit, Ruysseveldt, & Karen, 2019). Thus, proactive personality and its related self-regulatory behavior tendency can be regarded as a key personal resource (Hobfoll, 2011), which will amplify its value especially in demanding work circumstances. In sum, the challenging scenario of 'working while sick' to meet high work demands will activate the proactive personality trait. People of such predisposition will then mobilize resources to cope with challenges and protect both well-being and performance, compared to people with a weak dispositional proactive trait. We thus proposed that:

H2a: Proactive personality will mitigate the positive effect of presenteeism on exhaustion under high demands, such that the positive presenteeism-exhaustion relationship will be weaker for employees with high-level proactive personality.

H2b: Proactive personality will mitigate the negative effect of presenteeism on job performance under high demands, such that the negative presenteeism-performance relationship will be weaker for employees with high-level proactive personality.

Work reward as a socio-structural/external resource against the detrimental effects of presenteeism

In the context of presenteeism, socio-structural/external resources available in the workplace are viewed as the incentives to encourage employees to work while ill (Johns, 2010; Miraglia & Johns, 2016); or as the analgesic to mitigate the damaging effects on the presentees (Cooper & Lu, 2019). The positive socioemotional aspects of work as external resources have received abundant attention in the SP research, confirming that supervisory support, collegial support (Chen et al., 2021), team support (Wu & Lu, 2022), and psychosocial safety climate (Biron, Karanika-Murray, Ivers, Salvoni, & Fernet, 2021) are all beneficial for employees' well-being and performance when they work under illness. We in the present study focused on the structural-organizational regulatory aspects of the work environment as resources mitigating the adverse effects of presenteeism (Cooper & Lu, 2019). Work reward, such as fair pay, stability of employment, recognition and

promotion prospects, provided by organizations are essential resources incentivizing employees to engage at work and to cope with work stress (Siegrist, 1996). A solid body of evidence has already confirmed the positive effects of work reward as the structural-organizational regulatory components of the work environment for employees' well-being and job performance (Hussian, Khaliq, Nisar, Kamboh, & Ali, 2019; Li, Leineweber, Nyberg, & Siegrist, 2019; Siegrist & Li, 2016; Siegrist & Wahrendorf, 2016; Wahrendorf, Sembajwe, Zins, Berkman, Goldberg, & Siegrist, 2012). However, the salutogenic role of work reward has yet to be explored in the context of presenteeism. We thus adopted the "effort-reward mismatch" proposition in the Effort-Reward Imbalance (ERI) model (Siegrist, 1996) to understand the protective mechanism of work reward against resources loss when employees work through illness.

As a popular occupational stress framework, the ERI model is based on the central tenet of social exchange and reciprocity underlying the work contract (Siegrist, 1996). The principle of 'social reciprocity' pivots on the equivalent exchange of effort spent by the employee and rewards returned by the company. These extrinsic rewards are divided into three categories, including financial reward (salary or wage), socioemotional reward (esteem or recognition), and status-related reward (job promotion or job stability) (Siegrist, 2008). If employees experience the lack of reciprocity (e.g., high efforts with low rewards, misfit between efforts and rewards), employees' psychological trust to the organization is violated; this state of effort-reward imbalance evokes negative emotions and strain reactions with adverse effects on health and well-being (Siegrist, 2008; Siegrist & Li, 2016). For example, Wahrendorf et al. (2012) found that high effort or low reward is negatively related to mental health and the effort-reward imbalance is negatively related to physical health. Many studies also found that failed reciprocity of "cost" and "gain" is associated with high risks of depression, coronary heart disease and strains (Li et al., 2019; Siegrist & Wahrendorf, 2016). The systematic review of empirical studies examining the ERI model further corroborated the negative relationship between ERI and work well-being (Van Vegchel, de Jonge, Bosma, & Schaufeli, 2005). Expanding the model's initial focus on work stress and strains, Reizer and Siegrist

(2022) have recently shown that effort-reward imbalance was associated with multiple dimensions of employee performance behavior, including task performance, creative performance, and organizational citizenship behavior.

Building on the ERI research, presenteeism can be viewed as the circumstance when employees exert high efforts (working while ill) and expect work reward in return from their employers (Effort-reward balance). The provision of work reward by the organization can thus be seen as a reciprocation and goodwill from the employer to honor the psychological/work contract. Similar to internal motivational resources (Lu & Cooper, 2022), work reward can be deployed as a resource to counter the deleterious effects of resources depletion while employees work under illness, and thus function to protect the presentees' well-being and performance. In other words, when employees exert extraordinary efforts to work with ill health as they commit presenteeism, they will expect adequate rewards from the organizations (Siegrist & Wahrendorf, 2016). If employees indeed experience adequate exchange between efforts spent and rewards gained, the effort-reward match reinforces positive emotions, thus acting as a potential protective resource under stress (Siegrist & Wahrendorf, 2016). On the contrary, if they experience deficient reciprocity recurrently, negative emotions and stress-related physiological responses will adversely affect their health and work behavior. Bakker, Killmer, Siegrist, and Schaufeli (2000) found that the misfit of high extrinsic efforts spent (e.g., job demands) and low extrinsic rewards received (e.g., poor promotion prospects) are positively associated with burnout in nurses of a German university hospital. We further argue that when employees perceive that their high efforts (working through sickness to meet heavy workload) are matched with high rewards, they gain external resources in their struggle to maintain health and performance against the continuous depletion and loss caused by sickness presenteeism. We thus proposed that:

H3a: Work reward will mitigate the positive effect of presenteeism on exhaustion under high demands, such that the positive presenteeism-exhaustion relationship will be weaker for employees with high-level work reward.

H3b: Work reward will mitigate the negative effect of presenteeism on job performance under high demands, such that the negative presenteeism-performance relationship will be weaker for employees with high-level work reward.

Method

Procedure and participants

The present study is a two-wave panel study with a one-year interval between the two data collection points. We measured the independent variable (workload), mediator (SP) and dependent variables twice, and the moderators (proactive personality, work reward) were measured at Time 2 (T2). Following the convention for analyzing longitudinal data, we used dependent variables (exhaustion, job performance) at T2, while controlling for the corresponding measurements at T1 as the baseline levels. We used the independent variable (workload) and the mediator (SP) from T1, to separate from the dependent variables in time.

The present study was approved by Research Ethics Committee of the principle researcher's Institute. We used paper-and-pencil questionnaires for data collection and our sample was comprised of full-time employees working in different organizations and diverse industries in Taiwan. The survey was carried out using convenient sampling to recruit participants through personal contacts of the researchers. Some participants were enrolled in university-based executive education programs, and others were recruited through managers in various organizations. With the assistance of the contact persons, we successfully collected data at two time points (January 2020, January 2021). At T1, a cover letter accompanied the questionnaire, explaining the aim of our study and assuring confidentiality. The initial survey was completed by 631 persons (response rate: 89.25%). One year later, 297 persons completed the survey again (T2, retention rate: 47.07%). Using the "matching code" self-generated by and known-only to the respondents, T1 and T2 data from 284 persons were combined. We further excluded those with excessive missing data on the core research variables, resulting in the final sample size of 218. We examined the attrition bias by

comparing the participants in the panel sample and the dropouts on demographic characteristics and mean scores of all research variables (T1). We found no significant differences in any variables, indicating no serious attrition bias.

