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How daily negative affect and emotional exhaustion correlates with work engagement and presenteeism-constrained productivity

Abstract

Exploring productivity loss due to presenteeism, and how it can have an influence on employees' productivity has been an important concern for HR managers. Using the Conservation of Resources theory and the Job Demands-Resources model, this study investigated how work engagement could mediate the relationship between both emotional exhaustion and negative affect and productivity loss due to presenteeism in a country experiencing an economic downturn. A total of 42 employees from a health care institution completed a ten-day diary survey (420 diary tasks). Multilevel linear modeling results, including power analyses, showed that negative affect and emotional exhaustion predicted productivity loss due to presenteeism positively, while work engagement predicted productivity loss negatively. Furthermore, we found that at a day-level, work engagement mediated the effects of emotional exhaustion and negative affect on productivity loss due to presenteeism. This study highlights the importance of promoting work engagement to reduce the effects of negative affect and emotional exhaustion on productivity loss due to presenteeism through intervention.

Keywords: presenteeism, productivity, work engagement, burnout, negative affect, daily-diary study.

Introduction

In difficult labor contexts with economic crises emerging in different countries, many organizations have been downsizing their workforce or filing for bankruptcy (Lu, Lin, & Cooper, 2013b). This state of affairs has increased job insecurity and reduced resources (Lu et al., 2013b), important benefits, flextime and paid time-off (Bockerman & Laukkanen, 2010). As a result, there has been a tendency for increased presenteeism because despite the loss of resources and job security, competition, productivity and organizational re-structuring continue to be prompted by companies (Ferreira, Martinez, Cooper, & Gui, 2015; Simpson, 1998).

The prevalence of presenteeism has been common, representing 3 to 5 cases per 10 employees (Aronsson & Gustafsson, 2005). Due to this, presenteeism has emerged as a central construct in organizational psychology to delineate the psychological state underlying low levels of productivity at work. It has been defined as the behavior of going to work while one is ill (Aronsson, Gustafsson, & Dallner, 2000). Presenteeism has been an appraised psychological phenomenon because of its relevance in terms of employee productivity, well-being at work, its long-term effects on health and its impact on company performance (Ferreira & Martinez, 2012).

Productivity loss due to presenteeism as an outcome variable

Presenteeism has been investigated from two main perspectives. Research has focused on its frequency and possible predictor variables, such as job demands, job satisfaction, and affective motivational states (Aronsson et al., 2000, Demerouti, Le Blanc, Bakker, Schaufelli, & Hox, 2009; Karanika-Murray, Pontes, Griffiths, & Biron, 2015), as well as on the productivity loss associated with it (Ferreira & Martinez, 2012) by asking employees to estimate how their health has affected their work performance (Koopman et al., 2002). The latter perspective has been widely

investigated in North America and in the occupational medicine literature. This approach has emphasized the relationship between health-related problems and their impact on employees' productivity with costs for specific firms and the economy in general (Hemp, 2004). The current study is positioned within the second perspective, namely considering productivity loss due to presenteeism.

Presenteeism may interest managers and organizations facing strategies to reduce health problems that can affect productivity. For example, a study conducted in the USA showed that the indirect medical costs associated with presenteeism represent about \$311.8M costs in Bank One and that health conditions such as allergies, represent an average productivity loss of 4.1% with an aggregate annual loss of \$1,809,945 (Hemp, 2004). A study conducted by MM2, KPMG Econtech (2011) showed that presenteeism had a macroeconomic impact equivalent to \$34.1 billion of the Australian GDP in 2010 and an expected cost of \$35.8 billion in 2050. This evidence has highlighted the need to study the antecedents of productivity loss due to presenteeism and their intermediate variables.

The antecedents of productivity loss due to presenteeism

Different models have been developed to explain the personal and work factors of presenteeism and their effects on individual job performance (Johns, 2010). However, the literature has called for studies that focus on the affective and motivational antecedents of presenteeism (Karanika-Murray et al., 2015) because for example, the possible relationships between negative affect and productivity loss (due to presenteeism) have not been studied extensively. Even though some of the literature has mentioned that negative psychological disorders, such as anxiety and depression (Hemp, 2004), and negative supervisor behavior (Gilbreath & Karimi, 2012) tend to be related to productivity loss due to presenteeism, we argue that in

order to fully understand how productivity and well-being may be fostered at work, it is necessary to examine the dynamics of these relationships in their daily contexts, including possible resource contingencies.

The Conservation of Resources theory

The Conservation of Resources (COR) theory (Hobfoll, 1988) has emphasized how employees may experience strain (i.e., negative affect and emotional exhaustion) especially when resources are scarce in their surrounding environment. Consequently, they may try to maintain and protect their resources and even spend energy improving existing resources, which prompts them to go to work while ill, as opposed to staying at home. However, the COR theory has not explained the intermediate path between the perception of reduced resources (and consequent negative affect and emotional exhaustion) and the motivation to retain existing resources by going to work despite being ill. In other words, few studies have demonstrated which variables mediate these relationships. For instance, recent literature showed that work engagement fully mediated the relationship between presenteeism attendance and job satisfaction (Karanika-Murray et al., 2015). However, if lower job satisfaction and performance has been positively related to negative affect (Bouckenoghe, Raja, & Butt, 2013) and improved by lower emotional exhaustion (Qureshi & Sajjad, 2015), then we propose that these two variables may also be a source of perceived productivity loss due to presenteeism and that work engagement may also mediate these relationships.

