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Reducing Employee Burnout: The Mediating Role of Creativity

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Employee burnout represents both a significant financial cost for organizations, and a significant health detriment for society. Scholars estimate that burnout costs the U.S. economy over $125 billion dollars yearly and other researchers attribute over 120,000 worker deaths each year to workplace accidents or medical conditions associated with burnout. The present study explores the role that creativity plays in reducing employee burnout by identifying two highly relevant creativity constructs: creative adaptability and creative process engagement (CPE). A sample of 436 working adults were recruited to respond to two survey batteries separated by a lag of three weeks. The results of a series of parallel mediation models demonstrate that both CPE and creative adaptability partially mediate the relationship between challenge demands and two dimensions of burnout: exhaustion and cynicism. No association was observed between hindrance demands and creativity, and challenge demands failed to predict the reduced professional efficacy dimension of burnout. Additionally, CPE emerged as the stronger antecedent of both exhaustion and cynicism scores. While observed effect sizes were small, the standardized path coefficients between CPE and burnout dimensions were approximately twice as strong as those observed between creative adaptability and burnout. Implications for theory and practice are discussed.

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Introduction

American organizations needed to adapt during the Covid-19 pandemic. Following a series of federal and state-level stay-at-home mandates, many U.S. organizations implemented remote working technologies and policies that allowed employees to accomplish their workplace goals, and necessary collaboration, without undue risk to their personal health. While employees still reported increased stress and anxiety working during this time (Al Maqbali et al., 2021), the nationwide focus on an existential health threat may have ironically spurred organizations to divert greater attention towards understanding employee health, including the implementation of efforts to limit the deleterious effects of employee burnout (Schall & Chen, 2021).

In contrast, the phenomenon of burnout has been a common research topic across academic domains for at least 50 years. Physicians and psychiatrists investigating burnout found that burnout is associated with a myriad of negative health outcomes, including: cardiovascular disease (Appels et al., 1993), high blood pressure (Appels & Mulder, 1988), increased risk of stroke (Schuitemaker et al., 2004), chronic depression (Toker & Biron, 2012), generalized anxiety disorder (Melamed et al., 1999), sleeplessness or insomnia (Grossi et al., 2003), and reduced immune system response (Nakamura et al., 1999). Such implications for poor health outcomes represent a significant cost and burden on the American healthcare system. Economists investigating these implications estimate employee burnout costs the U.S. economy between $125 and $190 billion dollars every year in healthcare costs alone (Goh et al., 2015). The sum represents up to 10% of total annual U.S. healthcare costs and most of this expense has been historically shouldered by company-sponsored health insurance policies. Considering the impact of burnout on

health, Goh and colleagues attribute over 120,000 deaths per year to unhealthy management practices that U.S. companies promote among workers.

Certainly, the health and livelihood of workers remains a principal concern. There is, additionally, a significant case to be made regarding the economics of burnout. That is, burnout represents a significant operating expense for organizations, namely with regards to turnover, absenteeism, and low job performance (Hamidi et al, 2018). The cost of new employee search, recruitment, and onboarding/training represents a large investment for organizations compared to the cost of minimizing turnover and retaining high-performing individuals. Indeed, one study of healthcare organizations reported that the minimum costs associated with turnover represents a loss of at least five percent of an organization's total annual operating budget (Waldman et al., 2010). Likewise, absenteeism impacts both costs and productivity as missing employees increase the burden on other workers and limits the amount of services/products the organization can produce/provide. One recent hospital study revealed that non-paid-time-off absenteeism over eight months alone cost the hospital system $1.3 million, or an average of $700 per patient, in lost productivity (Faramarzi et al., 2021). Naturally, organizations maintain a vested interest in ensuring a healthy workforce that minimizes such unnecessary costs.

Simultaneously, organizations are constantly searching for competitive advantages that allow them to expand their market share and grow investor capital. To this end, organizations rely on creative individuals and groups to develop novel and high-quality products/services to remain competitive (Shalley & Gilson, 2004). Creative people, and the ideas they conceive, provide organizations access into new or emerging markets, thus facilitating long-term success in modern dynamic economic environments

(Anderson et al., 2014). Moreover, there is emerging evidence that engaging in creative endeavors may enhance overall well-being (Tang et al., 2021) and aid in coping following extreme adversity or disaster (Acar et al., 2021). However, the association between creativity and outcomes for burnout has received limited attention in the extant literature, and no previous research has sought to tease apart the competing influence of distinct creativity constructs. The present effort aims to address this deficit. To that end, an understanding of both burnout and the workplace characteristics that generate the burnout experience is necessary.