The sample was 31.6 percent male and 64.2 percent female, with a mean age of 39.99 (SD = 9.70), and mean job tenure of 9.03 years (SD = 8.67). Over 60 percent of the sample (61.2%) were married. Almost all respondents had college education (90.2%) and more than one third (34%) were managers. Participants identified their organizations in three categories, those employing under 250 people, between 251-1000, and over 1000. Data showed that our participants equally distributed in SMEs (35%, under 250 employees) and large companies (37.50%, over 1000 employees). We also asked participants to indicate the industries of their organizations and found that manufacturing (27.8%), high-tech (22.9%), and service (15.9%) being the top three industries.

Measures

The structured questionnaire was written in Chinese, and all the standard measures have been used and validated with Chinese samples in previous studies (the Chinese validation reference is given for each scale below).

Workload. We used the 5-item Quantitative Workload Inventory Scale (Spector & Jex, 1998; for the Chinese version: Wang et al., 2022) to measure how often each statement of workload occurs (e.g., "How often does your job require you to work very fast"). Five-point frequency scales were used (1 = Never, 5 = Always). The internal consistency reliability of the scale was 0.80 (T1) in the present study.

Presenteeism. We used the 2-item Presenteeism Behavior Scale (Lu et al., 2013, 2014) developed for the Chinese populations to measure the act of sickness presenteeism (e.g., "Although you feel sick, you still force yourself to go to work"). Participants rated the frequency of the behavior "in the past 6 months" on four-point scales (0 = Never, 4 = More than five times). The internal correlation of the scale was 0.82 (T1) and 0.87 (T2) in the present study. We conducted the normality test on the presenteeism data (assessed as the behavioral frequency) to decide whether a

variable transformation was required (Johns, 2011). Following normality diagnosis advice (Kline, 2005), we examined the skewness and kurtosis coefficients for SP at T1 and T2. The results showed that presenteeism (T1/T2) had a skewness coefficient of 0.001/-0.053 and a kurtosis coefficient of -0.939/-1.02. These values are all within the accepted ranges of ±2.0 for skewness and ±7.0 for kurtosis (Cunningham 2008). We thus concluded that the distribution of presenteeism was normal and this would not affect the estimator to use in the subsequent analysis.

Proactive personality. We used 3 items (Proactive Personality Scale, Seibert, Crant, & Kraimer, 1999; for the Chinese version: Chang, Lu, & Huang, 2011) to assess the proactive personality trait (e.g., "If I believe in an idea, no obstacle will prevent me from making it happen"). Five-point scales were used (1 = Strongly disagree, 5 = Strongly agree). The internal consistency reliability of the scale was 0.76 (T2) in the present study.

Work reward. We used 5 items (Effort-Reward Imbalance Questionnaires, Siegrist, Wege, Pühlhofer, & Wahrendorf, 2009; for the Chinese version: Li et al., 2019) to measure rewards for work effort, pertaining to salary, job promotion, job security, and esteem (e.g., "Considering all my efforts and achievements, my salary/income is adequate"). Five-point scales were used (1 = Strongly disagree, 5 = Strongly agree). The internal consistency reliability of the scale was 0.71 (T2) in the present study.

Exhaustion. We used a 4-item emotional exhaustion scale from the Maslach Burnout Inventory (Maslach & Jackson, 1986; for the Chinese version: Lu et al., 2014) to measure exhaustion (e.g., "I feel used up at the end of the workday"). Seven-point frequency scales were used (0 = Never experienced such a feeling, 6 = Experienced such feelings every day). The internal consistency reliability of the scale was 0.92 (T1) and 0.90 (T2) in the present study.

Job performance. We used the 4-item scale (Ang, Van Dyne, & Begley, 2003; for the Chinese version: Lu & Cooper, 2022) to assess self-rated job performance (e.g., "I am effective in my job"). Seven-point rating scales were used (1 = Strongly disagree, 7 = Strongly agree). The internal consistency reliability of the scale was 0.90 (T1) and 0.78 (T2) in the present study.

Control variables. According to the cognitive appraisal theory, differential reactions to the same stressor (e.g., working through illness) may be attributed to personal difference factor such as gender, marital status, and job position (Merrill et al., 2012). We thus collected information on gender (0 = female; 1 = male), marital status (0 = not married, 1 = married), and job position (0 = not manager, 1 = manager). During our study period of year 2020, Taiwan experienced several corona virus outbreaks, we thus included a global assessment of the Covid-19 impact on life at T2 (1 = Little impact, 5 = Severe impact). All the above are included as control variables to exclude potential confounding factors. To take advantage of our longitudinal data set, we also controlled for the baseline of the outcome variables in all the analyses.

Strategy of analysis

We used the SPSS 24 and PROCESS macro version 3.5 to test the mediation effect of presenteeism in the relationship between workload and work outcomes (exhaustion and job performance) (Model 4) and the moderated mediation effects of proactive personality and work reward (Model 14). According to Hayes, Montoya, and Rockwood (2017), PROCESS is able to directly estimate the moderated mediation effect with bootstrapping (5,000 in this study) to calculate bias-corrected confidence intervals. To take advantage of our two-wave data, in all the following analyses our independent variable (workload) and mediator (SP) were measured at T1, moderators (proactive personality and work reward) and dependent variables were measured at T2. We further controlled for the base-line levels of the dependent variables (exhaustion, job performance at T1). Before testing hypotheses, we conducted a confirmatory factor analysis (CFA) to verify the factor structure by confirming that each measure is loaded on a particular factor (Byrne, 2001).

Results

Descriptive analysis

Prior to the hypotheses testing, bi-variable correlations were computed, and results are shown

in Table 1. Workload at T1 positively correlated with presenteeism at T1, and exhaustion at T2. Presenteeism at T1 positively correlated with exhaustion at T2. Both proactive trait and work reward positively correlated with job performance; but negatively correlated with exhaustion. Exhaustion at T2 negatively correlated with job performance at T2, which was consistent with the correlation for exhaustion at T1 and performance at T1 (r = -.17, p <.05). Among the control variables, both gender (female) and job position (managers) positively correlated with job performance. The impact of Covid-19 positively correlated with exhaustion. Job position (managers) positively correlated with workload, proactive personality, and work reward. It is also worth noting that both the work condition and employee adjustment have remained stable over the study period of one year, indicated by moderate to strong auto-correlations between the same measures at different times (workload: r = .62; SP: r = .51; exhaustion: r = .55; job performance: r = .51).

Insert Table 1 here

Hypothesis testing

In order to test for discriminant validity, we conducted the CFA using AMOS 24. The hypothesized six-factor model (workload, presenteeism, proactive personality, work reward, exhaustion, job performance) displayed a suitable fit to the data ($\chi 2/df = 1.78$, CFI = 0.94, RMSEA = 0.06, SRMR = 0.07) and outperformed any simpler representations of the data ($p < .01$ for all model comparisons). As self-report may increase the threat of common method variance (CMV) bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), a CMV test was performed following the procedure used by Williams, Cote, and Buckley (1989). This analysis revealed that the method factor did improve model fit ($\chi 2/df = 1.50$; CFI = 0.96; RMSEA = 0.05; RMR = 0.06) (Model 5 in Table 2), which is expected. We further calculated the variance explained by the method factor (Williams et al., 1989), and found it to account for only 8.74% of the total variance. This amount is less than the 25% threshold recommended for diagnosing the CMV bias (Williams et al., 1989). We thus conclude that CMV was not a major concern in this study. In addition, we tested the factorial invariance of the 4-factor model (those variables measured twice) across the two measurement

points and found that the values of ΔCFI meet the requirements of measurement invariance (ΔCFI ≦ - 0.01). In other words, there was no significant differences of constructs (workload, SP, exhaustion, performance) across Time 1 and Time 2 (Cheung & Rensvold, 2002).