Work engagement as a mediator: The affective shift model

The affective shift model of work engagement has shown how work engagement may be affected by negative affect if followed by positive affect (Bledow, Schmitt, Frese, & Kuhnel, 2011) and that there can be considerable intra-individual variation. Thus, negative affect and emotional exhaustion may be particularly important to

capture short-term behavioral experiences affecting employees' productivity. In light of this, investigating these mechanisms through the role of daily work engagement may hold prospects of an enhanced psychological understanding of productivity loss due to presenteeism. It may also provide information for managers to develop work engagement strategies that mitigate the negative consequences of scarce resources and the loss spirals that affect employees' productivity.

The proposed model has been developed on the assumption that emotional exhaustion and negative affect are different constructs which have revealed within-subjects variance and played a different role in individuals' lives (Blanco-Donoso, Garrosa, Demerouti, & Moreno-Jiménez, 2016). For example, the emphasis of emotional exhaustion and negative affect seem to play a different role depending on the time of day (Blanco-Donoso et al., 2016). Some studies have shown that employees can go to work and have all of the required resources and support to reduce their emotional exhaustion, but still have negative affect associated with situations not directly related with their workplace (Judge & Kammeyer-Mueller, 2008). Contrary to this, employees may go to work with low negative affect, but they can reveal high levels of emotional exhaustion due to a lack of their supervisors' support or to high job demands (Macey & Schneider, 2008).

The proposed model has also been developed on the assumption that there is intra-individual variation in daily work engagement, as previously stated (Bledow et al., 2011). Therefore, the model proposes that emotional exhaustion and negative affect predict employees' engagement at work, which in turn, influence perceived productivity loss due to presenteeism at the day level. It also proposes that daily work engagement explains the relationship of both emotional exhaustion and negative affect with perceived productivity loss due to presenteeism.

Insert Figure 1 about here

Context of the present study

In light of the various aspects that have been discussed, the proposed model was tested in a country (i.e., Portugal) where the loss of resources associated with high health impairment and low employability have increased the pressure to go to work while ill (Martinez, Ferreira, & Nunes, in press). The pertinence of testing this model in a country like Portugal was drawn upon the COR model (Hobfoll, 1988), since employees' perception of losing resources (e.g., job / career stability) in countries where crises are more evident, tend to develop more burnout and negative affect.

Moreover, since presenteeism culture has been common in the health sector in Portugal (Martinez & Ferreira, 2012), we opted to test the model with employees working in this professional field. Presenteeism culture refers to the formal and informal organizational pressure individuals feel to attend work despite being ill (Simpson, 1998). Specifically, employees may feel pressured to go to work because of organizational practices, colleagues' behavior, and internal control policies that punish absence from the workplace (Ferreira et al., 2015; Zacher & Schulz, 2015). Furthermore, professionals working in the health sector have revealed a culture of loyalty and deep concern regarding their clients' vulnerability, because the latter are ill or elderly (Zacher & Schulz, 2015). Therefore, the risk of going to work sick increases substantially, since these professionals' job descriptions include providing care or welfare services.

Next, we briefly outline the existing literature on presenteeism, emphasizing research gaps and introducing the hypotheses derived from the proposed model.

Emotional Exhaustion and Perceived Productivity Loss (due to Presenteeism)

Burnout represents a chronic on-going reaction to one's work and a negative affective response to prolonged stress, which is not immediately reversible after changes in tasks, working conditions or even adequate recuperation (Maslach, Schaufeli, & Leiter, 2001). Burnout can be conceptualized as three distinct dimensions: i) emotional exhaustion, ii) personal accomplishments, and iii) cynicism. 'Emotional exhaustion' refers to the reduction of emotional, moral and psychological resources (Maslach et al., 2001). In line with previous studies (e.g., Shirom, 1989), exhaustion was considered in the current study as the most obvious manifestation of burnout, which leads to distancing oneself emotionally and cognitively from one's work as a way of coping with work overload.

The COR theory has highlighted that people strive to maintain, accrete and protect their most valued resources. The perception that these resources are threatened may lead to emotional exhaustion. That is, perceived loss of resources can be a consequence of high job demands. Health problems such as allergies, low back pain or depression may lead to a perception that daily job tasks are highly demanding (Johns, 2010), which in turn can reduce productivity and the consequent perception that goals and resources might not be achieved, thus promoting frustration and stress. Moreover, emotional exhaustion is a reaction to the loss of highly valued resources, such as health and the capacity to accomplish tasks while ill (Lazarus & Folkman, 1984). Also, emotional exhaustion may increase when employees perceive that an investment in resources is not compensated by an adequate return of resources (Halbesleben, 2006). For example, a person who has always gone to work while ill

may expect to be appraised by colleagues and supervisors and even rewarded with a higher position in the company, new projects or higher earnings (Simpson, 1998).

The literature has also provided evidence that exhaustion has a causal relationship with performance over time (Demerouti, Bakker, & Bulters, 2004) and that emotional exhaustion may predict subsequent levels of decreased productivity and increased risks of long and short-term sickness. Furthermore, evidence has shown that psychological conditions, such as high levels of stress and lack of emotional fulfillment, are fundamental in understanding productivity loss due to presenteeism (Demerouti et al., 2009). Specifically, exhaustion as a dimension of burnout has been significantly correlated with nurses' productivity loss due to presenteeism (Demerouti et al., 2009). Moreover, when people are exhausted, they use compensation strategies, which in turn increase exhaustion. Specifically, the transactional theory of stress (Lazarus & Folkman, 1984) has explained that people may cope with stressful events and develop different approaches by avoiding the potential source of stress or by confronting it. That is, some employees may have a lack of productivity because they go to work despite being ill to avoid the discomfort of disappointing bosses and colleagues. Accordingly, the perception of reduced productivity (due to illness) can promote an increased emotional exhaustion and the cycle begins again. In accordance with the proposed model, this lack of productivity may vary from day to day, depending on employees' daily emotional exhaustion. Thus, we hypothesize that:

H1: At the day-level, emotional exhaustion will be positively related to perceived productivity loss due to presenteeism.