Development of the Burnout Construct

The concept of burnout first appeared in academic literature in 1974 when Herbert Freudenberger investigated stress responses among volunteer healthcare providers in a drug addiction treatment clinic via semi-structured interviews and field observations. Using the term "staff burn-out", Freudenberger described a phenomenon where workers reported both physical and emotional depletion as well as reduced productivity (Freudenberger, 1977). Freudenberger observed that staff tended to report these feelings approximately one year after they began their work. His initial study documented several physical comorbidities of staff burn-out including frequent headaches, sleeplessness, and gastrointestinal disturbances, as well as behavioral indicators such as quickness to anger, paranoia (i.e., deep mistrust of coworkers and leaders), increased risk-taking, and a sense of extreme overconfidence. Commenting on the sense of overconfidence he observed, Freudenberger (1974) proposed staff burn-out was associated with workers believing that they had "been through it all in the clinic, [they] can take chances that others cannot" (p.161). Freudenberger reported that burned-out staff were likely to resort to drug abuse

themselves, and deploy substances such as barbiturates, marijuana, or tranquilizers during off-hours to relieve stress and experience relaxation. Burned out staff reportedly became highly inflexible in their thinking, characterized by an unwillingness to consider constructive feedback or challenges to their decisions, as well as cynical verbal reactions to novel ideas or policies (Freudenberger, 1989). According to Freudenberger burned-out staff members perceived progress or change as a threat: "change simply means another adaptation and [they] are just too tired to go through more changes" (1974, p. 162).

Concurrently, but independently, Maslach (1976) investigated emotional distress and coping strategies via work observations and open-ended interviews with 200 professionals including psychiatric nurses, prison workers, family lawyers, and social service workers. Maslach proposed that workers in care-providing positions strive to remain objective during their duties without losing their concern for the individuals their work benefits. Moreover, the conscious psychological effort of remaining objective in the face of emotionally laden situations reflects a source of stress that must be managed (later referred to as emotional labor; Rafaeli & Sutton, 1987). In her scholarship, Maslach (1976) positioned "burnout" (p. 16) as the result of continuous or high levels of stress resulting from excessive labor, be it physical, mental, or emotional. Notably, Maslach and Jackson's (1984) definition of burnout limited the experience to a phenomenon that "…occurs among individuals who work with people in some capacity" (p. 134). Following initial interview efforts, several studies (Maslach & Jackson 1979, 1981, 1984; Maslach & Pines, 1977; Pines & Maslach, 1978) expanded the scope of burnout research to include open-ended interviews with psychologists, police officers, child-care workers, child poverty lawyers, end of life care nurses, and emergency healthcare providers.

Summarizing extant findings, Maslach and Jackson (1981) described several emergent themes common across samples. Interviewees reported intense physical exhaustion or emotional fatigue as well as a litany of other symptoms such as insomnia, the development of stomach ulcers, deep muscle pain, and generalized muscle soreness (Maslach, 1976, 1978). In several studies participants reported recreational drug use, such as alcohol or marijuana, to cope with the intense exhaustion arising from their work (Maslach, 1974, 1976). Participants also described the loss of concern or emotional feelings towards their patients or clients (Maslach & Pines, 1977, 1979). That is, burned out workers reported feelings of apathy arising from their work situations and began treating care-receivers in cynical or dehumanizing ways, such as believing clients somehow deserved or desired the problems they were experiencing (Maslach, 1978). Such attitudes were linked with the tendency of caregivers to deploy distancing strategies during work observations, such as care providers referring to patients as their disease (*e.g.*, "He's a coronary"; Maslach, 1976, p. 19) and adopting cynical attitudes that reduced their own emotional involvement with patients or clients. Burned out workers also reported the development of negative self-evaluations concerning their own competence or accomplishments on the job (Maslach, 1982; Pines & Maslach 1980). In interviews, workers attributed this sense of incompetence to feelings of helplessness when addressing the root cause of patients'/clients' problems, and they expressed the sentiment that their work was not 'making a difference' or positively impacting the lives of care receivers.

Following such qualitative research efforts, Maslach and Jackson (1981) published the first validation study for an instrument measuring workers' experienced

burnout, referred to as the Maslach Burnout Inventory (MBI). The first version of the MBI consisted of 25 items drawing from questionnaires developed for previous qualitative interviews. Borrowing from Lazarus and Cohen (1977), the MBI instructed respondents to self-report both the intensity ("Very mild – 1", to "Very strong – 6") and the frequency ("A few times a year – 1", to "Everyday – 7") of several difference experiences or attitudes. The 1981 MBI overall scores were calculated via the simple means for intensity and frequency; thus, two distinct scores were provided for each emergent factor. A factor analysis (n = 1,025) using principal factoring and an orthogonal varimax rotation supported a three-factor structure of burnout. The first factor, titled "emotional exhaustion", consisted of nine items and described feelings of being overextended at work, referencing both physical fatigue and emotional stress. The second factor was titled "personal accomplishment", which described feelings of competence, experiences of success, feelings of energy, and satisfaction resulting from the provision of care or service. The personal accomplishment factor contained eight items and was reverse coded during scoring such that higher mean scores corresponded to lower degrees of burnout; that is, a reduction in personal accomplishment was associated with greater self-reports of burnout. The personal accomplishment subscale was conceptualized by Maslach and Jackson to be independent in regard to the other three subscales, as the component items of personal accomplishment did not cross-load onto other factors but remained orthogonal in factor correlations. The third factor, depersonalization, contained five items and captured the callous posture or impersonal attitudes that high-burnout caregivers adopted towards others. Notably, this factor also included feelings of paranoia, or suspicions that patients/clients secretly blamed the care/service-giver for their

problems. Maslach and Jackson's (1981) initial confirmatory factor analysis did include a fourth factor referred to as "involvement" which captured interpersonal connections at work; however, this factor was ultimately discarded during the development of the MBI due to poor reliability indicators and strong intercorrelations with the emotional exhaustion subscale items.

