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Published online: 26 Jul 2023.

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Materialism predicts burnout through the basic needs: individual-level and within-person longitudinal evidence

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ABSTRACT

Workplace burnout has strong negative consequences for both workers and organisations. Following Self-determination theory (SDT), we hypothesised that workplace materialism – the relative importance given to extrinsic (fame, money, image) versus intrinsic (relationships, pro-sociality, self-development) work goals – is a key antecedent of burnout. The relationship between work goals and burnout is expected to be mediated by lower satisfaction and higher frustration of basic psychological needs for autonomy, competence and relatedness. Extending previous correlational evidence, we tested the prospective relationships among these constructs using a three-wave longitudinal design among a large sample of Chilean workers ($N = 1841$). Both individual-level (cross-lagged panel model) and within-person (trait-state-occasion model) longitudinal analyses supported that materialism predicted subsequent levels of burnout through higher need frustration. Need satisfaction did not predict subsequent burnout in either analysis. Additionally, we found that burnout predicted subsequent need frustration, suggesting a dangerous reciprocal relationship between both constructs. Our findings support SDT and highlight the potential risks of emphasising materialism in organisational settings. Indeed, contrary to common organisational practices, our findings suggest that burnout can be reduced by lowering the importance of extrinsic goals, fostering intrinsic goals, and building working environments to avoid frustrating basic psychological needs.

"*In reality, it is not the excess of responsibility and initiative that makes one sick, but the imperative to achieve: the new commandment of late-modern labor society.*"—Byung-Chul Han, The Burnout Society

The well-being of employees is in danger (Pfeffer, 2018). In the US, for example, nearly half of all employees feel that their work is a significant source of stress (American Psychological Association Center for Organizational Excellence, 2018). This situation extends to other parts of the world, including developing countries (Vision Humana, 2020). One of the main dangers of this situation is the increase of workplace burnout,

defined as " … a state of *exhaustion* in which one is *cynical* about the value of one's occupation and *doubtful of one's capacity to perform*" (Maslach et al., 1996). According to Gallup (2020), 76% of employees worldwide experience burnout at least sometimes during their work. This is concerning, as burnout has been associated with detrimental outcomes for individuals (e.g. diminished job satisfaction; lower mental health), their partners (e.g. increased work-non work conflict), co-workers (e.g. greater interpersonal conflict), and the organisations they work in (e.g. employee turnover and absenteeism) (Cordes & Dougherty, 1993; Maslach et al., 2001; Shirom, 2003).

Research on the antecedents of burnout is abundant (see Alarcon, 2011; Aronsson et al., 2017; Bakker & Costa, 2014; Maslach et al., 2001). Because it is largely assumed that burnout emerges from an increased effort to cope with external demands (Aronsson et al., 2017), research to date has centred its attention on factors that may increase these demands such as work environment factors and socioeconomic status. In line with this, scholars have mainly focused on the role of job demands (e.g. role stressors, role ambiguity, role conflict) and job resources (e.g. control, autonomy) (Alarcon, 2011; Maslach et al., 2001), yet also recognised that other individual variables might contribute to the development of burnout (Alarcon, 2011). One of the aspects that has come to the fore are individuals' values and goals.

Early theoretical work on burnout (Maslach, 1976; Maslach et al., 2001) as well as empirical support (Leiter et al., 2009) indicate that a mismatch between an employee's personal values and the values of the organisation may lead to burnout. Meta-analytic findings support these arguments, showing that a lack of fit between personal and organisational values and goals may indeed be stressful (Kristof-Brown et al., 2005). In addition, longitudinal studies show that such discrepancy in values and goals may also lead to burnout (Kilroy et al., 2017). We expand on this line of work by arguing that not only the match, but particularly the nature some values in and of themselves have the potential to increase employees' experience of being pressured, and – hence – instigate burnout.

In line with this, a some studies based on Self-Determination Theory (Ryan & Deci, 2017) have found that individual differences in valuing *materialism* – a higher relative importance workers attach to extrinsic (e.g. fame, money, image) versus intrinsic (e.g. self-development, relationships, altruism) work values and goals (Vansteenkiste et al., 2007) – is associated with workplace burnout (Roche & Haar, 2013; Shevchuck et al., 2018; W. Unanue et al., 2017; Van den Broeck et al., 2015; Vansteenkiste et al., 2007). According to SDT, this is because materialism puts pressure on individuals and diminishes the satisfaction and increases the frustration of basic psychological needs for autonomy, competence and relatedness (Ryan & Deci, 2017). However, studies to date examining the relation between materialism and burnout have relied on cross-sectional designs, which cannot test directionality (e.g. does materialism lead to higher burnout or does burnout lead to higher materialism), and they are not well-suited for testing underlying psychological processes (i.e. mediators). Indeed, in order to test mediations appropriately, longitudinal designs including at least three waves of data are needed (Maxwell et al., 2011).

To allow for a stringent test of the prospective relationship between employees' materialism and burnout as well as the potential mediating roles of both basic need satisfaction (BNS) and basic need frustration (BNF), we conducted a three-wave longitudinal

study, with three months between waves in a large sample of Chilean workers ($N = 1841$). By doing so, we add to the current literature on burnout by providing strong evidence of an individual factor that can influence the development of burnout. This is important as, although goals are relatively stable, they are more easily and rapidly modifiable than other individual factors that have been linked to burnout such as socio-economic status and/or one's personality (e.g. emotion stability, general self-efficacy). Furthermore, given that the literature on the antecedents of burnout is only built on a few studies of methodologically high quality (Aronsson et al., 2017), we also add to the literature by using the most rigorous analyses to test the prospective relationship between materialism and burnout including both individual-level and within-person analyses (see Hamaker et al., 2015). Thus, by focusing on a relatively modifiable individual variable (i.e. materialism) and using a large longitudinal dataset and state-of-the art analytical approaches, our results may provide additional information to help developing strategies to diminish burnout.

Materialism as antecedent of burnout

Materialism is defined as "individual differences in people's long-term endorsement of values, goals, and beliefs that centre on the importance of acquiring money and possessions that convey status" (Dittmar et al., 2014, p. 880). Although materialism may be only associated to extrinsic values and goals (e.g. money, fame, image and status), Dittmar et al.'s (2014) meta-analysis found that the meaning of this construct is more fully captured by addressing the relative importance people give to materialism compared to other values and goals individuals might pursue. Thus, to address its full meaning, we conceptualise materialism as the relative importance individuals give to extrinsic (e.g. wealth, fame and image) versus intrinsic (e.g. self-development, relatedness and community involvement) goals and aspirations (Kasser & Ryan, 1996). Further, workplace materialism refers to the importance employees give to these values and goals in their work (Vansteenkiste et al., 2007). For example, highly materialistic employees give a greater value to having a better salary or higher status at work (i.e. extrinsic goals) rather than to their professional development or to build good relationships with their colleagues (i.e. intrinsic goals).