Negative Affect and Perceived Productivity Loss (due to Presenteeism)

A study with 28 European countries has shown how individual health changes are associated with unemployment (Tøge & Blekesaune, 2015). Moreover, evidence has

indicated that employees with poor health face an elevated risk of becoming unemployed. Among the 28 countries, Portugal was one of the countries with the highest unemployment rates and worst health status, which may explain a higher motivation on Portuguese employees' behalf to behave in ways that retain, protect and foster their resources. This perceived loss of resources (due to job insecurity or health impairment) may result in loss spirals which promote negative affect (Hobfoll, 2001).

Negative affect has been related to lower psychosocial well-being, such as depressive symptoms (Denollet & De Vries, 2006). Drawn upon the COR theory, we argue that employees with negative affect tend to have less confidence about their own efforts (De Dreu, Baas, & Nijstad, 2008) and perceive their situations as problematic. Accordingly, their insecurity increases their attention towards information-processing, leading them to spend more time searching for concrete external information (Binnewies & Wornlein, 2011). Since unmotivated individuals have been known to perform poorly, the depressive cycle from failure to negative mood states may be self-reinforced and have an increasingly strong negative impact on performance over repeated performance events (Judge & Kammeyer-Mueller, 2008). Moreover, research has suggested that people are not always in the same mood and that it may fluctuate from day to day (Ohly, Sonnentag, Niessen, & Zapf, 2010). Therefore, in our proposed model we expect that employees' manifestation of presenteeism may decrease as their affect state becomes positive, and increase with negative affect. Thus, we predict that employees may report higher levels of productivity loss due to presenteeism when they experience negative affect:

H2: Daily negative affect will be positively related to perceived productivity loss due to presenteeism.

The Mediating Role of Work Engagement

Work engagement has been refined in the literature as an effective-motivational construct characterized by three distinct dimensions of ‘dedication’, ‘absorption’ and ‘vigor’ (Schaufeli, Bakker, & Salanova, 2006). Considering its three dimensions, ‘vigor’ implies being energetic and mentally resilient at work, as well as being able to persist despite the difficulties. Dedication relates to feeling enthusiastic and inspired, as well as experiencing pride and dedication at work. Lastly, absorption is described as a total concentration on the job and the experience of feeling happy while performing working tasks (Bakker, Schaufeli, Leiter, & Taris, 2008).

Schaufeli and Bakker (2004) investigated engagement and burnout and found that these two constructs were negatively related. Although the Job Demands-Resources (JD-R) model integrates burnout as a negative consequence of engagement, other important outcomes such as productivity loss (due to presenteeism) need to be further studied because liking one’s own job, devotion and feeling fairly rewarded, motivates employees to go to work even if they experience health problems (Schaufeli & Bakker, 2004). Inclusively, to our knowledge, there are no studies emphasizing the relationship between work engagement and productivity loss due to presenteeism.

Job demands such as role conflict, role ambiguity, or workload are typical examples of situational factors associated with physical and psychological costs for employees (e.g., Zhou, Martinez, Ferreira, & Rodrigues, 2016). These symptoms may lead individuals towards emotional exhaustion. On the other hand, job resources include other situational and individual factors that facilitate employees’ goal achievement at work (Zhou et al., 2016). Examples of job resources are peer support, autonomy and feedback - dimensions which reduce the levels of burnout.

According to the JD-R model, employees tend to feel emotionally exhausted and negatively affected when they have low job resources and high job demands. Bakker

et al. (2008) revealed that engagement is a unique concept that is best predicted by the type of job characteristics (e.g., autonomy and feedback) and personal resources (e.g., optimism, self-efficacy and self-esteem). Hence, the model we propose assumes that engagement fluctuations may vary with health problems, but ultimately correspond to productivity gains or losses. Moreover, if engagement is negatively associated with burnout (Schaufeli & Bakker, 2004) and emotional exhaustion is positively associated with productivity loss due to presenteeism (Demerouti et al., 2009; Ferreira & Martinez, 2012), then we propose that the relationship between work engagement and productivity loss due to presenteeism will be negative. Specifically, the more engaged employees feel at work, the less productivity loss due to presenteeism they may experience. In line with recent studies on the absenteeism literature (Woerkom, Bakker, & Nishii, 2016), this research constitutes an important attempt to integrate both the COR theory and the JD-R model to productivity loss due to presenteeism. In the current study we propose that the JD-R goes beyond the COR theory, explaining that people not only seek to maintain their resources, but also that these resources are part of a motivational process required to mitigate the harmful effects of job demands (i.e., productivity loss due to presenteeism) through the promotion of work engagement (Bakker & Demerouti, 2007). Thus, we hypothesize that:

H3. At the day level, work engagement will mediate the relationship between emotional exhaustion and perceived productivity loss due to presenteeism.