Burnout Development: Competing Conceptualizations and Measurement

Maslach and Jackson's (1981) MBI validation study led to a debate regarding the nature of the burnout construct, and the validity of the MBI. One key issue was that the three dimensions of the MBI were not theoretically deduced but rather empirically derived from the factor analysis. Thus, it was not obvious if the proposed dimensions represented distinct a priori categories confirmed via statistical analysis, or if they emerged post-hoc from the effects of statistical artifacts such as common method bias. Indeed, psychometricians have demonstrated that post-hoc test-construction generates less-optimal psychometric properties than deduction-based approaches (Burisch, 1984). Progressing this critique, Pines and colleagues (1981; 1988) published a competing framework of burnout and a corresponding instrument referred to as the Burnout Measurement (BM). Pines et al. positioned burnout as a state of physical and emotional exhaustion resulting from involvement in any situation that is highly demanding. Pines and colleagues are purposefully ambiguous in their description of highly demanding situations, as they contend that physical or emotional demands are only two examples of many potential demands that may arise in various occupational, interpersonal, or social situations. Thus, Pines et al. diverged from the assumptions of the MBI in that burnout was not only relegated to the domain of people-focused work; rather, Pines and

colleagues contended that burnout may arise any profession or demanding experiences (*e.g.*, student life, marriage, etc.). The BM proposes a one-factor structure of burnout that mirrors the MBI's exhaustion dimension, implying the phenomenon of burnout is fully captured by exhaustion. However, Pines and colleagues differentiate between three distinct forms of exhaustion underlying experienced burnout, characterized as: demoralization, physical fatigue, and loss of motive (Enzmann & Kleiber, 1989). Unfortunately, confirmatory evidence supporting exhaustion's three-factor solution is difficult to replicate. Corcoran (1986) failed differentiate more than one dimension in a factorial validity study and Schaufeli and Van Dierendonck (1993) demonstrated a two-factor solution, rather than the hypothesized three, resulted in the best model fit indices during a confirmatory factor analysis.

Notably, Schaufeli and Van Dierendonck's (1993) construct validity study directly compared the psychometric properties of both the BM and MBI. Administering both instruments to a sample of 667 nurses, the researchers confirmed the three-factor structure of the MBI but failed to support that of the BM. The results of Schaufeli and Van Dierendonck provided evidence that the MBI's framework of burnout fits empirical data better than that of the BM. Still, the scholars note that the nature of burnout cannot be ascertained exclusively via psychometric investigation, and the lack of a priori theory preceding the development of the MBI remains a significant limitation.

Despite their instrument's inconsistent psychometric properties, the theoretical critique made by Pines and colleagues (1981, 1988) regarding burnout arising in many different domains did have impact. Golembiewski and Munzenrider (1981) adopted this position in their proposed phase approach to burnout, which positioned burnout as a

progressive condition that began with depersonalization and concluded with emotional exhaustion. Golembiewski and Munzenrider (1988) agreed with the three-factor model of burnout as described by Maslach and Jackson (1981) but modified the items to refer to "co-workers" rather than "recipients" to capture work domains outside of people service. Golembiewski and Munzenrider also demonstrated that the dual dimensions applied to the MBI, intensity and frequency, were not orthogonal during analyses of factor structures; in fact, participant responses to the two dimensions shared over 95% of the variance present between individual indicators, and the two aggregate scores did not differ in any statistically significant way across several samples. To address this limitation Golembiewski and colleagues proposed a response scale asking participants to self-report the degree to which various statement are 'like' (7) versus 'unlike' (1) themselves.

Acknowledging the series of critiques, Schaufeli et al. (1996) developed a theory of burnout which situated the experience as a series of reactions to job characteristics or features of the working environment regardless of occupational domain. The researchers argue that many occupational domains, not limited to people-service, require significant personal engagement in the execution of job responsibilities. Consistently high job demands on workers' attention, energy, or service without adequate resources or recovery to meet such demands generate the burnout experience. Accordingly, Schaufeli et al. presented the Maslach Burnout Inventory – General Survey (MBI-GS) to capture experienced burnout across job domains. The MBI-GS refers to three burnout factors: exhaustion, cynicism, and reduced professional efficacy. The exhaustion factor corresponds to that of the 1981 MBI but omits any direct reference to people as the cause

of burnout. That is, the MBI-GS ‘exhaustion’ refers to generic fatigue arising from demanding work conditions, such as long hours or few breaks resulting in depleted personal energy levels.