Materialism has a high prevalence in organisations (Deckop et al., 2010). Unfortunately, the pursuit of materialism at work has been associated with many negative consequences for employees and organisations, such as increased turnover intentions and work-family conflict, as well as diminished organisational commitment and job satisfaction (Deckop et al., 2010; W. Unanue et al., 2017; Vansteenkiste et al., 2007). One likely explanation for these detrimental effects is that materialism is thought to undermine the satisfaction and increase the frustration of the basic psychological needs for autonomy, competence and relatedness as proposed by SDT (Ryan & Deci, 2017).

## The hypothesized mediating role of basic psychological needs in the materialism-burnout link

According to SDT (Ryan & Deci, 2017) people have three basic psychological needs that must be fulfilled in order to achieve psychological growth, integrity, and well-being. These are the needs for *autonomy*, which refers to "the need to self-regulate one's

experiences and actions" (p.10); for *competence*, which refers to "feel effectance and mastery" (p.11); and for *relatedness*, which refers to "feeling socially connected" (p.11) (Ryan & Deci, 2017). SDT has consistently shown that BNS and BNF have important consequences for individuals' well-being and ill-being, both in general and in specific contexts such as the workplace. The distinction between BNS and BNF is important as, contrary to what could be expected, they are not two ends of the same continuum, but represent two distinct states (Vansteenkiste & Ryan, 2013). For example, individuals may feel they have little freedom in what they are doing (i.e. low autonomy need satisfaction), but this does not necessarily mean they feel pressured to engage in these tasks (i.e. need frustration). While experiencing BNS is primarily associated with well-being and flourishing, BNF is primarily associated with ill-being and maladjustment (Vansteenkiste & Ryan, 2013).

In organisational contexts, research has shown that BNS is positively linked with positive outcomes not only for employees, but also for their organisations (Ryan & Deci, 2017; Van den Broeck, Ferris, Chang, & Rosen, 2016). For example, employees function better (e.g. increased job satisfaction, engagement and positive affect, performance) when they have a sense of choice and self-expression in the things they undertake (i.e. work autonomy satisfaction), feel cared for and connected to other people at work (i.e. work relatedness satisfaction) and feel capable and competent to achieve their tasks at work (i.e. work competence satisfaction) (Van den Broeck et al., 2016). On the other hand, BNF leads to opposite results. For instance, employees that feel forced and pressured to do things at work (i.e. work autonomy frustration), excluded and disliked by others at work (i.e. work relatedness frustration), or insecure and doubtful about their abilities and performance at work (i.e. work competence frustration) become less autonomously motivated at work, which is associated with several detrimental outcomes for themselves and their organisations (e.g. turnover intentions, negative emotions at work, job insecurity) (W. Unanue et al., 2017).

Materialism is strongly linked to BNS and BNF (W. Unanue et al., 2014). SDT argues that, although individuals embrace goals thinking that they will lead to satisfaction and well-being, not all goals actually bring these expected positive consequences (Ryan & Deci, 2017). Specifically, the *type* of goals individuals pursue (independently of their actual fulfilment) will lead to different consequences for people's BNS and BNF. While goals that are inherently rewarding (i.e. intrinsic goals) lead to higher BNS and lower BNF, goals based on instrumental outcomes (i.e. extrinsic goals) lead to lower BNS and higher BNF (W. Unanue et al., 2014). In the work context, employees focusing on extrinsic goals such as acquiring more money, fame and/or status above more intrinsic goals such as their professional development or building good relationships with their colleagues (i.e. highly materialistic employees), are likely to engage in activities that are less intrinsically rewarding in order to achieve a higher salary or their desired promotion. As these goals distract them from participating in need satisfying activities (Vansteenkiste et al., 2007), such as connecting with their co-workers or engaging in learning opportunities, materialism diminishes BNS and increases BNF at work.

Both BNS and BNF may, in turn, explain the detrimental consequences of materialism at work. Previous studies have consistently found that BNS and BNF are strongly associated with various workplace outcomes related to workers well-being, job attitudes, job behaviours and motivation (Van den Broeck et al., 2016). In the case of burnout, we
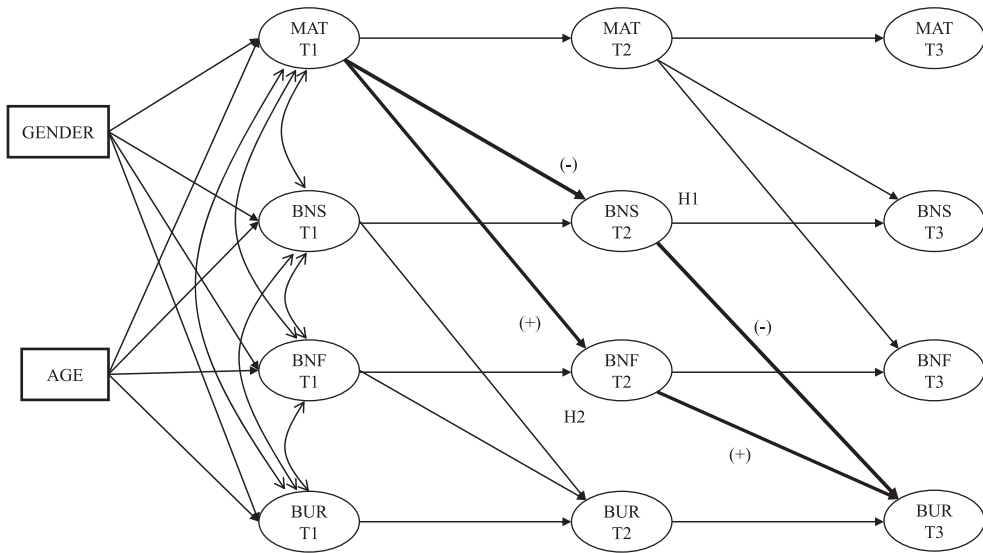
Figure 1. Hypothetical model. *Note.* MAT = materialism; BUR = burnout; BNS = basic need satisfaction; and BNF = basic need frustration. T1: Time 1; T2: Time 2; T3: Time 3.

argue that (a) experiencing a lack of choice or psychological freedom (i.e. low autonomy satisfaction), and feeling forced and pressured to do things in a certain way at work (i.e. high autonomy frustration) drains energy from employees and makes them cynical as they do not find what they do valuable or rewarding; (b) feeling not loved and cared for (i.e. low relatedness satisfaction), and excluded from other people at work (i.e. high relatedness frustration) would equally diminish workers' energy and attachment to work as they need to make extra effort to work in a context where they do not feel wanted and cannot count on social support; and (c) feeling that they cannot successfully complete difficult tasks (i.e. low competence satisfaction), and feeling insecure and doubtful about their abilities and performance at work (high competence frustration) also depletes workers' energy and increases their cynicism as they would constantly feel on probation and never feel sure of the quality of their work (Figure 1).

The need for longitudinal research

Some studies provide initial support for a positive relationship between materialism and burnout (Roche & Haar, 2013; Shevchuck et al., 2018; Van den Broeck et al., 2015), as well as for the mediation of BNS (Vansteenkiste et al., 2007) and BNF (W. Unanue et al., 2017) in this relation. By far, however, these studies are cross-sectional (Reyes et al., 2023). This is an important limitation in the field, for the following reasons. First, cross-sectional designs cannot establish temporal precedence between variables (LaGrange & Cole, 2008). Thus, evidence is needed to disentangle whether materialism leads to increased burnout or whether burnout leads to a shift towards more materialistic goals. Longitudinal research is needed to adequately test the materialism-burnout direction of the link.