Work engagement may be influenced by an interplay of positive and negative affective events through their influence on individuals' mood (Bledow et al., 2011). For instance, in anticipating the possibility of losing resources related with health impairments, employees must develop strategies to use other available resources (Hobfoll, 1988). These reactions to sustain engagement at work often affect the

frequency of presenteeism (Schaufeli, Bakker, & Salanova, 2006). Considering engagement (at work) and disengagement (away from work) have been found to correlate with employees' affective state (Schultz & Edington, 2007), we infer that negative affect at work tends to decrease work engagement.

Concurrently, evidence has also shown that work engagement predicts low levels of physical symptoms at work (Britt, Castro, & Adler, 2005). If workers who go to work despite being ill are engaged, their potential productivity loss due to health problems may be reduced. Therefore, if we consider that there is an interplay of positive and negative affective events occurring throughout the day and that work engagement may be influenced by this reciprocity (Bledow et al., 2011), we propose that the relationship between employees' negative affect and productivity loss due to presenteeism is explained by how they are engaged at work at the day level. Thus, we hypothesize that:

H4. At the day-level, work engagement will mediate the relationship between negative affect and perceived productivity loss due to presenteeism.

Method

Sample and procedures

We used a convenience sample of employees from a center of gerontology and health care in Portugal. The employees were responsible for health care and related services, including administrative work, inpatient and outpatient care, nursing care, therapeutic services, assisted living, housing and elderly care. From a total of 53 full-time employees, 45 agreed to participate. However, only 42 employees were considered because they reported at least one day of sickness presence at work during the 10 days studied. Therefore, we reported missing values in the diary surveys

throughout a ten-day period (one missing value for days 1 and 2; two missing values for days 4, 5, and 8; three missing values for days 3, 6, 7, 9 and 10). These missing values were attributed in part due to the fact that participants did not fill the criteria (i.e., to have health problems) of the Stanford Presenteeism Scale (SPS-6). As mentioned before, 36.6% of the participants reported very good or excellent health status, which might explain the missing values for the SPS-6 daily scores. The mean age of the employees was 35.1 years ($SD = 10.28$). They had an average professional experience of 9.6 years ($SD = 8.16$) and an average tenure of 4.2 years ($SD = 42.65$). Despite being contracted to work 7 hours per day, the participants worked a weekly average of 38.05 ($SD = 3.52$) hours. Back pain (38.9%) and headaches (11.1%) were reported as the main physical problems, whereas anxiety (50%) and depression (13.3%) were reported as the main psychological disorders. We measured the health status and conscientiousness at the person-level. Participants were invited to report (with a single item question) their perceived health status in the preceding weeks from 1 (poor) to 5 (excellent). Despite reporting health problems, the majority (63.4%) described their health as reasonable or good.

Approximately one month before starting the research the person responsible for the institution granted us permission to collect data, assuring all ethical procedures. The week prior to the implementation of the diary, we informed all of the employees individually about the objectives of the research and the importance of answering according to their own perception. Those who agreed to participate (84.9%; $N = 45$) were briefed in groups of five in order to know the aims of the study and how the diary tasks should be filled in. In case of agreement, participants signed an informed consent. We opted for the paper version because employees would have more difficulty in accessing a computer with Internet because of their work setting. At the

beginning of the first week (Monday), employees filled in a general questionnaire including demographic data. The diary survey reporting the daily variables (e.g., productivity loss, work engagement, emotional exhaustion and negative affect) were completed in the afternoon after working hours during ten consecutive working days (one questionnaire per day during two weeks). A researcher was present at the health care institution thirty minutes prior to the end of the workers' afternoon shift in order to collect data and to ensure that every participant filled in the survey properly.

Measures and psychometric evidence

We used daily diary surveys in this study. Self-reported age, gender, tenure, health status and conscientiousness were included as person-level covariates in the model. As previous research found that employees' age, gender tenure, and health status have certain influence on productivity loss due to presenteeism (Hemp, 2004; Miraglia & Johns, 2016), we identified them as the control variables at the individual level. All of the items in the diary survey were worded to refer to "today" (e.g., Today, I felt...). In order to control the possible effect of personality traits on productivity loss due to presenteeism (see Johns, 2011), we included a measure of conscientiousness. This five-point scale (John, Donahue, & Kentle, 1991) included 8 items and presented a Chronbach alpha of .79.

We computed an exploratory factor analysis for each day to interpret the internal structure of each measure with FACTOR 10.0 (Lorenzo-Seva & Ferrando, 2013). The underlying structure of the data was tested with the Kaiser-Meyer-Olkin (KMO) and the Bartlett's Test of Sphericity. The KMO measure of sampling adequacy was overall reasonable (e.g., .76, .83, .74, .80, etc.), whereas the Bartlett Sphericity was significant ($p < .001$) throughout the ten sessions, demonstrating that the variables were suitable for factor analyses. Also, there is multivariate normality if Mardia's

coefficient is lower than $P(P + 2)$, where P is the number of observed variables. In this study, the observed variables demonstrated a Mardia's coefficient of kurtosis above $P(P+2)$ throughout the sessions. Thus, we used Unweighted Least Squares (ULS) as the estimation method for factor extraction, which does not depend on distributional assumptions (Joreskog, 1977). So as to obtain the appropriate number of factors to retain, we used Velicer's MAP and Horn Parallel analyses which are optimal extraction methods (Bandalos & Finney, 2010). Also, there were no items with loadings greater than .40 on two or more components. This preliminary study of the measures' structure revealed good results (Bandalos & Finney, 2010).