The ‘cynicism’ factor replaced the MBI’s ‘depersonalization’ and represents the most significant change between the two conceptualizations. Cynicism refers to general indifference or experienced emotional distance towards one’s work categorized by apathy towards outcomes, or the sense that the work is not significant/meaningful. Whereas ‘depersonalization’ references distance created between the care-provider and care-receiver, ‘cynicism’ references distance created between the worker and their labor. Leiter and Schaufeli (1996) describe the cynicism factor as the “active disengagement from work [that] goes beyond a neutral aloofness from doing one’s job to encompass a quality of cynical rejection.” (p. 231). That is, the cynicism factor goes above and beyond mere disengagement from work and refers to a dysfunctional coping mechanism whereby the worker adopts an indifferent attitude to remove/distance themselves from strenuous job demands.

Likewise, the ‘reduced professional efficacy’ factor refers to a dysfunctional reaction towards job demands such that workers’ self-perceptions of their own competence, and future performance, are negatively impacted. The ‘reduced professional efficacy’ factor differs from the MBI’s conceptualization of ‘personal accomplishment’ such that the former assesses the individual’s expected personal effectiveness at work, while the latter references experiences of success garnered from client interactions. In response to inconsistent psychometric properties (*e.g.*, Golembiewski et al., 1986), the MBI-GS replaces the MBI’s response scale with a single dimension seven-point

frequency rating ranging from 0 (“never”) to 5 (“daily”) to capture the frequency that participants experience various events.

Following its development, the validity of the MBI-GS has been assessed across multiple studies. Schutte et al. (2000) administered the MBI-GS to 9,055 individuals in three European countries (Finland, $N = 8,529$; Sweden $N = 267$; The Netherlands $N = 259$) and tested three competing models: a one-factor solution reflecting that proposed by Pines et al. (1981), a two-factor solution reflecting the results of Schaufeli and Van Dierendonck (1993), and the three-factor solution underlying the MBI-GS. Applying a maximum-likelihood structural equation model (SEM) in LISREL, the researchers demonstrated that the three-factor solution generated the most ideal goodness-of-fit indices ($x^2 = 4,361$, *d.f.* = 84, *NFI* = .95, *CFI* = .95), and each additional factor added to the model yielded significant decrements in x^2 ($p < .05$). The factor loadings for each of the three dimensions were high, ranging from .63 to .87. Further, Schutte and colleagues demonstrated that the factor structure did not differ based on self-reported occupational groups (*i.e.,* clerical, blue-collar, technical, and managerial professionals), indicating that the MBI-GS remains a valid measure of burnout across differing occupational domains.

Similar results were observed by Leiter and Schaufeli (1996), who administered the MBI-GS to 3,312 hospital workers working in different domains: clerical/maintenance, technologists, managers, therapists, and nurses. Using LISREL to conduct a maximum-likelihood structural equation model (SEM), the researchers confirmed the three-factor structure of MBI-GS ($x^2 = 367$; *d.f.* = 100; *GFI* = .90; *RNI* = .92; *RMR* = .099). The researcher also demonstrated that the three-factor solution fit the

data of each occupational group equally well when the sample was split based on job category/industry.

Bakker et al., (2002) also assessed the validity of the MBI-GS across eight different occupational groups from a sample of 2,919 Dutch employees, including managers, software engineers, technicians, human resource professionals, and care-providing service workers. A series of confirmatory factor analyses revealed that a three-factor solution as proposed by Schaufeli et al. (1996) accounted for 59% of observed variance and outperformed both a two-factor ($\Delta x^2(16) = 682$, $p = .001$) and a one-factor ($\Delta x^2(24) = 1{,}535$, $p = .001$) burnout solution. The researchers also demonstrated that the three-factor solution fit the data of each occupational group equally well. Bakker et al.'s study provided strong evidence that exhaustion, cynicism, and reduced professional efficacy represent three distinct dimensions of burnout and suggests that the MBI-GS can be accurately deployed in many diverse occupational contexts.

Drawing from the above, there is ample evidence supporting a three-factor model of burnout comprised of exhaustion, cynicism, and reduced personal efficacy. Moreover, valid and reliable measurement of the burnout experience is captured via the MBI-GS. Indeed, the three-factor conceptualization is currently the most widely accepted model of burnout, and the MBI-GS has been described as the "gold-standard" for burnout measurement in a variety of occupational settings (Schutte et al., 2000; Williamson et al., 2018). It is noteworthy, then, that Schaufeli et al. (1996) propose that stress arising from certain job characteristics represents the key antecedent in generating the burnout experience. Specifically, scholars have focused on the positive relationship between

burnout and job demands, as well as the negative relationship between burnout and job resources.

Burnout Antecedents: Job Stress, Job Resources, and Job Demands

The Job Demands/Resource (JD-R; Demerouti et al., 2001) model proposes that employee well-being arises from a balance between positive and negative characteristics of the work environment. When the work environment contains a disproportionate level of negative characteristics, employees experience low work engagement and poor work performance. Under Demerouti et al.'s original JD-R model, negative job characteristics refer to physical, social, or organizational aspects of the work environment that function as stressors for employees. Job demands create strain or stress at work and result in sustained physical, emotional, or mental effort on the part of the employee. Thus, job demands are seen as a "cost" (Demerouti et al., 2001, p. 501) such that workers must exert effort or mobilize resources (i.e., energy) to fulfil the requirements of the demand. The greater the job demand, the greater the effort required, and in turn the greater the cost and stress for the worker. Examples of job demands include long work shifts, intense manual labor, interpersonal conflict, and job insecurity. Conversely, the JD-R model posits positive job characteristics (i.e., job resources) are physical, social, or organizational aspects of the work environment that function as preservers for employee health. That is, job resources refer to health-sustaining aspects of work that promote the achievement of work goals, stimulate personal/professional development, or reduce the stress arising from job demands. When job resources are high, employees maintain the necessary assets to offset the cost and subsequent stress inflicted by job demands.