Insert Table 2 here

Testing the mediating effect of presenteeism

We adopted the Model 4 in PROCESS 3.5 (Hayes, Montoya, & Rockwood, 2017) to examine the mediation effect with 5000 bootstrap samples. This model estimates the mediation effects and their significance based on 95 percent bootstrap confidence intervals. In the first step, the effects of individual characteristics and baseline dependent variable (exhaustion, job performance at T1) were controlled. In the second step, we examined the mediation effect of presenteeism on the relationship between workload and work outcomes (exhaustion, job performance at T2) in separate models (Model 2 and Model 4). As shown in Table 3, Model 2 and Model 4 explained 32% and 31% of the variance in exhaustion (F[7, 167] = 11.35, $p < 0.001$) and job performance (F[7, 168] = 10.55, $p < 0.001$) respectively. However, the bootstrap estimates indicated that the indirect effect of workload on exhaustion or job performance via presenteeism was insignificant (bottom of Table 3), thus our Hypothesis 1 (a, b) was not supported.

Insert Table 3 here

Testing the protective effects of proactive personality and work reward on the detrimental effects of presenteeism on outcomes under the high workload condition

The analysis of moderated mediation effect was conducted using Model 14 in PROCESS 3.5. Bootstrapping (5000 bootstrap samples) was used with 95% bias corrected confidence intervals applied. In the first step, the effects of individual characteristics and baseline dependent variable (i.e., exhaustion, job performance at T1) were controlled. In the second step, we examined the moderated mediation effects of proactive personality and work reward on the detrimental effects of presenteeism on outcomes separately. As shown in Table 4, the moderated mediation models (Model 2 and Model 4) explained 40% and 46% of the variance in exhaustion (F[9, 163] =12.19, p

< 0.001) and job performance (F[9, 164] =15.39, p < 0.001) respectively.

Insert Table 4 and 5 here

Firstly, as Table 4 shows, the interaction effect of proactive personality and presenteeism was significant on exhaustion (Model 2, b = -0.26, p < 0.01, 95% CI: -.4310~ -.0925) and job performance (Model 4, b = 0.08, p < 0.01, 95% CI: .0213~.1406). Similarly, as Table 5 shows, the interaction effect of work reward and presenteeism was significant on job performance (Model 4, b = .05, p <0.05, 95% CI: .0117~.0927), but not significant on exhaustion (Model 2, b = -.10, p > 0.05, 95% CI: -.2201~.0111) (H3a was not supported). Secondly, we examined the contingent effects of proactive personality/work reward on the relationships between presenteeism and exhaustion/job performance in high workload condition. The results showed that the contingent effect of proactive personality was significant (index = .01, SE = .01, 95% CI = .0020~.0243) on the "presenteeism-job performance" relationship in high workload conditions. The contingent effect of work reward on the "presenteeism-job performance" relationship was also significant (index = .01, SE = .00, 95% CI = .0009~.0153). However, the contingent effect of proactive personality on the "presenteeism-exhaustion" relationship in high workload condition was insignificant (index = -.01, SE = .01, 95% CI = -.0447~.0082) (H2a was not supported). Lastly, we clarified the varying degrees of moderation effects according to levels of proactive personality/work reward. As shown in Table 4, the detrimental effect of presenteeism on job performance under high workload condition was reversed (became positive) and significant for those with high-level of proactive personality, but the "presenteeism-job performance" relation was insignificant for those with middle-level and low-level proactive personality. Similarity, as shown in Table 5, the detrimental effect of presenteeism on job performance under high workload condition was reversed (became positive) and significant for those having high-level of work reward, but the "presenteeism-job performance" relation was insignificant for those having middle-level and low-level of work reward. In other words, presenteeism due to heavy workload related positively to performance in conditions of high proactive personality and high work reward; these findings were contrary to our hypotheses.

Therefore, our moderated mediation hypotheses per job performance (H2b and H3b) were not supported.

To further probe the statistically significant conditional indirect (moderated mediation) effects, we used estimates from the moderated mediation models to plot the conditional effects of presenteeism on job performance in high workload condition at various levels of intrapersonal and socio-structural resources. We estimated the conditional effect of presenteeism on job performance at low (−1 SD) and high (+1 SD) levels of the moderator. The results showed that the "presenteeism-job performance" relationship was positive and significant for employees of high-level proactive personality (slope = 0.18, $p < 0.05$) or of high-level work reward (slope = 0.20, $p < 0.001$); However, the "presenteeism-job performance" relationship was negative and significant for employees of low-level proactive personality (slope = -0.18, $p < 0.05$), or non-significant for employees of low-level work reward (slope = -0.15, *ns*) (Figures 2 and 3). Overall, plots of the contingent effects showed the positive relation between presenteeism and job performance under high workload condition for those with high proactive personality or high work reward. These findings were contrary to our H2b and H3b. Although the conditional indirect effect of proactive personality on the second lag of the "workload-SP-exhaustion" relationship was insignificant (bootstrap estimates at the bottom of Table 4), the interaction term between proactive personality and presenteeism was significant on exhaustion (b = -.26, $p < .01$, Model 2 in Table 4). We preceded to plot the moderation pattern and found that the negative relationship between presenteeism and exhaustion was insignificant for employees of high-level proactive personality (slope = -0.35, *ns*), while the positive relationship between presenteeism and exhaustion was significant for those of low-level proactive personality (slope = 0.80, $p < 0.01$) (Figure 4).

Insert Figures 2, 3, and 4 here

Additional analysis

If we exclude the effects of individual characteristics and baseline dependent variables (exhaustion, job performance at T1 respectively) as control variables from the analyses, the

confounding effects inflated the results. We found that when all the control variables were excluded from the analysis, the mediation effect of SP in the relationship between workload and exhaustion was supported, but the mediation effect of SP in the relationship between workload and job performance was not supported. The contingent effect of proactive personality was supported but the contingent effect of work reward was not supported. In this paper, we opted to report the "net effects" when all the control variables were included in the analysis.

We also re-run the analysis on the same model by using SP at T2 as the mediator while controlling the effect of SP at T1 as the baseline. The results showed that the mediation effect of presenteeism in the "workload-job performance" relationship was insignificant (index = .00, SE = .01, 95% CI = - .0090~.0198), but the mediation effect of SP in the "workload-exhaustion" relationship became significant (index = .09, SE = .06, 95% CI = .0043~.2348). The contingent effects of proactive personality and work reward on the indirect relationship of "workload-SP-job performance" were both insignificant (index = .00/.00, SE = .00/.00, 95% CI = - .0050~.0067/ -.0046~.0038). The contingent effects of proactive personality and work reward on the indirect relationship of "workload-SP-exhaustion" were also insignificant (index = -.01/ -.01, SE = .01/.01, 95% CI = -.0384~.0054 /-.0357~.0002). Agreeing with the argument put forward by Skagen and Collins (2016) that the optimal recall period of presenteeism should be no more than two months, we strongly prepone for using SP at T1 as the mediator, as the built-in recall span for our presenteeism measure covers the past six months, which already exceeds the suggested optimal timeframe.