Second, recent methodological research suggests that mediation cannot be tested optimally using cross-sectional designs (O'Laughlin et al., 2018). Testing mediation using

cross-sectional designs generates biased estimates and cannot provide any information about temporal precedence of the constructs under study. Because mediation is a causal process, cross-sectional designs provide only a weak indication of such mediation, impairing inferences about causality or temporal precedence. In line with this, methodological literature (MacKinnon et al., 2012; Maxwell et al., 2011; Maxwell & Cole, 2007; O'Laughlin et al., 2018) has argued that longitudinal designs with multiple waves of measurements are needed to provide evidence of temporal precedence, which, potentially, may support a hypothesised sequence of predictor, mediator and outcome variables in mediation models.

Moreover, it has been argued that researchers should examine temporal relations between psychological constructs not only in single-level analyses at the individual level, but also at a within-person level of analysis (Hamaker et al., 2015). Single-level analyses, such as the highly popular cross-lagged panel model (CLPM), examine whether an individual with *higher than average* materialism at T1 is likely to show higher than average burnout at T2, while controlling for their existing level of burnout at T1. By doing so, these analyses are better suited for causal inference questions than cross-sectional models. Notably, CLPM includes autoregressive effects of the same variables at t-1, which helps to control for confounding variables, reducing the possibility that other unaccounted factors (e.g. job demands/resources) may explain the results. However, individual-level analyses such as the CLPM do not separate variance due to *within-person* changes over time from variance due to stable, trait-like *between-person* differences, and so it has been argued that the estimated cross-lagged paths conflate these two different sources of variance (Hamaker et al., 2015).

To address this concern, researchers have developed multilevel approaches to longitudinal analysis that begin by separating the variance in each variable into a stable *between-person* component and a time-varying *within-person* component (e.g. Cole et al., 2005; Hamaker et al., 2015). Because the between-person component of each variable is stable over time, by definition it provides no information about temporal precedence among the variables; temporal relations among variables are examined by modelling cross-lagged relations among the within-person components. Thus, within-person approaches to longitudinal analysis, such as trait-state-occasion model (TSO) adopted here, can be used to test whether a person with *higher than their usual level* of materialism at T1 is likely to show higher than their usual level of burnout at T2. TSO controls not only for autoregressive paths between adjacent measurement occasions but also for stable between-person variance in each measure, and thus it provides a more extensive control for possible confounding influences than the CLPM.

By focusing on the changes within individuals, within-person analyses can be used to model developmental processes of psychological constructs as they are theorised to occur within individuals, complementing traditional individual-level analyses. This is especially relevant in the case of burnout as it has been defined as "an ongoing process that unfolds over time." However, individual-level and within-person approaches are not necessarily redundant, as they address different questions (which individuals are more likely to soon experience burnout vs. when an individual is more likely to experience burnout) and they embody different assumptions about confounding variables. Hence, statisticians have advised to compare the results from both approaches to test the robustness of one's conclusions (Lüdtke & Robitzsch, 2022).

The current study

We conducted a longitudinal study to test the link between materialism and burnout over time, as well as the mediating roles played by both BNS and BNF. We collected three waves of data with an interval of three-months between waves, among a large sample of Chilean workers. We used individual-level and within-person analyses, to assess the following hypotheses:

H1: Materialism will prospectively predict higher levels of burnout through the mediation of BNS. Specifically:

H1a: At the individual level, we expect that individuals showing higher materialism than others at an earlier time-point (Ti) would be likely to show lower BNS than others at a later time-point (Ti + 1), leading in turn to higher levels of burnout than others at a subsequent time-point (Ti + 2).

H1b: At the within-person level, we expect that if a person showed higher than their usual level of materialism at Ti, the person would be likely to show lower than their usual level of BNS at Ti + 1, which in turn would lead to higher than their usual level of burnout at time Ti + 2.

H2: Materialism will prospectively predict higher levels of burnout through the mediation of BNF. Specifically:

H2a: At the individual level, we expect that individuals showing higher materialism than others at Ti would be likely to show higher BNF than others at Ti + 1, leading to higher burnout than others at time Ti + 2.

H2b: At the within-person level, we expect that if a person showed higher than their usual level of materialism at Ti, the person would be likely to show higher than their usual level of BNF at Ti + 1, which in turn would lead to higher than their usual level of burnout at time Ti + 2.

Method

Sample and procedure

We collected data via an online questionnaire sent to a large sample of Chilean workers, as part of a research project funded by the Chilean Government. A university in Santiago provided the e-mails of its alumni. Following both the guidelines of the American Psychological Association and the university's ethics protocol, we conducted a three-wave longitudinal design, where each wave was separated by three months.[1] The current research was approved for the Ethical Committee of the mentioned university. At T1, we sent participants a brief introduction to our study and the consent form. Confidentiality and the right to leave the study at any time (without penalty) was assured. No financial incentive was provided. Participants were informed that the survey would be available only for one week within each wave, and friendly reminders were sent twice. Those participants who did not wish to participate or continue with the study were removed from the mailing list and were not contacted later. For those who decided to complete the survey all questions except for their monthly salary and family monthly income were mandatory.

At T1, 1841 participants completed the survey. In total, 45% were female, 54.9% male, 0.1% non-binary. Respondents' ages ranged between 21 and 71 years old ($M_{age} = 36.94$;

$SD = 8.59$). At T2, 979 participants answered the core questions, including 44% female, 56% male, aged between 23 and 75 ($M_{age} = 38.57$; $SD = 9.54$). At T3, 700 participants completed the survey, including 46% female, 54% male, aged between 24 and 72 ($M_{age} = 38.96$; $SD = 9.77$). In total, 421 participants completed all three waves. Participants who completed one or two waves ($N = 1420$) did not differ in gender ($\chi 2(2)] = 0.64$, $p = 0.727$), nor in materialism ($t(1839) = 0.72$, $p = 0.473$), BNS ($t(1839) = -0.90$, $p = 0.366$) or BNF ($t(1839) = 1.74$, $p = 0.083$) from those who completed the three waves ($N = 421$). However, participants who completed the three waves were likely to be older ($t(609.84) = -4.47$, $p < 0.001$) and reported lower burnout ($t(741.29) = 4.16$, $p < 0.001$). Little´s MCAR test (Little, 1988) was nonsignificant, consistent with assuming that missing data were "completely at random" ($\chi 2(2613)) = 2641.520$, $p = 0.344$). These results allowed us to include all participants in our analysis, using full information maximum likelihood estimation (FIML) to deal with missing data; FIML estimates model parameters based on all available information in the data, even from participants with only one wave (Newman, 2014).

Appropriate sample sizes for SEM models need to have a minimum between 30 and 460 cases (Wolf et al., 2013) as well as a minimum of 10 cases per parameter (Weston & Gore, 2006). Thus, our sample size ($N = 1841$) exceeds the requirements for SEM analyses identified in literature.

Measures

We used measures with good psychometric properties. The original scales were translated into Spanish using a standard back-translation procedure (Brislin, 1970).