Examples of job resources may include scheduling flexibility, social support, mentorship/feedback, and job control.

Demerouti et al.'s (2001) original JD-R model proposed two primary mechanisms by which employees develop job-related burnout. In one process, strenuous and consistent job demands overwhelm the positive effects of job resources resulting in diminished resources and increased strain on employees. Thus, Demerouti et al. proposed job demands are positively correlated with MBI-GS exhaustion scores, contributing to increased experiences of work-related burnout among employees. In the second process, a lack of job resources prevents recovery from the strain inflicted by job demands. Without necessary job resources Demerouti et al. propose workers engage in distancing or withdrawal behaviors as a self-protective strategy that mitigates further energy depletion. Thus, job resources are expected to negatively correlate with both job strain and the cynicism dimension of the MBI-GS, contributing to reduced experiences of work-related burnout.

To investigate their proposals, Demerouti et al. (2001) recruited 374 German employees with 21 unique job titles in three occupational fields (human services, manufacturing, and transportation workers). The scholars collected self-reported scores on exhaustion, disengagement (cynicism), as well as perceived levels of job resources and job demands in participants' working environment. Specifically, Demerouti et al. requested self-report data on five job demands and six job resources theoretically derived from a list of working conditions. Job demands included: physical workload, time pressure, demanding contact with clients, unfavorable work schedules, and stressful work environments. The list of job resources included: performance feedback, rewards, job

control, decision-making, job security, and supervisor support. The items were coded such that higher self-reported scores referenced greater job demands or greater job resources, respectively. The scholars conducted a confirmatory factor analysis to determine the dimensionality of the JD-R measurement model. Results provided initial evidence for a two-factor structure of working conditions, referencing one job resource factor and one job demands factor. The model displayed acceptable fit indices ($x^2(137) = 340.71$, GFI = .91, RMR = .05, NFI = .60, CFI = .83, IFI = .84) and the two-factor model displayed significantly greater model fit than a one-factor solution ($\Delta x^2(374) = 12.03$, $p = .001$). The pattern of results suggests that a dichotomized framework of working conditions is an appropriate interpretation of observed data.

Regarding proposed relationships to burnout dimensions, Demerouti et al. (2001) constructed a structural equation model (SEM) consisting of the two latent exogenous factors that were confirmed. The burnout dimensions of exhaustion and cynicism were included in the model as endogenous variables. The SEM results demonstrated that the hypothesized model fit the data adequately ($x^2(374) = 61.59$, GFI = .98, RMR = .03, NFI = .94, CFI = .98, IFI = .98), and each job demands/resource indicator loaded onto their respective latent factor. Additionally, the beta coefficient between the job demand factor and the exhaustion dimension was strongly positive and significant ($\beta = .91$, $p = .01$), while the coefficient between the job resources factor and cynicism was negative and significant ($\beta = -.71$, $p = .01$), albeit with a slightly weaker magnitude. Overall, the JD-R model was found to explain 82% of observed variance in the exhaustion dimension, and 52% of observed variance in the cynicism dimension of burnout. In sum, Demerouti et al.

demonstrated robust supporting evidence for the hypothesized impacts of job demands and resources on two dimensions of burnout.

Additionally, Demerouti et al. (2001) replicated the hypothesized relationships between job demands/resources and burnout via a SEM for each occupational group separately. The researchers demonstrated the model fit each group comparably well, but differences in factor loadings of certain job demands did emerge. For example, in the human services and manufacturing groups the 'physical workload' items displayed the strongest factor loadings onto the job demand factor, while the 'stressful work environment' items loaded more strongly for the transportation group. Regarding resources, 'performance feedback' displayed the strongest loading onto the job resources factor for human services and transportation groups, while 'job control' was the strongest for the manufacturing group. The pattern of results suggests that the JD-R model remains valid across occupational domains. However, different job demands/resources likely become more or less impactful depending on the industry analyzed due to specific considerations and working environment characteristics therein.

Several other studies have refined and progressed the JD-R model. Bakker et al. (2005) proposed that the relationship between job demands and job resources may be more complex than previously expected. Demerouti et al. (2001) described two main mechanisms: high demands/low resources versus low demands/high resources. Drawing from the observation that factor loadings of demands/resources differ between occupational domains, Bakker et al. hypothesized that the presence of key job resources may ameliorate the impact of high job demands on job-related stress, thus reducing experienced burnout. To investigate, the researchers administered the MBI-GS to a

sample of 1,012 European employees of a professional education institution. The participants also self-reported their perceptions of four job demands (i.e., work overload, emotional demands, physical demands, work-home interference) and four job resources (i.e., autonomy, social support, leader support, performance feedback). Following the guidelines of Aiken and West (1991), Bakker et al. conducted a series of hierarchical regressions to determine if a job demands/resources interaction term explained unique variance in the three burnout dimensions (i.e., exhaustion, cynicism, reduced personal efficacy). Their analyses yielded two notable results.