Discussion

The exponential growth of empirical studies on presenteeism have been demonstrated via a meta-analysis of its antecedents and correlates (Miraglia & Johns, 2016), and a comprehensive volume integrating multi-disciplinary research perspectives (Cooper & Lu, 2018). However, two key shortfalls have been identified in the state-of-the-art stocktaking of this thriving field. One is the inconsistent findings regarding the consequences of the SP behavior for employees' health and

performance, especially when the lasting effect of presenteeism is scrutinized pertaining to employees' work outcomes (e.g., Karanika-Murray & Biron, 2020; Skagen & Collins, 2016). The other is the lack of systematic examination of the contextual factors for the SP behavior in general, and the boundary conditions contingent to the "SP-outcomes" relationships in particular (e.g., Cooper & Lu, 2019; Lohaus & Habermann, 2019; Ruhle et al., 2020). In an attempt to fill the void, we examined the long-lasting effects of presenteeism on employees' well-being and performance in the time span of one year; and simultaneously explored the boundary conditions of the presumed negative "presenteeism-outcomes" relationships. Results showed that workload related positively to job performance via increased presenteeism but only for those high in proactive personality and work rewards. These findings support the functional view of presenteeism for certain people and certain conditions (Karanika-Murray & Biron, 2020). However, support was also found for the buffering role of proactive personality since SP related positively to exhaustion only for those low in proactive personality, while the relationship was non-significant for those high in proactive personality. The present study thus contributes to the flourishing presenteeism literature in the following ways.

Theoretical contribution

First, our study contributed to the scarce empirical evidence pertaining to the mediation effects of presenteeism between objective work demands (e.g., workload) and work attitude or behavior using longitudinal data (Johns, 2010; Miraglia & Johns, 2016), which is more appropriate for testing mediation than cross-sectional data. However, we found no long-term (one year) direct effects of workload on future well-being and job performance, nor indirect effects via presenteeism. This is consistent with findings from a previous study (Demerouti et al., 2009), namely workload had only short-term (6 months) effects on presenteeism, so did presenteeism on exhaustion; no lasting effects were detected for one year. We went further in the present study by explicitly testing the mediation effects of presenteeism between workload and exhaustion, and expanding the scope of employees' outcomes to job performance. Our attempt to examine the long-lasting effects of

presenteeism on both well-being and performance is distinct in the field, as the majority of the existing longitudinal studies on presenteeism adopt short time frames (from 1 week to 6 months). The non-significant long-term relationships we found between high workload and employee outcomes are explained by the moderated mediation findings, that is, the indirect effects are only conditional. In our study, the context of the East Asian work environment, the prevailing workplace culture champions work-hard and "Good Samaritanism" are virtues to encourage individuals to persevere in demanding work conditions (Kang, Matusik, & Barclay, 2017; Lu et al., 2013). Such socio-cultural imperatives for overwork (i.e. social approval) coupled with individual capability (i.e. proactive personality) and/or organization endowment (i.e. work reward), help the presentees to maintain their well-being and job performance. Notwithstanding, more concerted research is needed to establish the robustness of the non-significant long-lasting effect of presenteeism in different socio-cultural and work contexts.

In particular, the relationship between presenteeism and well-being may vary due to different research designs, such as different measures of workload, presenteeism and dependent variables (Baeriswyl et al., 2017; Wang et al., 2022), different time frames used (Lu & Cooper, 2022), different sample selection and sizes (Skagen & Collins, 2016). Some researchers did find that presenteeism had a negative impact on general health after one year (Gustafsson & Marklund, 2011), and burnout two years later (Dellve et al., 2011). Skagen and Collins (2016) noted that the mix results of presenteeism on mental health were probably due to participant recall bias. Similar to sick leave, the behavioral frequency of presenteeism is likely to be under-reported when retrospectively assessed over a year (Voss, Stark, Alfredsson, Vingård, & Josephson, 2008) or six months (as done in the present study). Following Ruhle et al. (2020) and Skagen and Collins (2016), we thus suggest that future research could set up additional follow-up periods to clarify the temporal variation of the effects of presenteeism behavior, namely, for how long and to what extent presenteeism is likely to have an adverse effect. We need systematic research to disentangle the temporal trajectory of the effects of presenteeism over time.

Second, in the current changing business environment and increasingly demanding work conditions, sickness presenteeism may be unavoidable in certain circumstances (e.g., Lohaus & Habermann, 2019; Van Der Feltz-Cornelis et al., 2020). Thus, mobilizing all available resources to persevere when working while ill in order to protect health and performance in tandem is of paramount importance for employees and organizations. Although the two perspectives of negative versus positive views of presenteeism seem disparate in their theoretical stances, our findings tentatively suggest that the two views may be reconciled contingent on the portfolio of available resources to the presentees. In the present study, we found that resources buffer the effect of presenteeism on exhaustion, but make employees functional when it comes to performance. When presentees had low personal capability (i.e. proactive personality), sickness presenteeism not only damaged job performance under high workload condition but also elevated exhaustion. However, when presentees had high personal capability (i.e. proactive personality) or high organization endowment (i.e. work reward), presenteeism had a positive relationship with their job performance under high workload conditions. While negative as well as positive effects of presenteeism happened over the lapse of one year, our findings highlight the pivotal role of contextual factors and boundary conditions for realizing the dysfunctional and functional presenteeism in the real world. That said, the tentative proposition that resources have different functions for different outcomes of presenteeism (well-being vs. performance) remains to be tested with future empirical studies.

Karanika-Murray and Biron (2020) purported that there are different types of presenteeism contingent on the presentees' individual capacity and work resources. Adopting their typology, the functional presenteeism was realized for those with high proactive personality, and when presentees have high work reward, despite high work demands. However, the damaging effects of presenteeism under high demands on job performance were only shown for presentees with low proactive personality. Furthermore, the moderation effect of proactive personality on the positive relationship between presenteeism and exhaustion was found to be significant only for employees with lower levels of proactive personality, while the relationship was insignificant for employees

higher in proactive personality. We have thus demonstrated that proactive personality as an intrapersonal resource can buffer the negative impact of presenteeism on health and performance, whereas adequate work reward as a socio-structural resource can even overturn the negative relationship between presenteeism and performance into a positive one.

Those with high proactive personality are predisposed to cope actively in demanding work conditions, working through illness could thus be used as a coping strategy to regulate their workload and protect their performance and health (Biron & Saksvik, 2010). Employees with low proactive personality in contrast, experience more exhaustion while taking passive coping strategies and attitudes to deal with heavy work demands (Nielsen, Firth, & Crawford, 2022). In addition to proactive personality, future research could explore other intrapersonal factors to identify *who* are the resilient presentees and *who* are the high-risk ones in demanding work conditions (e.g., Demerouti et al., 2009; Wang et al., 2022). As research on the positive presenteeism is only emergent, further studies to investigate the contingent factors of other work resources and individual capabilities for the functional presenteeism is in dire need (Karanika-Murray & Biron, 2020; Ruhle et al., 2020).