Materialism at work
We used the scale developed by Van den Broeck et al. (2015). The scale is a short six-item version of the Aspiration Index (Kasser & Ryan, 1996), adapted to the work context. Participants were asked to rate the importance to them of each of six work goals (i.e. "to what extent is it important to you having a job in which … ") and answered on a seven-point Likert scale from 1 (not at all) to 7 (very much). Items for extrinsic work goals were "in which you are admired for your prestigious position" (fame), "in which you are financially successful" (money), and "in which you are able to look attractive" (image). Items for intrinsic work goals were "in which you can develop yourself" (self-development), "in which you can build and/or maintain good relationships" (relationships), and "in which you can contribute to society" (pro-sociality).

We used three parcels as indicators of materialism to reduce measurement error bias (Coffman & MacCallum, 2005; Finkel, 1995). To do so, and following Duriez et al. (2007), we first calculated the grand mean for all intrinsic and extrinsic work goals. Then, we subtracted from each extrinsic and each intrinsic goals means, the individual's overall mean. Third, we reversed the intrinsic centred means. Finally, we build three parcels as indicators of materialism. For each parcel we used one extrinsic and one reversed intrinsic work goal. Higher materialism is reflected by positive scores. Reliabilities were acceptable at T1 ($\alpha = .71$), T2 ($\alpha = .73$), and T3 ($\alpha = .72$).

BNS and BNF at Work

We measured BNS and BNF using the 24-item Basic Psychological Needs Scale (Chen et al., 2015) adapted to the work context. Respondents were asked to answer how true were certain work-related affirmations to them on a seven-point Likert-scale ranging from 1 (not at all true) to 7 (very true). Example items of BNS are "at work, I feel a sense of choice and freedom in the things I undertake" (autonomy), "I feel that the people I care at work about also care about me" (relatedness) and "I feel confident that I can do things well on my job" (competence). Example items of BNF are "my daily activities at work feel like a chain of obligations" (autonomy), "I feel excluded from the group I want to belong to at work" (relatedness) and "when I am at work, I have serious doubts about whether I can do things well" (competence). We used four parcels as indicators for each construct (i.e. BNS, BNF) to reduce measurement error bias (Coffman & MacCallum, 2005; Finkel, 1995). Each parcel was composed of one autonomy, one competence and one relatedness item in order to equally represent each need. Reliabilities for BNS were good at T1 ($\alpha = .89$), T2 ($\alpha = .90$), and T3 ($\alpha = .91$). BNF also showed good reliabilities at T1 ($\alpha = .85$), T2 ($\alpha = .88$), and T3 ($\alpha = .87$).

Burnout

We used the 10-item Maslach Burnout Inventory-General Survey (Schaufeli et al., 1996) to measure burnout as it is the most validated and used scale in the literature (Maslach et al., 2008). This measure included the subscales of emotional exhaustion and depersonalisation. Examples of emotional exhaustion items are "I feel emotionally drained from my work" and "I feel used up at the end of a day." Examples of depersonalisation items are "I have lost enthusiasm in my job" and "I have become more cynical about the utility of my job." Respondents were asked to answer how each item relates to their current job in a seven-point Likert scale ranging from 0 (never) to 6 (always). We used three parcels as indicators of burnout. Each parcel had indicators of both emotional exhaustion and depersonalisation subscales. Reliabilities were good at T1 ($\alpha = .93$), T2 ($\alpha = .93$), and T3 ($\alpha = .93$).

Plan of analysis

We tested our hypotheses using Structural Equation Modelling (Cole & Maxwell, 2003; Selig & Preacher, 2009) with Mplus 8 software (Muthén & Muthén, 2017). As described above, we used latent variables to reduce measurement bias (Finkel, 1995), included auto-correlated error terms for the observed indicators of each latent variable across the three time points (Jöreskog, 1979) and allowed all the latent variables to covary freely within time. Fit indices were assessed following the recommendations of Hu and Bentler (1999) and Kline (2005) with root mean square error of approximation (RMSEA) < .06 (.08), standardised root mean squared residual (SRMR) < .08 (.10), and comparative fit index (CFI) > .95 (.90) as indicators of good (acceptable) fit.

In line with recommendations of Lüdtke and Robitzsch (2022) we analysed our data using two complementary strategies that are presented as Model 1 and Model 2. In Model 1, we tested a CLPM (after Finkel, 1995) predicting individual differences in burnout over time. In Model 2, we used a TSO (after Cole et al., 2005) focusing our predictions more narrowly on within-person change in burnout. A three-wave study was sufficient for

model identification (Cole et al., 2005). In both models, based on recent recommendations by Orth et al. (2022), we interpreted the effect sizes of cross-lagged parameters as follows: .03 (small), .07 (medium), and .12 (large). Effect sizes of cross-sectional parameters were interpreted according to the normative values established by Cohen (1992): .10 (small), .30 (medium), and .50 (large).

Results

Table 1 shows descriptive statistics and zero-order correlations for all our constructs.

Model 1: full cross-lagged panel model (CLPM)

In Model 1, we tested a full CLPM in which all variables at T_{i+1} were regressed on their own lagged measure and on all the other measures at T_i (Finkel, 1995). By doing so, we were able to control for stability paths, as well as assess the relationships among all variables through time. We first tested a model without constraints in which we allowed all variables (i.e. materialism, BNS, BNF, burnout) to covary freely within each time point. We included auto-correlated error terms for the observed indicators of each variable (Jöreskog, 1979). Model fit was good, $\chi^2(727) = 1677.107$, $p < 0.001$, CFI = .978, RMSEA = .027 (90% CI: .025, .028), SRMR = .042. Second, we constrained all the factor loadings of each construct to be equal across waves. Model fit was also good, $\chi^2(747) = 1699.121$, $p < 0.001$, CFI = .978, RMSEA = .026 (90% CI: .025, .028), SRMR = .043. The change in CFI was less than .01 ($\triangle = .000$) which allows us to assume measurement invariance across waves according to Cheung and Rensvold (2002). Third, following Cole et al. (2005), we constrained lagged paths to be time invariant (i.e. T1 → T2 = T2 → T3). Thus, each path was tested through a single parameter.[2] Fit was also good, $\chi^2(763) = 1721.244$, $p < 0.001$, CFI = .977, RMSEA = .026 (90% CI: .024, .028), SRMR = .043. This final model did not show significant loss of fit compared to the model constraining only factor loadings ($\triangle\chi^2(16) = 22.12$, $p = 0.139$). Details of the structural parameters of Model 1 are presented in Table 2.