First, Bakker et al. (2005) extended previous findings on the positive relationship between job demands and burnout scores by demonstrating that specific job demands significantly predict higher scores on all three (rather than only two) dimensions of burnout in a series of regression models; however, observed regression coefficients were smaller than those originally observed by Demerouti et al. (2001). All four job demands significantly predicted exhaustion scores (work overload: $\beta = .41$, $p = .001$; emotional demands: $\beta = .46$, $p = .01$, physical demands: $\beta = .25$, $p = .01$, work-home interference: $\beta = .52$, $p = .01$). All four job demands significantly predicted cynicism scores (work overload: $\beta = .10$, $p = .01$; emotional demands: $\beta = .31$, $p = .01$, physical demands: $\beta = .19$, $p = .01$, work-home interference: $\beta = .20$, $p = .01$), and three of the four job demands significantly predicted reduced professional efficacy scores (work overload: $\beta = .06$, *n.s.*; emotional demands: $\beta = .11$, $p = .01$, physical demands: $\beta = .09$, $p = .01$, work-home interference: $\beta = .11$, $p = .01$). Overall, these findings provide supporting evidence and enhanced specificity for the link between job demands and work-related burnout. Bakker

et al.'s findings also imply that job demands and resources impact all burnout dimensions, rather than only exhaustion and cynicism.

Second, Bakker et al. (2005) demonstrated that self-reported burnout scores are not only affected by the levels of job demands and job resources independently, but also that the interplay of job resources and job demands together impact burnout. That is, Bakker and colleagues demonstrated that a working environment rich in job resources may buffer against the negative impacts of job demands. Conducting 16 hierarchical regression analyses for each burnout dimension, the researchers found that job resources moderated the positive relationship between all four job demands and exhaustion scores; when job resources were greater, the job demand-exhaustion relationship becomes either weaker or non-significant. The finding was replicated when examining job demands and cynicism scores, but the researchers were unable to demonstrate a buffering effect between job resources and reduced professional efficacy. The pattern of results suggests job resources play an important role in attenuating the negative effects of job demands on exhaustion and cynicism. Moreover, Bakker et al. replicated a previous finding by Taris et al. (2003) who noted that participants reported the highest levels of fatigue (exhaustion) when high job demands coincided with low job resources. In sum, Bakker et al. progressed JD-R theory by shifting the focus away from the unique influence of job demands/resources, and towards an emphasis on their multiplicative impacts on burnout.

Despite Bakker et al.'s (2005) contributions, empirical research has disproportionately focused on the role of job resources over that of job demands or the interaction between the two (Kwon & Kim, 2020). Still, some scholars propose that different forms of job demands may have differential implications for employee burnout.

The notion of categorically distinct job demands is derived from Yerkes and Dodson's (1908) classic study that identified "good" stressors (i.e., stressors that result in improved performance) versus "bad" stressors (i.e., stressors that reduce performance); however, it should be noted that Yerkes and Dodson's proposed U-shaped relationship between stress and performance proves difficult to replicate when empirically tested (e.g., Lienert & Baumler, 1994; Teigen, 1994; Westman & Eden, 1996). Regardless, empirical research has demonstrated that certain forms of job demands are ironically associated with favorable workplace outcomes.

For example, Beehr et al. (2001) demonstrated that job demands reflecting a requirement to continuously concentrate on, or monitor, several workplace processes simultaneously were positively correlated with job satisfaction and uncorrelated with voluntary turnover in a sample of 115 manufacturing employees. Cavanaugh et al. (2000) also found that job demands representing a challenge to be overcome (e.g., high levels of responsibility) were unrelated to voluntary turnover, while job demands that hindered employees' ability to carry out duties (e.g*.,* interpersonal conflict) positively predicted voluntary turnover in a series of hierarchical regression models. Following, Podsakoff et al. (2007) conducted a meta-analytic regression using 183 independent samples to examine the relationship between challenge-demands or hindrance-demands and retention-related criteria, including: job strain, job satisfaction, organizational commitment, turnover intentions, actualized turnover, and disengagement. The researchers defined challenge-demands as workplace characteristics that are appraised as opportunities for employees to promote their career advancement, demonstrate value to leaders, or enhance their own expertise (e.g., requesting additional duties/training). In

contrast, hindrance-demands are those which constrain employees' ability to be successful at work or draw attention/concentration away from the job and towards unrelated matters (e.g., job insecurity). Challenge-demands are thought to elicit a positive, motivational response, while hindrance-demands result in emotional distress or disengagement.