Third, extending the resources loss-gain dynamism depicted in the COR theory, we found that proactive personality and work reward are crucial resources protecting job performance in the continuous resources depletion situation when the employee is forced to 'work while ill' necessitated by heavy workload. Employees with the proactive disposition tend to take stress as a challenge and take initiatives to actively gain resources to cope. For instance, proactively coping employees were not only more likely to commit presenteeism, but also attained favorable evaluations from their supervisors, especially when work demands were high (Biron & Saksvik, 2010; Wang et al., 2022). According to the COR theory, proactive personality could be categorized as a personal resource (intrapsychic), while work reward is a socio-structural resource provided by the organization (Hobfoll et al., 2018). In line with the tenet of the ERI model, work reward is the reciprocation from organizations to compensate employees' work efforts (Siegrist & Wahrendorf,

2016). When presentees feel better compensated with more rewards (resources gains) while working with illness (resources depletion), they have stronger motivation to honor the reciprocity principle by maintaining their job performance. Most of the extant presenteeism studies adopt a resource-based view such as COR and Job demands-Resources Model, we believe that introducing alternative theoretical perspectives such as the reciprocity view underpinning the ERI Model or the psychosocial regulatory view of the social cognitive theory (Cooper & Lu, 2016), can enrich our understanding of the presenteeism behavior and contribute to the theoretical development in the field (Lohaus & Habermann, 2019). Following on the expansion of the ERI model to organizational behavior (Reizer & Siegrist, 2022), the present study represents the first empirical attempt to incorporate one key concept of the model into the presenteeism literature, namely work reward as an extrinsic component of the work environment.

Lastly, our findings tentatively suggest that sickness presenteeism can be either dysfunctional or functional under certain conditions (Chen et al., 2021; Lu & Cooper, 2022). The boundary conditions we have identified answer to the call by various scholars (Cooper & Lu, 2019; Ruhle et al., 2020) for bringing in the "contexts" of the SP behavior. According to the COR theory, resources can be categorized into internal- and external origins (Hobfoll, 2011). This study provided preliminary proof that both the intrapersonal/internal (proactive personality) and socio-structural/external (fair work reward) resources are valuable for presentees overcoming the serious resource depletion caused by working through illness; which then enable them to maintain well-being and job performance over a prolonged period of one year. We have taken the pioneering step to investigate the entire process from antecedent to presenteeism to employee outcomes, incorporating intrinsic (proactive personality) and extrinsic (work reward) components of the contextual factors. Future studies may explore the effects of more contextual factors (salutogenesis and pathogenesis), from different origins (e.g., work team, workplace culture), and on more diverse outcome variables (e.g., health symptoms, work behaviors) to extend our knowledge of the SP process.

Managerial implications

From a practical perspective, our findings can offer useful insights for managing presenteeism in the precarious work context of the post-pandemic world (Cigna, 2020; Sharma et al., 2021). First and foremost, we urge employers to reduce the pressure on employees to work while ill by ensuring sufficient manpower, especially for those in the work context who lack of individual and work resources. If, for any high demand or deadline reason, presenteeism is unavoidable, employers must provide adequate support and resources to enable presentees to simultaneously balance heath and performance (Karanika-Murray & Biron, 2020). Previous research has found that support from supervisors, colleagues and the work team are important resources to lessen the damage of presenteeism to employee outcomes (Chen et al., 2021; Wu & Lu, 2022).

We have demonstrated that organization endowed work rewards can help the presentees to maintain their job performance in high demand work conditions. Employers should thus provide fair compensations for employees' efforts, such as financial rewards, recognition and promotion, job stability, and safety. Furthermore, both the present study and previous research have found that proactive personality is related to positive work behaviors and favorable work outcomes (Tornau & Frese, 2012). Managers can implement training programs to enhance employees' skills of proactive coping (Tiwari, 2021), or to recruit employees with high proactive trait who will better adapt to the high-demand work conditions (Wang et al., 2017; Fuller & Marler, 2009). It needs to be stressed that we are by no means encouraging presenteeism, both employees and employers should keep a close watch on the "physical wear and tear" of working in illness. Sufficient recovery from stress and recuperation is thus pivotal in managing presenteeism as a sustainable work behavior (Lu & Chou, 2020; Sonnentag, Venz & Casper, 2017).

Limitations and future directions for research

As with any research, this study is subject to some limitations which can point to new directions for further research. First, we acknowledge that all variables were self-reported, which may increase the threat of common method variance (CMV) bias (Podsakoff et al., 2003). In an

effort to minimize such bias, we adopted a two-wave design to separate the independent variable (workload), mediator variable (presenteeism), moderator variables (proactive personality and work reward), and dependent variables (exhaustion and job performance) in time. Second, 3-wave data are ideal for an appropriate test of mediation. We nonetheless used Hayes' PROCESS (Hayes, 2013) to test the mediation effects of presenteeism between objective workload and subjective attitude or behavior; meanwhile estimating the contingent effects of proactive personality and work reward on the indirect effects of workload on outcomes through presenteeism (i.e. the second-leg of the mediation). Our moderated mediation models confirmed robust positive effects of presenteeism on employees' job performance one year later for those with high proactive personality and work reward. However, we failed to find evidence for the direct effects of workload on well-being and job performance. With only a handful of longitudinal studies and ours using the longest timeframe of one year, we will refrain from speculating on differential time trajectories pertaining to different outcome variables (e.g., well-being and performance). Instead, we encourage the test of various timeframes (short-, medium-, long-) to clarify the process of presenteeism in a wider range of time trajectories.

Third, we tested models of exhaustion and performance in separate analyses and did not account for their potential interrelationship. Previous research has suggested a negative relationship between exhaustion and performance (Bakker & Demerouti, 2017). In the context of presenteeism, there may be a chain effect: heavy work demands precipitates sickness presenteeism, which leads first to exhaustion, then further hampers performance. Demerouti et al. (2009) noted a reciprocal relationship between presenteeism and exhaustion. They suggested that employees who experienced exhaustion could commit more presenteeism to avoid decrements in performance, which in the long run, would exhaust more energy and burnt out. In other words, presenteeism could be useful to protect work performance in the short term (e.g., avoiding piling up of workload); but may ultimately be detrimental to well-being due to the deprivation of recovery (Rivkin, Diestel, Gerpott, & Unger, 2022). Similarly, following the logic of economic exchange principles (e.g., Blau, 1964;

Coleman, 1990; Gouldner, 1960), employees can be motivated to exert more efforts in productivity to obtain higher reward, but this could be harmful to their well-being in the long run. Although we found that proactive personality and work reward could act as activator to promote the functional effects of presenteeism on performance over a one-year period, future research should collect 3-wave data to examine the sequential mediation model linking presenteeism, exhaustion, and performance as a chain of events.

Fourth, we focused on proactive personality and work reward as moderators on the presenteeism process. However, the potential list of resources countering loss and strain can be quite extensive (Hobfoll et al., 2018). For instance, Miraglia and Johns (2016) identified that optimism is a core intrapersonal factor that consistently correlates with presenteeism. Recent research has also demonstrated that motivations (e.g., work value orientation) and workplace social support (e.g., supervisor and colleagues) can buffer the detrimental impact of presenteeism on well-being and performance (Chen et al., 2021; Lu & Cooper, 2022). Over and beyond buffers of negative effects of presenteeism, some studies have found that proactive employees were more likely to commit presenteeism and subsequently attain better job performance evaluations under high work demands (Wang et al., 2022), and self-efficacious employees gave more positive reasons for committing presenteeism (Lu et al., 2013). We thus suggest that future research could expand the search for resources from individual, workplace, and the wider societal context, while clarifying their effective mechanisms for dysfunctional and functional presenteeism (Miraglia & Johns, 2016). Finally, the present study was conducted in an Eastern Asian country (Taiwan) and the relatively small and non-random sample may limit the generalization of our findings. Future studies should include more diverse samples from other countries to establish the generalizability of our findings and those from Western studies (Sharma et al., 2021).