Prospective Relationships. First, we found that materialism at T_i did not prospectively predict BNS at T_{i+1}, B = .005 [95% CI −.089; .099], $p = .915$, $\beta_{T1 \to T2} = .002$, $\beta_{T2 \to T3} = .003$, which in turn did not prospectively predict higher burnout at T_{i+2} B = −.053 [95% CI −.134; .028], $p = .198$, $\beta_{T1 \to T2} = −.034$, $\beta_{T2 \to T3} = −.034$. Thus, the mediation of BNS (H1a) was not supported. However, we found that materialism at T_i was a significant and positive prospective predictor of BNF at T_{i+1}, with a medium-to-large effect size: B = .197 [95% CI .096; .297], $p < 0.001$, $\beta_{T1 \to T2} = .091$, $\beta_{T2 \to T3} = .100$. BNF at T_{i+1}, in turn, was a significant and positive predictor of burnout at T_{i+2}, with a large effect size: B = .270 [95% CI .167; .373], $p < 0.001$, $\beta_{T1 \to T2} = .173$, $\beta_{T2 \to T3} = .181$. Importantly, the indirect effect from materialism to burnout through BNF was significant and positive (indirect effect = 0.053, $SD = 0.016$, [95% CI 0.022; 0.084], $p < .01$), which supported the BNF mediation hypothesis (H2a).

We found two additional significant paths among variables. First, BNF at T_i prospectively predicted lower BNS at T_{i+1}, with a large effect size: B = −.124 [95% CI −.189; −.058], $p < 0.001$, $\beta_{T1 \to T2} = −.120$, $\beta_{T2 \to T3} = −.128$. Second, burnout at Ti prospectively predicted higher BNF at T_{i+1}, also with a large effect size: B = .111 [95% CI .071; .152], p

Table 1. Descriptives and Zero-order Correlations between all Variables at T1, T2 and T3.

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	1.45	0.50	1												
2. Age	36.94	8.59	−.12*	1											
3. Materialism T1	3.02	0.70	−.06*	−.04	1										
4. Materilalism T2	3.02	0.71	−.08*	−.09**	.63**	1									
5. Materialism T3	2.99	0.70	−.03	−.07	.60**	.71**	1								
6. BNS T1	5.45	0.96	−.03	.10**	−.07**	−.10**	−.07	1							
7. BNS T2	5.43	0.96	−.02	.10**	−.06	−.13**	−.13**	.69**	1						
8. BNS T3	5.43	0.95	.00	.10*	−.03	−.11*	−.13**	.64**	.70**	1					
9. BNF T1	2.64	1.00	−.04	−.07**	.24**	.22**	.16**	−.56**	−.50**	−.44**	1				
10. BNF T2	2.69	1.05	−.01	−.12**	.20**	.25**	.25**	−.47**	−.58**	−.51**	−.66**	1			
11. BNF T3	2.68	1.03	.04	−.05	.21**	.28**	.3**	−.42**	−.49**	−.57**	−.60**	.73**	1		
12. Burnout T1	2.27	1.50	.05*	−.16**	.11**	.08*	.17**	−.52**	−.44**	−.42**	.63**	.55**	.46**	1	
13. Burnout T2	2.30	1.53	.10**	−.22**	.13**	.15**	.20**	−.45**	−.57**	−.44**	.54**	.68**	.57**	.71**	1
14. Burnout T3	2.30	1.49	.12**	−.16**	.09*	.13**	.22**	−.43**	−.50**	−.58**	.50**	.58**	.68**	.60**	.69**

Note. T1: $N = 1841$; T2: $N = 979$; T3: $N = 700$. BNS = Basic Need Satisfaction, BNF = Basic Need Frustration. T1: Time 1; T2: Time 2; T3: Time 3. * $p < .05$, ** $p < .01$

Table 2. Unstandardised [and Standardised] Estimates of Structural Parameters from the Full Cross-lagged Panel Model.

Parameter	Estimate	p	(95%CI)	Estimate	p	(95%CI)
Prospective relationships						
	Time 1 -> Time 2			Time 2 -> Time 3		
Hypothesised predictive paths						
Materialism -> BNS	.005 [.002]	.915	(−.089, .099)	.005 [.003]	.915	(−.089, .099)
Materialism -> BNF	.197 [.091]	<.001	(.096, .297)	.197 [.100]	<.001	(.096, .297)
BNS -> Burnout	−.053 [−.034]	.198	(−.134, .028)	−.053 [−034]	.198	(−.134, .028)
BNF -> Burnout	.270 [.173]	<.001	(.167, .373)	.270 [.181]	<.001	(.167, .373)
Other significant predictive paths						
BNF -> BNS	−.124 [−.120]	<.001	(−.189, −058)	−.124 [−.128]	<.001	(−.189, −.058)
Burnout -> BNF	.111 [.160]	<.001	(.071, .152)	.111 [.162]	<.001	(.071, .152)
Other non-significant predictive paths						
Burnout -> BNS	−.014 [−.021]	.462	(−.052, .024)	−.014 [−.021]	.462	(−.052, .024)
Materialism -> Burnout	.117 [.037]	.118	(−.030, .264)	.117 [.040]	.118	(−.030, .264)
BNS -> BNF	−.043 [−.040]	.123	(−.097, .011)	−.043 [−.041]	.123	(−.097, .011)
BNS -> Materialism	−.004 [−.008]	.778	(−.033, .025)	−.004 [−.008]	.778	(−.033, .025)
BNF -> Materialism	−.006 [−.012]	.741	(−.045, .032)	−.006 [−.013]	.741	(−.045, .032)
Burnout -> Materialism	.020 [.057]	.068	(−.002, .042)	.020 [.059]	.068	(−.002, .042)
Stability paths						
Materialism -> Materialism	.848 [.769]	<.001	(.791, .906)	.848 [.871]	<.001	(.791, .906)
BNS -> BNS	.656 [.645]	<.001	(.604, .708)	.656 [.653]	<.001	(.604, .708)
BNF -> BNF	.600 [.561]	<.001	(.530, .671)	.600 [.600]	<.001	(.530, .671)
Burnout -> Burnout	.595 [.587]	<.001	(.536, .655)	.595 [.583]	<.001	(.536, .655)
Standardised contemporaneous relationships						
	Time 1 < -> Time 1 (*Standardised* correlations)			Time 2 (Time 3) < -> Time 2 (Time 3) (*Standardised* residual covariances)		
Materialism with						
BNS	−.103	<.001	(−.160, −.046)	−.177 (−.048)	<.001 (.508)	(−.274, −.080) (−.189, .093)
BNF	.302	<.001	(.247, .357)	.238 (.105)	<.001 (.170)	(.139, .338) (−.045, .254)
Burnout	.130	<.001	(.073, .187)	.107 (.223)	<.05 (<.01)	(.005, .208) (.078, .367)
Burnout with						
BNS	−.540	<.001	(−.575, −.505)	−.463 (−.469)	<.001 (<.001)	(−.525, −.401) (−.545, −.393)
BNF	.679	<.001	(.651, .708)	.543 (.541)	<.001 (<.001)	(.483, .602) (.466, .616)
BNS with						
BNF	−.592	<.001	(−.625, −.559)	−.438 (−.441)	<.001 (<.001)	(−.503, −.374) (−.522, −.361)

Note. BNS = basic need satisfaction; BNF = basic need frustration; standardised paths in square brackets for prospective associations. Only standardised contemporaneous relationships are reported.

< 0.001, $\beta_{T1 \to T2}$ = .160, $\beta_{T2 \to T3}$ = .162, thus indicating a reciprocal relationship between burnout and BNF. No other significant path was found.