Indeed, Podsakoff et al.'s (2007) meta-analysis demonstrated that hindrance-demands negatively predicted job satisfaction (β = -.66, p = .01, R^2 = .37) and organizational commitment (β = -.63, p = .01, R^2 = .34), as well as positively predicted turnover intentions (β = .53, p = .01, R^2 = .25), and actualized turnover (β = .25, p = .01, R^2 = .05). In contrast, challenge stressors positively predicted job satisfaction (β = .24, p = .01, R^2 = .37) and organizational commitment (β = .29, p = .01, R^2 = .34) while negatively predicting turnover intentions (β = -.10, p = .01, R^2 = .25), and actualized turnover (β = -.06, p = .01, R^2 = .05). Notably, both challenge- and hindrance-stressors positively predicted job stress (challenge: β = .21, p = .01; hindrance: β = .48, p = .01). The pattern of meta-analytics results suggest that job demands do not represent a monolith as suggested by early conceptualizations of the JDR model. Rather, job demands that encourage skill development or promote growth may spur greater motivation, facilitate job satisfaction, and reduce employee turnover. Regarding burnout, the pattern of results suggests that individual differences between employees' appraisal or perception of job elements may play a significant role in the development of burnout. However, both types of job demands had similar impacts on self-reported job stress. Considering Demerouti et al. (2001) proposed that job stress was a key mechanism by

which job demands result in burnout, the differential relationship between hindrance/challenge demands and burnout required more explicit analysis.

Fortunately, a meta-analysis by Crawford et al. (2010) sought to address this issue. Crawford and colleagues collected 64 samples from studies that analyzed engagement, burnout, and job demands to investigate whether hindrance/challenge demands were directly related to individual outcomes at work. Examining the estimated true correlation corrected for sampling error and unreliability, the researchers reported that challenge-demands were positively, weakly, and equally correlated to both engagement and burnout (burnout, engagement: $r = .16$, $p < .05$). In contrast, hindrance-demands were negatively and weakly correlated to engagement ($r = -.19$, $p < .05$), but positively and moderately correlated with burnout ($r = .30$, $p < .05$). The researchers conclude that both forms of job demands, challenge and hindrance, are expected to increase employee experienced burnout, but hindrance demands may be comparably more deleterious to employee outcomes. This finding is consistent with Demerouti et al.'s (2001) JDR model and reinforces the notion that greater job demands, regardless of appraisal, generate an increased energy cost for employees which culminates in greater job stress and greater burnout. However, the researchers note that their sample of 64 studies included empirical investigations that utilized the MBI as well as several other burnout measurement tools. As a result, the researchers were unable to differentiate the implications of challenge versus hindrance demands for different dimensions of burnout (i.e., exhaustion, cynicism, reduced professional efficacy). Thus, the exact mechanism underlying the challenge/hindrance-demand and burnout relationship remains unclear.

Notably, the breadth or scope of what constitutes a 'job demand' or 'resource' has received some criticism. Xanthopoulou et al. (2007) proposed that the original JD-R model failed to capture a key category of relevant characteristics reflecting the individual-level resources each worker maintains above and beyond those provided by the work environment. These "personal resources" (p. 123) refer to perceptions or attitudes held by workers, including self-esteem, self-efficacy, locus of control, and optimism. Such self-appraisals and perceptions are thought to impact how negatively or positively workers perceive the work environment and by extension the demands or resources therein. Additionally, Xanthopoulou and colleagues note that similar constructs have been analyzed as both moderators (e.g., Pierce & Gardener, 2004; Van Yperen & Snijders, 2000) and mediators (e.g*.,* Feldt et al., 2000; Luthans et al., 2006) in the relationship between the work environment and organizational outcomes. Thus, the role of personal resources in the context of the JD-R model was unclear.

To investigate further, Xanthopoulou et al. (2007) surveyed 1,439 Dutch workers employed by a major electronics enterprise. Using self-reported scores on job demands, job resources, exhaustion, and work engagement the researchers conducted a series of SEMs situating personal resources as either a moderator or mediator of the relationship between job demands/resources and exhaustion. Results of a moderated structural equation model (MSEM) demonstrated that a hypothesized moderation model fit the data well ($x^2(19) = 56.03$, GFI = .98*,* RMSEA = .05, NFI = .97, CFI = .98, IFI = .98). However, the path coefficient between the interaction term (*i.e*., job demands x personal resources) failed to achieve significance levels, suggesting that personal resources do not moderate the relationship between job demands/resources and the exhaustion dimension

of burnout. Conversely, a SEM situating personal resources as the full mediator between job resources and exhaustion was supported. The researchers followed the process outlined by Baron and Kenny (1986) to demonstrate: 1) a significant relationship between job resources and exhaustion (β = -.29, p = .01), 2) a significant relationship between job resources and personal resources (β = .75, , p = .01), 3) a significant relationship between personal resources and exhaustion (β = -.33, , p = .01), and 4) a full mediation effect whereby the relationship between job resources and exhaustion became insignificant after the inclusion of personal resources (from β = -.29, p = .01 to β = -.02, p = .80, *n.s.*, z = 5.25, p = .01). Overall, the SEM explained 44% of the variance observed in exhaustion scores.