Productivity loss due to presenteeism was measured with the six-item short form of the Stanford Presenteeism Scale (SPS-6, Koopman et al., 2002). The SPS-6 measures were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). An example of items includes: During my working day: "Because of my (health problem), the stress of my job was much harder to handle". The internal consistency (Cronbach's alpha) of the 10 dairy survey applications ranged from .72 to .91 and it explained from 39% to 58% of the variance with goodness of fit (GFI) between .84 and .98. Employees with no perceived health problem did not respond.

Emotional exhaustion was assessed with a seven-item subscale of the Copenhagen Burnout Inventory (Kristensen, Borritz, Villadsen, & Christensen, 2005) and all measures were rated on a seven-point Likert scale ranging from 0 (never) to 6 (always). An example of items includes: "Today, I felt that my work was emotionally exhausting". The internal consistency (Cronbach's alpha) ranged from .87 to .98, and it explained from 61% to 71% of the variance with GFI values between .95 and 99.

Negative affect was measured with the ten negative items from the Positive and Negative Affect Schedule – PANAS (Watson, Clark, & Tellegan, 1988) that have a

five-point mood checklist ranging from 1 (very slightly or not at all) to 5 (extremely). Participants were asked to mention the extent to which they had experienced a specific emotion (e.g., "Distressed" and "Upset") during their working day. The internal consistency (Cronbach's alpha) of this measure ranged from .78 to .86, and it explained from 32% to 50% of the variance with GFI values between .83 and .94.

Work Engagement was measured with the nine-item scale from the daily use version of the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006), which is rated on a seven-point Likert scale ranging from 0 (never) to 6 (always). We opted for the UWES because it measures three dimensions of work engagement (i.e., dedication, absorption, and vigor) which, according to the COR model, interprets the energy that individuals spend to maintain and retain existing resources better (Hobfoll, 1988). An example of items includes: "Today, my job inspired me". The internal consistency (Cronbach's alpha) of this measure ranged from .89 to .95 and it explained from 54% to 78% of the variance with GFI values between .95 and 1.00.

The distinctiveness of the four constructs (i.e., productivity loss due to presenteeism, emotional exhaustion, negative affect and work engagement) was confirmed with Confirmatory Factor Analysis (AMOS 20.0) by contrasting a four-factor model (including modification indices with error covariance within the same factor) against a single factor model. The fit indices revealed that the proposed four-factor model fit the data well [$\chi^2_{(360)} = 1035.72, p < 0.01, \chi^2/df = 2.80, CFI = .91, IFI = .91, RMSEA = .067$]. This structure remained stable with findings revealing no significant differences ($\Delta\chi^2 > .05$) across the 10 daily diaries. All of the factor loadings were significant, thus supporting convergent validity.

Construct reliability, as well as convergent, and discriminant validity of all of the variables were also confirmed. Considering the moderate to high composite reliability

(ranging from .61 to .91), the Average Variance Extracted (AVE) and Average Shared Variance (ASV), we were able to confirm convergent and discriminant validity (Hair, Black, Babin, & Anderson, 2010). The AVE represents the percentage of variances in a latent construct that can be explained by its indicators (observed variables). In the present study, the AVE ranged from .48 to .70 for most of the constructs, except for negative affect (.33). However, the square root of the AVE was larger than the correlations of the construct with the other constructs, suggesting acceptable convergent validity (Hair et al., 2010). Discriminant validity was established because all of the ASV scores (ranged from .22 to .38) were below the AVE.

Data analysis

We computed hierarchical linear modeling (Heck, Thomas, & Tabata, 2014) with SPSS 20.0. Our option for HLM resides on how work engagement, negative emotion and negative affect have been supported to have daily fluctuations (Schultz & Edington, 2007), which suggests the need to study the day and individual levels of analysis. We used Maximum Likelihood Estimation for all analyses.

To justify the use of the daily-diary survey approach in this study, we calculated intraclass correlations (ICC1), and the reliability of the group mean (ICC2). As suggested by the literature (Gilbreath & Karimi, 2012), the ICC1 values for job engagement (.61), emotional exhaustion (.71) and negative affect (.47) were below the ICC2 values (.94, .96 and .89, respectively). Moreover, all of the ICC2 values were higher than .70. Thus, we concluded that this approach was statistically suitable.

All of the studied variables (i.e., productivity loss, emotional exhaustion, negative affect and engagement) were considered at the person and day-level. Intercepts varied significantly at the day level (Wald $Z = 12.040$, $p < .001$), and the ICC (intraclass correlation) suggested that about 21.5% of the fluctuations (ups and downs) in

productivity loss due to presenteeism could be attributed to within-person variation. These findings suggest that productivity loss due to presenteeism was not stable over time but fluctuated considerably. Moreover, since 78.6% of the employees reported physical health problems (e.g., 12 individuals mentioned that their problem was a chronic disease) and 66.7% reported psychological health problems (e.g., six participants reported psychological chronic disease such as anxiety), we considered that these diseases might have had a different impact in different days of the study.

To assess the mediation of work engagement on the relationships between emotional exhaustion/ negative affect and productivity loss due to presenteeism, we conducted a three-step analysis (Baron & Kenny, 1986). Firstly, we examined the relationship between the independent and the dependent variable ($X \rightarrow Y$). Secondly, we tested the relationship between the independent and the mediator ($X \rightarrow M$). Thirdly, we tested the multilevel relationship between the independent and the dependent variable, including work engagement (mediator) in the models ($X \rightarrow M \rightarrow Y$). Although the Baron and Kenny (1986) procedures appear as a common procedure in mediation analysis, the Bootstrap tests of indirect effect have higher power (Zhao, Lynch Jr., & Chen, 2010) and therefore guided our decisions in the analyses.