Contemporaneous Relationships. At T1, materialism was significantly and negatively correlated with BNS ($r = -.103$ [95%CI: $-.160$, $-.046$]. $p < .001$), and significantly and positively correlated with BNF ($r = .302$ [95%CI: .247, .357]. $p < .001$) representing a small and medium effect size respectively (Cohen, 1992). Burnout was significantly correlated with both BNS ($r = -.540$ [95%CI: $-.575$, $-.505$]. $p < .001$) and BNF ($r = .679$ [95%CI: .651, .708]. $p < .001$) at T1, representing a large effect size in both cases (Cohen, 1992). Materialism and burnout were significantly and positively correlated at T1 ($r = .130$ [95%CI: .073, .187]. $p < .001$), representing a small effect size (Cohen, 1992). All these variables also showed substantial residual covariances at T2 and T3 (see Table 2).

Model 2: full expanded multivariate trait-state-occasion (TSO) model

To test our hypotheses at the within-person level, we used an expanded multivariate latent TSO model (Cole et al., 2005; LaGrange et al., 2011; LaGrange & Cole, 2008).[3] The TSO model allows us to test within-person processes that cannot be separated from stable between-person differences within the CLPM. TSO separates the variance of a construct, measured as a succession of *state* variables, into *trait* or stable (between-person) and *occasion* or changing (within-person) components (LaGrange & Cole, 2008). To do so, we modelled state variables for each construct at each time-point as latent variables. Then, variance was partitioned by separating state variables into trait and occasion variables which load on all the three state variables of each construct. We fixed the loadings of both trait and occasion variables on the state variable to be 1. Residual variance of the state variables was fixed to zero, so that all variance in each state variable was partitioned into its trait and occasion components.

To test our hypotheses, we regressed each occasion variable at T_{i+1} on all occasion variables at T_i. As in the CLPM analysis, we first tested a model by constraining all the factor loadings of each construct to be equal across waves. The model fit was good, $X^2(737) = 1615.77$, $p < 0.001$, CFI = .979, RMSEA = .025 (90% CI: .024, .027), SRMR = .037. Then, we constrained autoregressive and cross-lagged paths to be invariant over time. Model fit was also good $X^2(753) = 1637.341$, $p < 0.001$, CFI = .979, RMSEA = .025 (90% CI: .024, .027), SRMR = .038. This final model did not show a significant loss of fit in comparison to the previous model ($\triangle X^2(16) = 21.57$, $p = 0.158$). Standardised estimates of structural parameters from the TSO model are presented in Table 3. All indicators showed strong ($.589 \leq \lambda \leq .962$) and significant ($p < .001$) standardised loadings on their target state. Similarly, state variables loaded substantially on their target trait ($.676 \leq \lambda \leq .808$) and target occasion ($.589 \leq \lambda \leq .737$) variables.

Prospective Relationships. First, we found that materialism at T_i was a significant negative predictor of occasion BNS at T_{i+1}, with a large effect size: B = $-.352$ [95% CI $-.693$; $-.011$], $p < .05$, $\beta_{T1 \to T2} = -.188$ $\beta_{T2 \to T3} = -.225$. However, occasion BNS at T_{i+1} did not predict occasion burnout at T_{i+2}, B = .060 [95% CI $-.181$; .300], $p = .627$, $\beta_{T1 \to T2} = .033$, $\beta_{T2 \to T3} = .033$. Thus, H1b was not supported. Second, we found that occasion materialism at T_i was a significant positive predictor of occasion BNF at T_{i+1}, with a large effect size: B = .558 [95% CI .217; .898], $p < 0.01$, $\beta_{T1 \to T2} = .234$, $\beta_{T2 \to T3}$

Table 3. Unstandardised [and Standardised] Estimates of Structural Parameters from the Expanded Multivariate Trait-state-occasion (TSO) model.

Parameter	Estimate	p	(95%CI)	Estimate	p	(95%CI)
Prospective relationships						
	Occasion 1 -> Occasion 2			Occasion 2 -> Occasion 3		
Hypothesised predictive paths						
Materialism -> BNS	−.352 [−.188]	<.05	(−.693, −.011)	−.352 [−.225]	<.05	(−.693, −.011)
Materialism -> BNF	.558 [.234]	<.01	(.217, .898)	.558 [.294]	<.01	(.217, .898)
BNS -> Burnout	.060 [.033]	.627	(−.181, .300)	.060 [.033]	.627	(−.181, .300)
BNF -> Burnout	.243 [.151]	<.05	(.012, .474)	.243 [.171]	<.05	(.012, .474)
Other significant predictive paths						
Burnout -> BNF	.154 [.199]	<.01	(.054, .253)	.154 [.212]	<.01	(.054, .253)
Other non-significant predictive paths						
BNF -> BNS	−.138 [−.149]	.091	(−.298, .022)	−.138 [−.169]	.091	(−.298, .022)
Burnout -> BNS	−.032 [−.053]	.513	(−.130, .065)	−.032 [−.054]	.513	(−.130, .065)
Materialism -> Burnout	.460 [.141]	.064	(−.027, .947)	.460 [.169]	.064	(−.027, .947)
BNS -> BNF	.034 [.026]	.687	(−.133, .202)	.034 [.027]	.687	(−.133, .202)
BNS -> Materialism	−.035 [−.051]	.454	(−.125, .056)	−.035 [−.056]	.454	(−.125, .056)
BNF -> Materialism	.054 [.088]	.233	(−.035, .142)	.054 [.112]	.233	(−.035, .142)
Burnout -> Materialism	.024 [.060]	.361	(−.028, .076)	.024 [.069]	.361	(−.028, .076)
Stability paths						
Materialism -> Materialism	.583 [.467]	<.001	(.355, .810)	.583 [.631]	<.001	(.355, .810)
BNS -> BNS	.052 [.051]	.612	(−.150, .255)	.052 [.050]	.612	(−.150, .255)
BNF -> BNF	.276 [.235]	<.01	(.081, .470)	.276 [.278]	<.01	(.081, .470)
Burnout -> Burnout	.308 [.291]	<.001	(.138, .478)	.308 [.296]	<.001	(.138, .478)

Parameter	Estimate	p	(95%CI)	Estimate	p	(95%CI)	Estimate	p	(95%CI)	Estimate	p	(95%CI)
Standardised Contemporaneous relationships												
	Trait level			Occasion 1			Occasion 2			Occasion 3		
Materialism with												
BNS	−.021	.827	(−.212, .169)	−.235	.054	(−.475, .004)	−.286	<.01	(−.457, −.116)	−.103	.231	(−.272, .066)
BNF	.203	.136	(−.064, .471)	.432	<.01	(.172, .693)	.314	<.001	(.179, .450)	.176	<.05	(.010, .324)
Burnout	.130	.289	(−.110, .370)	.130	.422	(−.187, .446)	.165	<.05	(.031, .299)	.306	<.001	(.144, .468)
Burnout with												
BNS	−.646	<.001	(−.727, −.565)	−.375	<.001	(−.532, −.218)	−.493	<.001	(−.613, −.373)	−.491	<.001	(−.589, −.329)
BNF	.825	<.001	(.753, .898)	.481	<.001	(.310, .652)	.597	<.001	(.503, .690)	.580	<.001	(.487, .672)
BNS with												
BNF	−.675	<.001	(−.754, −.597)	−.462	<.001	(−.610, −.314)	−.476	<.001	(−.602, −.351)	−.462	<.001	(−.566, −.358)

Note. BNS = basic need satisfaction; BNF = basic need frustration; standardised paths in square brackets for prospective associations. Only standardised contemporaneous relationships are reported.