Conclusion

Based on conservation of resources theory, this research represents an initial empirical attempt at investigating the protective effects of intrapersonal/internal and socio-structural/external

resources against working in sickness in high-demand conditions. Unexpectedly, we found that high proactive personality and work reward could help to realize the positive impact of presenteeism on employees' job performance over one year. Our findings thus answer the "for whom and under which circumstances" questions of presenteeism, that is for proactive presentees and when organizations provide adequate work reward, higher performance can be sustained over an extended period of strenuous work. This is probably because proactive employees have a more positive attitude towards and take active initiatives to cope with demanding work; because employees feel reciprocated with fair work rewards for their extraordinary efforts (Nielsen et al., 2022). We hope that our research will lead to more scholarly interest in exploring the boundary conditions and mechanisms which transform the presenteeism behavior into employee outcomes. We also hope that presenteeism in today's work environment can be better managed as a viable choice for both employees (if they so wish) and organizations.

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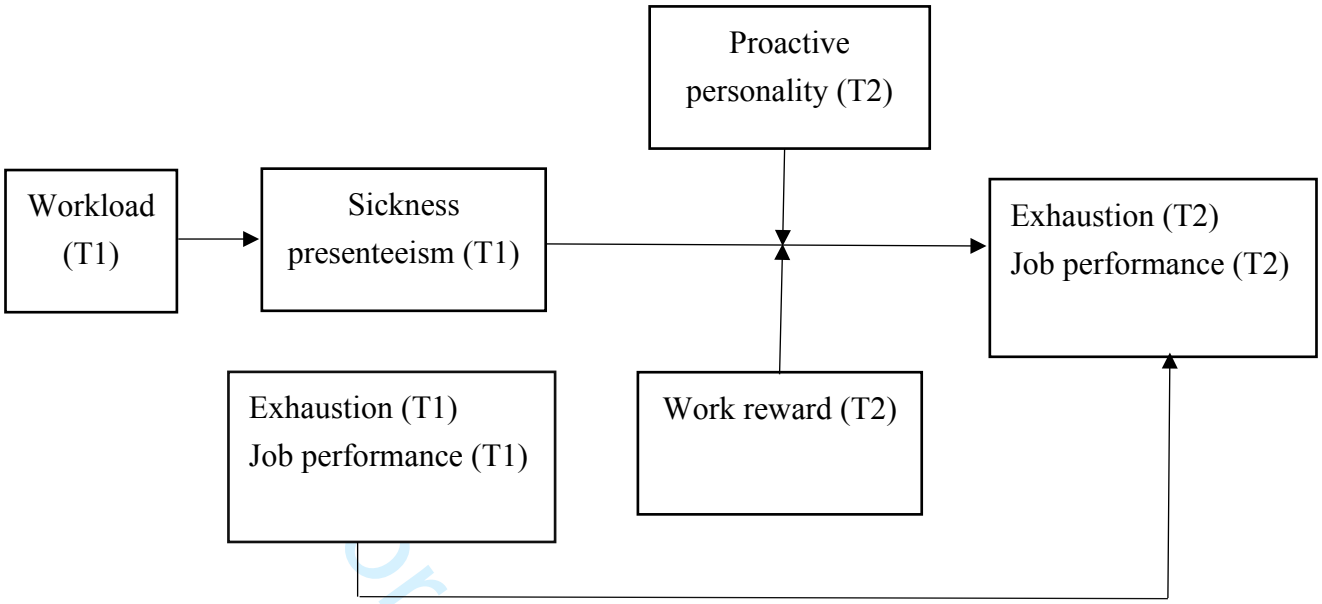

Figure 1 Research model

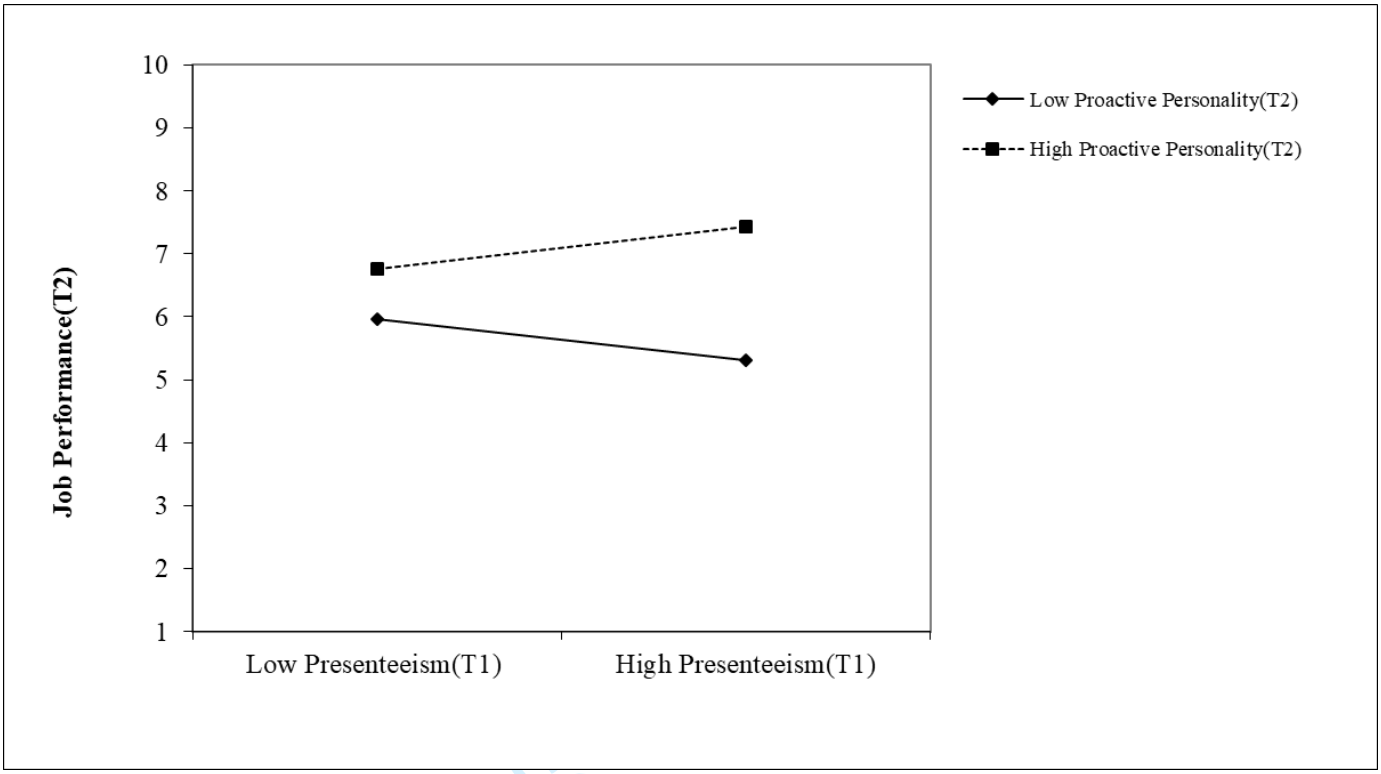

Figure 2 The interaction effect of presenteeism and proactive personality on job performance