Results

Descriptive statistics

Table 1 shows descriptive statistics with mean scores, standard deviations and intercorrelations of the studied variables over two weeks. We also asked employees to report their health problems. The most common physical problems were: back pain (33.3%), allergies (9.5%), asthma (7.1%), and eye problems (7.1%). Participants also

reported psychological problems such as anxiety (35.7%), stress (16.6%), and depression (11.9%).

Insert Table 1 about here

Hypotheses testing

Table 2 shows the null model (i.e., no-predictors model) with a significant value ($p < .05$) supporting the application of multilevel analysis. We introduced the control variables in Model 1. Findings showed that the effects of gender, age, tenure, health status and conscientiousness personality trait were not significant on productivity loss due to presenteeism. This absence of significant results may be attributed to the reduced sample size at the person-level ($N = 44$). As depicted in Model 1, we hypothesized that at the day level emotional exhaustion was positively related to daily perceived productivity loss due to presenteeism. We found that at the day level emotional exhaustion and negative affect were positively related to perceived productivity loss ($\gamma = .32$, $SE = .04$, and $\gamma = .58$, $SE = .08$, respectively, both $p < .001$), therefore, hypotheses 1 and 2 were supported. Moreover, to assess the mediation effect, we tested the relationship between the antecedents (emotional exhaustion and negative affect) and the mediator (Models 3a and 3b). Results showed that both emotional exhaustion and negative affect were negatively related to work engagement at the day level ($\gamma = -.41$, $SE = .04$, and $\gamma = -.50$, $SE = .10$, respectively, both $p < .001$). When we added work engagement (mediator) in step 3 (Models 4a and 4b), the effects of daily emotional exhaustion and negative affect on perceived productivity loss decreased ($\gamma = .18$, $SE = .04$, and $\gamma = .49$, $SE = .08$, respectively, both $p < .001$), while work engagement was negatively related to perceived

productivity loss ($\gamma = -.34$, $SE = .04$, and $\gamma = -.37$, $SE = .04$, respectively, both $p < .001$).

Insert Table 2 about here

We used Macro PROCESS for SPSS to compute the Sobel test regarding the indirect effect of emotional exhaustion on productivity loss via work engagement, which showed that the effect was significant (Sobel $Z = 5.99$, $p < .001$). The same significant value was found for the indirect effect of negative affect on productivity loss through work engagement (Sobel $Z = 4.58$, $p < .001$). Bootstrapping with bias-corrected confidence estimates (1000 samples) confirmed the mediation hypotheses (Preacher & Hayes, 2008) with a bootstrap of 99% CI around the indirect effect not containing zero for both emotional exhaustion (.059, .145) and negative affect (.067, .305). Overall, these findings confirmed the mediation effect mentioned in hypotheses 3 and 4, revealing that work engagement mediated the relationship between emotional exhaustion and negative affect and productivity loss due to presenteeism.

In order to estimate model generalization we developed a cross validation approach, testing the predictors on perceived productivity loss. Accordingly we selected a random 80% of the sample to re-run Models 4a and 4b. Taking into account the standardized scores for the random 80% sample we computed a predicted score for all the cases. Then, we split the data to compare samples (80% and 20%) taking into account the correlation between the predicted score and perceived productivity loss. Results show similar significant correlations for the 20% sample ($r = .50$, $p < .001$) and the 80% sample ($r = .59$, $p < .001$) in model 4a. The same situation occurs

for model 4b, with significant correlations for the 20% sample ($r = .54, p < .001$) and the 80% sample ($r = .59, p < .001$).

Moreover, results revealed unbiased parameter estimates in our multilevel linear analysis, since we provided over 30 level-2 units, which according to McCoach (2010), are sufficient for this type of analyses. Furthermore, we used MATRIX in SPSS to determine the power of the analyses presented. Initial estimates of power (given a sample size of 42 with 10 repeated measures within individuals and group sizes varying from equal sizes to the larger group which was 2.5 times the size of the smaller group, and assuming a 0.5 unit difference in means and SD of 0.6) indicated the power was sufficient to detect a change in Y over time (with power estimates ranging from 0.82 to 0.90) and a predictor X time effect (with power estimates ranging from 0.94 to 0.98) (Heck, & Thomas, 2014).

Discussion

This study filled a gap in the literature by studying the effects of emotional exhaustion and negative affect on perceived productivity loss due to presenteeism. Findings provided an important contribution to the international stress management literature as the comprehensive COR model (Hobfoll, 1988, 2001) and the JD-R theory (Schaufeli & Bakker, 2004) were introduced to explain reduced productivity loss due to presenteeism in a country with low employability rates and low perceived health status. Moreover, our findings provided a new comprehensive approach regarding the link between negative / emotional exhaustion and productivity loss due to presenteeism in Portuguese employees working in a very difficult socio-economic reality - as the Chinese, British, Scandinavian and North American societies have already mentioned in previous studies (e.g., Lu, Cooper, & Lin, 2013a).