= .294. BNF at T_{i+1}, in turn, was a prospective predictor of occasion burnout at T_{i+2}, with a large effect size: B = .243 [95% CI .012; .474], $p < .05$, $\beta_{T1 \rightarrow T2} = .151$, $\beta_{T2 \rightarrow T3} = .171$. Additionally, the indirect effect from materialism to burnout through BNF was significant and positive (indirect effect = .136, $SD = .069$, [95% CI .001; .271], $p < .05$). Thus, BNF mediated the relationship between materialism and burnout, supporting H2b. Finally, similar to what we found in our CLPM analysis, occasion burnout at T_i also prospectively predicted occasion BNF at T_{i+1}, with a large effect size: B = .154 [95% CI .054; 0.253], $p < .01$, $\beta_{T1 \rightarrow T2} = .199$, $\beta_{T2 \rightarrow T3} = .212$.

Contemporaneous Relationships. Trait materialism was not significantly correlated with trait BNS ($r = -.021$ [95%CI: $-.212$, .169]. $p = .827$), trait BNF ($r = .203$ [95%CI: $-.064$, .471]. $p = .136$) or trait burnout ($r = .130$ [95%CI: $-.110$, .370]. $p = .289$). However, occasion materialism showed a medium positive correlation with occasion BNF at T1 ($r = .432$ [95%CI: .172, .693]. $p < .01$), T2 ($r = .314$ [95%CI: .179, .450]. $p < .001$) and T3 ($r = .176$ [95%CI: .010, .324]. $p < .05$). Similarly, occasion materialism showed a medium/small correlation with occasion burnout at T2 ($r = .165$ [95%CI: .031, .299]. $p < .05$) and T3 ($r = .306$ [95%CI: .144, .468]. $p < .001$). Trait burnout was significantly and strongly correlated with trait BNS ($r = -.646$ [95%CI: $-.727$, $-.565$]. $p < .001$) and trait BNF ($r = .825$ [95%CI: .753, .898]. $p < .001$). Similarly, occasion burnout was significantly correlated with occasion BNS and BNF at T1, T2 and T3 (see Table 3).

Discussion

The present research aimed to clarify the prospective relationship between materialism and burnout in the workplace. Drawing on SDT, we hypothesised that materialism would lead to higher levels of burnout, and that this relationship would be mediated by the lower satisfaction and higher frustration of the basic psychological needs for autonomy, relatedness and competence. Across both individual-level (CLPM) and within-person (TSO) analyses of our three-wave longitudinal study, results consistently showed that materialism prospectively predicts higher burnout, and that this association is mediated by higher BNF. By using both CLPM and TSO we provide robust evidence to support our results, as both types of analyses are important for understanding the materialism-burnout link. Our CLPM results show that individuals with initially higher levels of materialism were likely to show higher subsequent levels of BNF and, in turn, burnout than would otherwise be expected from their existing levels of these outcomes. This may be important for identifying those individuals at the greatest risk of subsequent burnout. Our TSO results show that individuals with initially higher than their usual levels of materialism were likely to show higher than their usual subsequent levels of BNF and, in turn, burnout. This may be especially important for understanding the causal mechanisms underlying burnout.

Notably, our results don't support that striving for materialistic goals offers few opportunities to have one's basic needs satisfied (BNS), that is, we could not establish that materialistic striving would lead to low levels of volition, connection or feelings of efficacy. Our result did show that the negative implications of pursuing materialism go beyond that, and contribute to the active frustration of employees basic needs (BNF): When striving for status, financial success or power at work, employees thus feel

pushed or pulled around like a pawn (frustration of autonomy), lonely and rejected (frustration of relatedness) and disappointed or insecure about their competences (frustration of competence), and therefore burn out.

Furthermore, we found a reciprocal relationship between BNF and burnout using both types of analyses, indicating there may be a downward spiral of in which feelings of need frustration, as outlined above, cause employees to feel exhausted and cynical about work, which then in turns leads to more situation in which they feel frustrated in their basic needs. Effect sizes were mostly large, compared to those that are typically found in cross-lagged analyses (Orth et al., 2022). However, we did not find support for the mediation of BNS nor the backward or bi-directional link between materialism and burnout. These results yield important theoretical implications for SDT and burnout research, as well as practical implications.

Theoretical implications

Theoretically, our results add to the literature on SDT in two important ways. First, they extend the application of SDT to work contexts by testing more thoroughly the impact of materialism on workers' well-being (i.e. burnout), as well as the psychological mechanisms behind this association (i.e. BNF). Second, our study highlights the importance of studying BNF to address the impact of materialism on individuals' well-being/ill-being. According to Vansteenkiste and Ryan (2013), BNF and BNS relate differently to well-being and ill-being outcomes as they are not two ends of the same continuum. Our results support these claims showing that BNF, rather than BNS, is able to explain work-related ill-being and the dark side of work (Olafsen et al., 2017).

Our results add to burnout literature by showing that the personal pursuit of materialism is an important antecedent of this negative psychological syndrome. To date, literature on the antecedents of burnout has mainly focused on situational causes by studying how job demands and resources impact the levels of burnout of employees (Alarcon, 2011). Although researchers have also studied the role of individual variables influencing employees' burnout by addressing workers' personality and socioeconomic status (Bakker & Costa, 2014), we show that there might be other less studied and more easily modifiable individual factors that can further explain the development of burnout (i.e. materialistic goals). The fact that these values have an impact on burnout indicates that not only the match between individual and organisational values is important (Maslach et al., 2001), but also that some values may be detrimental in themselves.

Our findings revealed an additional detrimental consequence of experiencing burnout by showing that not only does BNF enhance burnout, but also burnout increases the levels of BNF among employees. This is concerning as BNF has been associated with detrimental outcomes for workers' work-related well-being such as decreased engagement and work satisfaction, as well as increased turnover intention and job insecurity (W. Unanue et al., 2017), as well as general ill-being such as increased depression, anxiety and stress and decreased life satisfaction (Rouse et al., 2020). According to SDT, increased levels of BNF lead to detrimental consequences for individual's ill-being, such as burnout. However, increased burnout entails having high levels of emotional exhaustion and detachment from one's work. Thus, increased levels of this syndrome also lead to higher levels of frustration of their basic psychological needs at work,

which in turn will lead to higher burnout. Consequently, this bi-directional relationship between burnout and BNF potentially generates a dangerous vicious cycle for employees' well-being, which seemingly can be initiated by materialistic work goals and aspirations.

Practical implications

Confirming that materialism is an antecedent of burnout, and finding a reciprocal relationship between burnout and BNF, not only highlights the need to develop ways to reduce materialism and its negative consequences in order to protect workers' mental health, but also helps to do so. Unlike personality and socioeconomic status which are highly stable, research indicates that materialism can be reduced in at least three different ways. First, materialism can be diminished through the reduction of materialistic cues (i.e. exposing individuals to materialistic messages) that can produce an increment in the pursuit of these values (Moldes & Ku, 2020; Twenge & Kasser, 2013). For example, social norms, pay systems, and performance ratings may foster the pursuit of materialism at work (Kasser et al., 2006). Diminishing the exposure to these cues at work may help to improve workers' well-being.