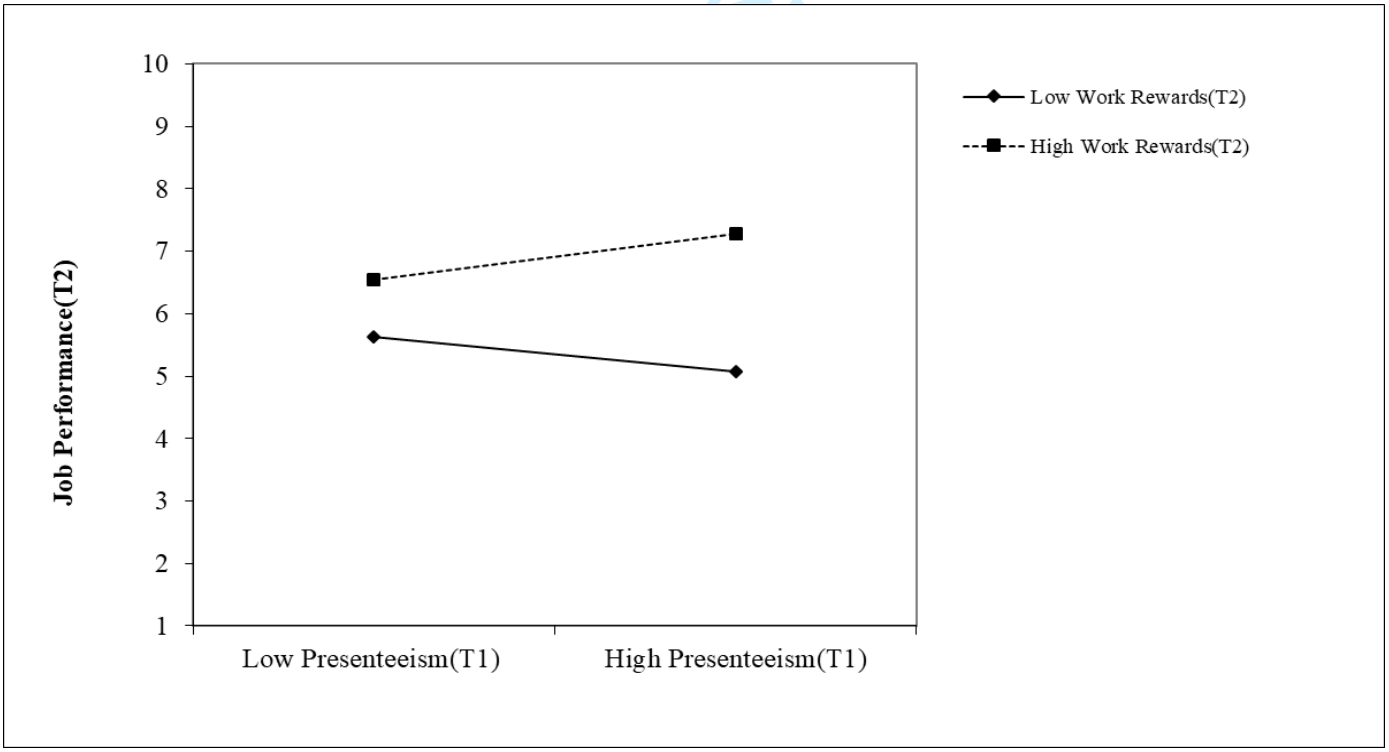

Figure 3 The interaction effect of presenteeism and work reward on job performance

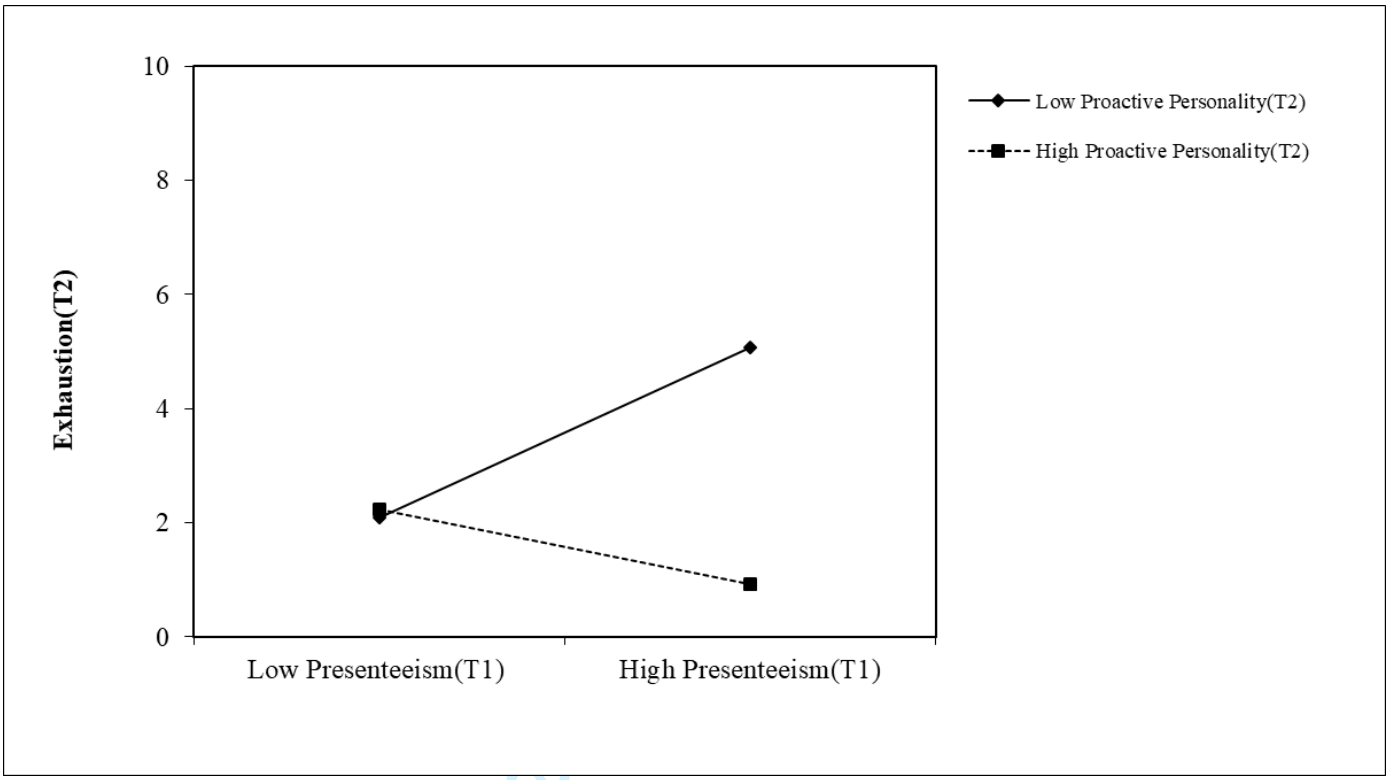

Figure 4 The interaction effect of presenteeism and proactive personality on exhaustion

Table 1 Correlations among study variables (n = 218)

	Mean	SD	Gender	Marriage	Manager	Covid19	T1WL	T1SP	T2SP	T2Proactive	T2Reward	T1Exh	T2Exh	T1JP	T2JP
Gender	.40	.57	1												
Marriage	.61	.49	-.03	1											
Manager	.34	.47	.29***	-.20***	1										
Covid 19	2.49	1.10	.13	.07	.10	1									
T1WL	17.62	3.19	-.00	-.04	.23***	.05	1								
T1SP	5.08	1.87	-.11	-.06	.13	.07	.26***	1							
T2SP	5.09	1.90	-.12	.00	.06	.21**	.27**	.51***	1						
T2Proactive	10.00	2.20	.20**	-.08	.19**	-.04	.02	-.11	-.10	1					
T2Reward	16.02	3.33	.12	-.05	.20***	-.13	-.08	-.11	-.20**	.42***	1				
T1Exh	10.54	5.42	-.08	.04	.00	.01	.36***	.32***	.24***	-.14*	-.31***	1			
T2Exh	9.67	5.30	-.03	.03	-.09	.14*	.27***	.29***	.47***	-.28***	-.38***	.55***	1		
T1JP	20.85	3.82	.20	.07	.28***	.06	.17*	-.05	.08	.40***	.34***	-.17*	-.14*	1	
T2JP	10.74	2.00	.15*	.11	.12	-.03	.09	-.10	.00	.44***	.42***	-.16*	-.18**	.51***	1

Notes: Gender: 0 = female, 1 = male; Marriage: 0 = not married; 1 = married; Manager: 0 = employees; 1 = managers. Covid 19 = Perceived impact of Covid 19; WL = Workload; SP = Sickness presenteeism; Proact = Proactive personality; Reward = Work reward; Exh = Exhaustion; JP = Job performance.