Our first hypothesis stated that emotional exhaustion would be positively related to perceived productivity loss due to presenteeism. The literature has emphasized the relationship between the frequency of presenteeism and emotional exhaustion (Baeriswyl, Krause, Elfering, & Berset, 2016). Therefore, the current study complemented findings from previous cross sectional studies (Demerouti et al., 2009; Ferreira & Martinez, 2012), since we adopted a more robust methodology with evidence reinforcing the daily fluctuations of emotional exhaustion affecting employees' productivity loss due to presenteeism. In other words, our results showed that emotional exhaustion at the day level were a negative affective response that influenced perceived productivity loss due to presenteeism (Ferreira & Martinez, 2012). A possible interpretation of this finding could be that specifically in the health-care sector, productivity loss due to presenteeism is salient, essentially due to the fact that employees tend to stay at work many hours because of night shifts (Zacher & Schulz, 2015). Moreover, employees must deal with high task demands (in many cases their decisions have serious implications for patients' lives and well-being), low job autonomy (with standardized and normative procedures) and a lack of supervisor support (Ito & Brotheridge, 2003). Previous studies demonstrated that employees with low task complexity, high levels of job autonomy, supervisory support, and internal locus of control, tended to present less emotional exhaustion (Zacher & Schulz, 2015). Hence, the risk of emotional exhaustion increases as these employees feel pressured to go to work despite being ill in order to avoid the discomfort of disappointing their bosses, colleagues and patients (Ferreira et al., 2015).

The second hypothesis of this study stated that negative affect would be positively related to perceived productivity loss due to presenteeism. Previous research has indicated that negative affect influences employees' behavior (Ilies,

Scott, & Judge, 2006) and reduces performance at work (Judge & Kammeyer-Mueller, 2008). To complement these findings, our study showed that at the day level, negative affect was positively related to perceived productivity loss due to presenteeism. Similar to other studies (De Dreu et al., 2008), we found that employees who went to work on days with negative affect tended to be emotionally affected, which in turn, reduced their perceived productivity. To our knowledge, this study was the first attempt to incorporate negative affect as an antecedent of perceived productivity loss (due to presenteeism) and not the frequency of presenteeism. Previous models of presenteeism (e.g., Johns, 2010) have not included affect as a potential antecedent of presenteeism (frequency and productivity), thus we believe that future studies might consider the role of emotions regarding employees' performance in contexts of sickness presence.

We also hypothesized that work engagement would mediate the relationship between emotional exhaustion (hypothesis 3), negative affect (hypothesis 4) and perceived productivity loss due to presenteeism. Our findings revealed that employees reported lower levels of perceived productivity due to presenteeism when experiencing work engagement, which corresponded to high levels of energy and mental resilience while working (Bakker et al., 2008). Hence, this study provided insights into the mediating effect of work engagement in the relationship between emotional exhaustion and productivity loss due to presenteeism, as well as in the relationship between negative affect and productivity loss due to presenteeism. The variance explained at the day level suggested that productivity loss due to presenteeism, work engagement and negative antecedents were not stable, but rather fluctuated according to the day-level of emotional exhaustion, negative emotion or work engagement. In the recent JD-R model, work engagement has appeared as a

predictor of organizational outcomes (Schaufeli & Bakker, 2004). In line with previous studies (Woerkom et al., 2016), the current study extended and integrated the JD-R and COR models by considering a specific context of presenteeism at work (Demeruti et al., 2009) and incorporating perceived productivity loss due to presenteeism as a potential outcome of both models, which deserves further investigation.

Limitations and Suggestions for Future Research

This study is not without limitations. A first possible limitation has to do with the fact that it was conducted during two working weeks, making it difficult to notice long-term individual fluctuations. The tendency to repeat the same question over a period of two consecutive weeks (memorization effect) might be a concern related to the daily diary survey approach (Gleason, Bolger, & Shrout, 2001). Future studies could explore whether the studied relationships persist for long periods of time and how the studied variables affect individual, group and organizational performance.

The use of self-reported measures, consisting each of a small number of items could constitute another limitation of the present study. Future studies might use i) neutral observer ratings, (e.g., 360 degree feedback perspectives with colleagues, supervisors, customers), ii) emotional, work engagement, burnout and strain measures, as saliva cortisol, facial expressions, voice quality, heart rate variability, electrodermal activity, or even sleep quality measures. Nevertheless, and despite the low AVE for negative affect, we found theoretical evidence to measure the discriminant validity (Hair et al., 2010) and the hypothesized relationships were carefully theorized. Future studies could also consider the diagnosis of symptoms related to productivity loss due to presenteeism (e.g., type of symptoms, severity and impact on the task) in order to better control and conceptualize the relationship

between different variables and its contribution to productivity loss. Also, although we analyzed a substantial amount of data, we used a small sample size with employees from the healthcare sector, which could be another factor that may have influenced our study findings. Thus, future work should comprise a larger sample size and other work sectors to investigate findings as those presented here. Nevertheless, we presented unbiased parameter estimates in our multilevel linear analysis, since we provided over 30 level-2 units, which according to McCoach (2010), are sufficient for this type of analyses.

Taking into account that data was collected in a center of gerontology and health care (where employees are mainly females), our sample was somewhat gender-biased. The absence of consensus concerning the effect of gender on productivity loss due to presenteeism (Martinez & Ferreira, 2012; Simpson, 1998) and the non-significant direct effect of gender as a control variable may suggest that future studies might consider a more representative sample distribution.

Our study presented work engagement as an individual variable that has a partial mediation effect in the studied relationships. Accordingly, other work-related factors could be considered as an extension of the current study in determining productivity loss due to sickness presence (Hansen & Andersen, 2008). Thus, contextual antecedents of productivity loss (see Johns, 2010, 2011) could potentially be included in future studies. Lastly, it would also be interesting for future research to control for the time of the day regarding employees' emotional exhaustion and negative affect.