Second, materialism is defined as the relative importance that individuals give to extrinsic (e.g. wealth) versus intrinsic (e.g. self-development) values (Kasser & Ryan, 1996). Thus, promoting the pursuit of intrinsic rather than extrinsic values (e.g. self-development) could also help to rebalance work priorities away from materialism-related values, and consequently, reduce levels of burnout.

Third, recent research has shown that gratitude might also help to reduce the negative effects of materialism as several studies have found a negative relationship between two variables (e.g. Chaplin et al., 2019; Lambert et al., 2009; Polak & McCullough, 2006). Thus, fostering gratitude in organisations could potentially help to reduce burnout by reducing materialism. In line with this, recent studies have found that gratitude interventions improve employee well-being and reduce burnout (Chan, 2011; Kersten et al., 2022; Lanham et al., 2012).

Furthermore, our results suggest that creating an organisational context that helps to avoid the frustrating the basic psychological needs may also help to diminish the concerning levels of burnout among workers today. Thus, avoiding situations that frustrate the needs for autonomy (e.g. excessive surveillance or micro-management), competence (e.g. focusing excessively on employees' mistakes) and relatedness (e.g. excluding certain employees, bullying, restricting time or opportunities for social contact) at work could also help to diminish burnout.

Ethical implications

Our results also have important ethical implications. Materialism is a salient value in organisations, as many companies encourage the pursuit of materialism by focusing on maximising productivity, efficiency and profitability (Dyck & Schroeder, 2005). Concerningly, our results show that materialism has detrimental consequences for employees' well-being by prospectively predicting higher levels of BNF and burnout, which seem to form a vicious cycle undermining employees' well-being. Thus, organisations

and employees should be cautious of promoting these values, as this would entail important ethical problems (Kasser et al., 2006).

Limitations

Although our study advances the understanding of the relationship between materialism and burnout, it has some limitations. First, all our variables were measured through self-report questionnaires, which could entail the presence of common method variance. To diminish this possibility, we follow several a priori precautions stated in the literature such as using construct valid measurement scales, ensuring anonymity and informing participants that there were no right or wrong answers (Podsakoff et al., 2003). To date, most research measures materialism and burnout through self-reported questionnaires as they are subjective psychological aspects. However, future research could find ways to measure these constructs through alternative methods such as peer reports and/or observation of behaviours.

Second, we sampled Chilean workers. Although it was a strength of our study to show the applicability of SDT predictions in a developing nation, our results may not be representative of other cultures. Further, our survey was directed to a database from alumni of a university in Santiago who are relatively more educated and have greater income than the general population in the city. Thus, a broader set of samples from different cultural and socioeconomical contexts should be used in future research to evaluate the generalizability of our findings. Future studies should also include information regarding their type of jobs (e.g. self-employed workers/employees, blue-collar/white-collar workers) and other occupational information such as the industry sector they work in, size of their organisation and type of pay (e.g. fixed vs variable compensations).

Third, the time-lag chosen may have impacted the pattern of results obtained. Specifically, our study used a 6-month period timeframe, with 3-month intervals between each wave. To date, no "rule of thumb" exists that establishes a specific timeframe between two consecutive waves in longitudinal designs, as effects between variables might happen over different timescales depending on the processes involved (Ford et al., 2014; Taris & Kompier, 2014). Previous time frames in longitudinal studies on similar areas vary significantly between 1-month (Boehm et al., 2011), 2-months (Sheldon et al., 2010), 3-months (Wood et al., 2008), 6-months (Lyubomirsky et al., 2011) and yearly (W. Unanue et al., 2016) intervals. For this particular study, we estimate 3-month intervals to fit our purposes, as the local workforce generally lapses on 6-months (semester) or yearly cycles. Future research could explore different time-lags, as well as potentially using a continuous time modelling approach (Voelkle et al., 2012), to provide a more detailed picture of the timescales over which materialistic values can lead to basic need frustration and in turn to burnout.

Fourth, although temporal precedence is a key requirement for establishing causality, it does not provide proof of causality (Granger, 1980; Maziarz, 2015). Future studies could complement this evidence through experimental designs to dismiss the possibility of third variables that might influence the observed relationships. For example, one of the main theories explaining the development of burnout is the job demands-resources model (Bakker & Demerouti, 2017) which was not included in the model. However, "third variable" explanations should not be a major concern in this case as the potential influence of

these variables are likely to be accounted in the stability paths of the CLPM and the trait component of the TSO. Furthermore, in the specific case of job demands, while materialism and increased organisational job demands can act together, this is not necessarily true. Workers in high intensity workplaces may engage in behaviours that may lead to enhance burnout, but these individuals may not necessarily be materialistic (i.e. pursuing image, fame, status or wealth). They could as well pursue self-development, good relationships at work or altruism (i.e. intrinsic goals). Likewise, materialistic individuals could work in organisational settings that do not require them to work long hours or be available 24/7 but do so because their goal is to have a lot of money or achieve a powerful position in the organisation. While previous work has examined the between and within person interaction effects of job resources and intrinsic values (Van den Broeck et al., 2011; Van den Broeck et al., 2015), future research could explore the effects of the combination of holding job demands and materialistic values.

Conclusion

Toxic workplaces are so harmful that they are causing individuals to literally die from overwork (Pfeffer, 2018). Understanding what leads to employees experiencing chronic exhaustion in organisations is fundamental in order to prevent its negative, and possibly fatal, consequences. Here, we found that materialism prospectively predicts burnout, mediated by frustration of the basic psychological needs for autonomy, competence, and relatedness. Moreover, we found that BNF and burnout prospectively predict each other, forming a vicious cycle for individuals' well-being. These results suggest that diminishing materialism, as well as other sources of BNF, could help to improve employees' well-being, and consequently, enhance organisations' productivity. However, reducing materialism is not an easy task, as this value is highly prevalent in contemporary work culture. Therefore, organisations should pay close attention to their current practices (i.e. pay systems, performance ratings, company objective) in order to prevent the promotion of these values, and to promote instead a context that supports the satisfaction and reduces the frustration of the basic psychological needs. Furthermore, workers should also be aware of the detrimental effects that the pursuing materialism can entail and try to pursue intrinsic values (such as self-development, relationships, and altruism) that help their proper functioning and well-being.

Disclosure

We do not have any potential conflict of interest.

Notes

1. The project collected several other measures, but they are not relevant for the present research (see Reyes et al., 2022; W. Unanue et al., 2019; J. Unanue et al., 2021). Importantly, none of the associations tested here have been published previously.
2. Note that these constraints are applied to the unstandardized paths. Since variances of our measures were not perfectly equal across the three time waves, the corresponding standardized paths for T1 → T2 and T2 → T3 are also expected to differ slightly.

3. This approach is virtually identical to the more recently described multiple indicator RI-CLPM (Mulder & Hamaker, 2021).

Disclosure statement

Funding

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