* $p < .05$, **$p < .01$, *** $p < .001$

Table 2 Summary of the goodness-of-fit indices of the competing models (n =218)

Model		$X^2(df)$	X^2/df	RMR	SRMR	GFI	NFI	CFI	RMSEA
Model 1	Full model-6 factors	30.97(174)	1.78	.07	.07	.88	.86	.94	.06
Model 2	5 factors	479.82(179)	2.68	.12	.10	.82	.78	.85	.09
Model 3	3 factors	782.93(186)	4.21	.13	.12	.75	.64	.69	.12
Model 4	1 factor	1338.60(189)	7.08	.15	.16	.56	.38	.41	.17
Model 5 (CMV check)	1-factor (one latent method variable)	230.09(153)	1.50	.06	-	.91	.89	.96	.05

Notes: 6-factor model (Full model): workload (T1), sickness presenteeism (T1), proactive personality (T2), work reward (T2), exhaustion (T2), job performance (T2); 5-factor model: workload (T1), sickness presenteeism (T1), proactive personality (T2), work reward (T2), exhaustion (T2) + job performance (T2); 3-factor model: workload (T1) + sickness presenteeism (T1), proactive personality (T2) + work reward (T2), exhaustion (T2) + job performance (T2).

Table 3 Mediation effect of presenteeism on the relationship between workload and job outcomes (n =218)

Variables	Model 1 Presenteeism (T1)		Model 2 Exhaustion (T2)		Model 3 Presenteeism (T1)		Model 4 Job performance (T2)	
	b	SE	*b*	SE	*b*	SE	*b*	SE
Step 1: Control variables								
Gender	-.46	.25	.44	.69	-.40	.26	.33	.25
Marriage	-.14	.27	-.17	.72	-.12	.28	.36	.27
Manager	.54	.30	-1.95*	.82	.57	.32	.10	.31
Covid 19 (T2)	.17	.12	.48	.31	.16	.12	-.06	.12
Exhaustion (T1)	.11***	.03	.42***	.07		.04		
Job performance (T1)					-.06		.26***	.04.
Step 2: Independent variables								
Workload (T1)	.05	.04	.20	.12	.14***	.04	.02	.04
Presenteeism (T1)			.38	.21			-.06	.07
Total R^2	.18***		.32***		.12**		.31***	
F	6.35		11.35		3.84		10.55	
df	(6, 168)		(7,167)		(6,169)		(7,168)	
The effect of X on Y[a]	Unstandardized effect size (SE)		95% CI LL	UL	Unstandardized effect size (SE)		95% CI LL	UL
Direct effect of X on Y	.20 (.12)		-.0104	.440	.02(.04)		-.059	.1002
Indirect effect of X on Y mediated via Me	.02(.02)		-.0167	.0731	-.01(.01)		-.0315	.0112

Notes: Gender: 0= female, 1 = male; Marriage: 0 = not married; 1 = married; Manager: 0 = employees; 1 = managers.

[a] X = independent variable; Y = dependent variable; Me = Mediator variable

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4 Moderated mediation effect of proactive personality in the presenteeism process (n = 218) [a, b]

	Model 1 Presenteeism (T1)		Model 2 Exhaustion (T2)		Model 3 Presenteeism (T1)		Model 4 Job performance (T2)	
Predictors	*b*	SE	*b*	SE	*b*	SE	*b*	SE
Control variables								
Gender	-.35	.25	.86	.66	-.32	.26	.09	.23
Marriage	-.16	.26	.05	.69	-.13	.28	.37	.24
Manager	.41	.30	-1.80*	.80	.46	.32	.16	.28
Covid 19 (T2)	.19	.11	.35	.30	.17	.12	.01	.11
Exhaustion (T1)			.39***	.07				
Job performance (T1)							.18***	.03
Independent variables								
Workload (T1)	.05	.04	.24*	.11	.14***	.04	.02	.04
Presenteeism (T1)			2.84**	.86			-.81**	.30
Proactive personality (T2)			.87	.49			-.08	.17
Presenteeism x Proactive personality			-.26**	.09			.08**	.03
R^2	.20***		40***		.12**		.46***	
Conditional indirect efforts (through Presenteeism) at three levels of Proactive personality [c]	B(SE)		95%CI LL	95%CI UL	B(SE)		95%CI LL	95%CI UL
-1 SD	(7.54)		.04(.04)		-.029	.142	-.03(.02)	-.066	.003
M	(9.67)		.02(.02)		-.016	.067	-.00(.01)	-.023	.016
+1 SD	(11.81)		-.01(.02)		-.071	.027	.02(.01)	.001	.053

Notes: LL = lower limit; CI = confidence interval; UL = upper limit. [a] n = 218; unstandardized regression coefficients are reported; standard errors in parentheses. [b] Direct and total effects. [c] Bootstrap sample size = 5,000.

*p < .05; **p < .01.

Table 5 Moderated mediation effect of work reward in the presenteeism process (n = 218) [a, b]

	Model 1 Presenteeism (T1)		Model 2 Exhaustion (T2)		Model 3 Presenteeism (T1)		Model 4 Job Performance (T2)	
Predictors	b	SE	b	SE	b	SE	b	SE
Control variables								
Gender	-.46	.25	.60	.66	-.40	.26	.29	.23
Marriage	-.14	.27	-.12	.70	-.12	.28	.48	.24
Manager	.54	.30	-1.35	.81	.57	.32	-.11	.28
Covid 19 (T2)	.17	.12	.39	.31	.16	.12	.02	.11
Exhaustion(T1)			37***	.07				
Job performance (T1)							.17***	.03
Independent variables								
Workload (T1)	.05	.04	.22	.11	.14***	.04	.04	.04
Presenteeism (T1)			1.94*	.96			-.82*	.34
Work reward (T2)			.21	.34			-.03	.12
Presenteeism x Work reward			-.10	.06			.05*	.02
R^2	.18***		.38***		.12**		.45***	

Conditional indirect efforts (through Presenteeism) at three levels of Work reward [c]		B(SE)	95%CI LL	95%CI UL	B(SE)	95%CI LL	95%CI UL
-1 SD	(12.71)	.03(.04)	-.021	.120	-.02(.02)	-.055	.007
M	(15.93)	.01(.02)	-.016	.064	.00(.01)	-.016	.023
+1 SD	(19.14)	-.00(.02)	-.058	.044	.03(.01)	.002	.057

Notes: LL = lower limit; CI = confidence interval; UL = upper limit. [a] n =218; unstandardized regression coefficients are reported; standard errors in parentheses. [b] Direct and total effects. [c] Bootstrap sample size = 5,000.

*$p < .05$; **$p < .01$.