Practical Implications

Findings from our study suggest that negative affect and exhaustion should be reduced to improve productivity despite presenteeism in care settings. Accordingly, increased opportunities for work engagement are important procedures when

developing interventions to reduce productivity loss due to presenteeism. For instance, the literature suggests that autonomy and increased job complexity reduces emotional exhaustion (Kubicek & Korunka, 2015). In this sense eldercare professionals should be responsible for several patients instead of specific activities, which in turn will favor their own time management and decision-making process.

Negative affect in the health sector is associated with hidden anger, resentments or frustrations and at the same time the need to express kindness with patients and their families. The Team STEPPS (Strategies and Tools to Enhance Performance and Patient Safety) is an interesting program that promotes competences (e.g., communication, leadership, mutual support and situation monitoring) required to deal with these adversities inherent to the health sector (Ferguson, 2008). Managers should develop inter-professional programs to enable teams to find appropriate strategies that lead to emotional exhaustion reduction, essentially with the improvement of working conditions (e.g., reduced team conflicts, task ambiguity).

Previous studies suggest that one-third of the time devoted by these professionals is spent doing tasks (e.g., transportation or phlebotomy or transportation) that can be done by other less qualified professionals (Boex & Leahy, 2003). Therefore, managers should ensure avoidance of repetitive and high demanding activities with the inclusion of task rotation and a better management of shift cycles. Additionally, practitioners should consider the introduction of periodical breaks where health care professionals are less exposed to patients and families.

Conclusion

While previous research has studied the positive outcomes of engagement (Schaufeli & Bakker, 2004), our study has suggested that work engagement mediates the effects of emotional exhaustion and negative affect with productivity loss due to

presenteeism. Thus, our study constituted an advancement in the international stress management literature by enriching the COR and JD-R models with the organizational outcomes of productivity in sickness presence. Moreover, the dynamic fluctuations found at the daily basis, provided interesting contributions for managers by showing that work engagement may have an important role in reducing the negative consequences of emotional exhaustion and negative affect on productivity loss due to presenteeism.

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Table 1

Means, standard deviations, and zero-order correlations.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1. Gender ^a	1.88	.33									
2. Age	35.07	10.28	.10								
3. Tenure (months)	50.08	3.51	.10	.11							
4. Health status	3.27	.77	-.26	-.22	-.03						
5. Conscientiousness	3.77	.32	.23**	.26**	.12*	-.09					
6. Productivity loss	2.50	.48	-.06	-.05	-.01	-.37*	-.18**		.40**	.49**	-.49**
7. Negative affect	1.39	.36	.16	-.18	.01	-.17	-.12*	.51**		.39**	-.26**
8. Emotional exhaustion	2.53	1.09	.07	.08	-.03	-.24	-.15**	.62**	.39*		-.46**
9 Engagement	3.78	.85	.19	.15	.00	.10	.11*	-.49**	-.22	-.48**	

Note. Correlations below the diagonal are person-level correlations (N=42). Correlations above the diagonal are day-level correlations

(N=396). * $p < .05$, ** $p \leq .01$. ^a 1 = Male, 2 = Female.

Table 2

HLM emotional exhaustion and negative affect predicting perceived productivity loss due to presenteeism: work engagement mediation.

	Mediation analysis							
	Null Model	Step 1		Step 2		Step 3		
			X → Y		X → M		X → M → Y	
<i>Outcomes:</i>		Productivity loss		Engagement		Productivity loss		
	Model 0	Model 1	Model 2a	Model 2b	Model 3a	Model 3b	Model 4a	Model 4b
Intercept	2.50** (.07)	3.66** (.74)	3.60** (.58)	3.68** (.62)	1.99(1.08)	2.05(1.21)	2.94** (.62)	2.96** (.58)
1. Gender ^a		-.14(.25)	-.24(.20)	-.28 (.19)	.49(.37)	.47(.41)	-.06(.21)	-.11(.20)
2. Age		-.00(.01)	-.00(.01)	.00(.01)	.01(.01)	.00(.01)	.00(.01)	.00(.01)
3. Tenure (months)		-.00(.00)	-.00(.00)	-.00(.00)	-.00(.00)	.00(.00)	-.00(.00)	-.00 (.00)
4. Health status		-.22(.11)	-.15 (.09)	-.20* (.09)	.17(.16)	.20(.18)	-.10(.09)	-.11(.09)
5. Conscientiousness		-.27(.26)	-.11(.21)	-.15(.22)	.65(.38)	-.82(.43)	.11(.22)	.13(.21)
6. Emotional exhaustion			.32** (.04)		-.41** (.04)		.18** (.04)	
7. Negative affect				.58** (.08)		-.50** (.10)		.49** (.08)
8. Engagement							-.35** (.04)	-.37** (.04)
Level 1 Intercept	.34** (.08)	.40** (.03)	.34** (.03)	.37** (.03)	.37** (.03)	.43** (.03)	.29** (.02)	.28** (.02)
Level 2 Intercept	.19** (.05)	.20** (.06)	.11** (.04)	.13** (.04)	.48** (.13)	.60** (.16)	.13** (.04)	.11** (.04)
<i>Deviance</i>	830.404	796.884	724.831	754.255	822.113	878.868	672.556	665.671
Number of parameters	3	8	9	9	9	9	10	10

Note. * $p < .05$, ** $p \leq .01$. ^a 1 = Male, 2 = Female.