The results reported by Xanthopoulou et al. (2007) suggest personal job resources represent an important antecedent of reduced exhaustion above and beyond the function described by Bakker et al. (2005). That is, previous studies situated environmental job resources as the key prevention or mitigators against the deleterious effects of job demands. In contrast, Xanthopoulou et al. demonstrated that personal job resources may play a more active role in reducing exhaustion by activating or supporting positive self-appraisals during stressful work situations. The researchers argue that workers who maintain greater levels of self-efficacy and self-esteem are more likely to remain resilient in the face of job demands and interpret workplace events or situations more positively, leading to less stress and less experienced burnout.

Reducing Employee Burnout: Resiliency or Creativity?

Drawing from Xanthopoulou et al.'s (2007) results, Kwon and Kim (2020) proposed that coping strategies that build resiliency are another key individual difference

that may influence the deleterious impact of hindrance-demands and corresponding burnout in the workplace. According to Lazarus and Folkman (1984), coping strategies refer to "constantly changing cognitive and behavioral efforts designed to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). While individuals may differ in their personal coping approaches, strategies whereby workers manage stressors by avoiding demanding situations or withdrawing/disengaging from the work itself will not likely result in positive career or organizational outcomes (Perrez & Reicherts, 1992). Alternatively, constructive coping strategies are goal-oriented and problem-focused efforts that target specific environmental stressors resulting in adaptation rather than avoidance during the execution of work performance (Janssen, 2000). While there is a myriad of coping strategies found in extant literature, stress and coping scholars have emphasized the effectiveness of approaches that focus on the development of psychological resiliency (Aldwin, 1994; Luthans et al., 2006).

Psychological Resiliency and Burnout

Rutters (1987) describes psychological resiliency as a "protective factor" (p. 316) against negative emotional and physical outcomes associated with experienced adversity. Resiliency as a coping mechanism is thought to emerge from the long-term construction of a positive self-view; specifically, psychologically resilient people are thought to develop strong convictions regarding their own self-efficacy and believe they maintain an adequate level of problem-solving ability to adapt to demanding situations (Wagnild & Young, 1993). Psychological resiliency is distinct from the self-esteem construct, however, in that resiliency goes beyond favorable self-perceptions to include the capacity

to ‘bounce-back’ from conflict, failure, or disaster and still thrive or progress despite such setbacks (Luthans, 2002; Luther & Cicchetti, 2000). Further, several scholars describe an element of psychological resiliency that refers to the capacity experience contentment in the face of dynamic or ambiguous situations, particularly when long-held assumptions are questioned (Luthans et al., 2007; Weick et al., 1999). To illustrate, Sweetman and colleagues (2010) argue resiliency is “not merely a simple process of achieving linear homeostasis; rather, resilience is a cumulative and interactive process that enables individuals to go beyond what is normal and to move to a positive disequilibrium and positive deviance. This enables them to challenge personal assumptions and build further resilience through positive adaptation” (p. 11).

While the science of psychological resiliency originated in the domain of clinical psychiatry, empirical evidence suggests psychological resiliency is an important antecedent for positive workplace outcomes. For example, Siu et al. (2009) conducted a two-wave longitudinal survey study of 287 Chinese healthcare workers to investigate the relationship between workers’ self-reported psychological resiliency and a series of individual perceptions as well as health outcomes over a period of five months. The scholars demonstrated that self-reported psychological resiliency scores positively predicted job satisfaction (β = .10, p = .05), work-life balance (β = .11, p = .05), and general quality of life (β = .27, p = .01) five months after resiliency self-reports were collected. Moreover, higher resiliency scores negatively predicted the number of work-related injuries (β = -.10, p = .05) and adverse psychological symptoms (*e.g.,* anxiety, depression; β = -.17, p = .01) after the five-month interval. The scholars concluded that the development of employee resiliency, or the selection of resilient employees, may be

one way organizations can reduce costs associated with absenteeism, physical illness, the development of mental disorders, and turnover.

Unfortunately, the link between resiliency and burnout has not received a great deal of attention in extant literature. One literature review published in 2019 reported only a single previous empirical effort that directly investigated the relationship between the two constructs in the healthcare industry, where burnout is a significant concern and has received a great deal of academic attention (Hetzel-Riggin et al., 2019). However, the COVID-19 pandemic has increased interest in both employee burnout and means of improving the employee experience via increased resiliency. In one early conceptualization, psychological resiliency in relation to burnout was described as the capacity for workers to overcome obstacles or job demands without experiencing a reduction in professional efficacy (Taku, 2014). This perspective suggests that resiliency primarily operates on experienced burnout by preserving employees' work-related self-efficacy (*i.e.*, the MBI professional accomplishment factor) and may be unrelated to experiences of exhaustion or cynicism. Supporting this perspective, one recent study of 102 Italian medical doctors during the COVID-19 pandemic reported significant negative correlations between all three MBI-GS factors and self-reported psychological resiliency scores; however, self-reported resiliency only significantly predicted reduced professional efficacy in a hierarchical regression model ($\beta = -.5$, $p < .01$; $R^2 = .37$; Di Monte et al., 2020). Di Monte and colleagues' results suggest that enhanced psychological resiliency may alleviate employees' experienced burnout by limiting the extent to which negative work experiences result in a diminished self-perception of one's professional proficiency.

Other recent empirical investigations into the relationship between resiliency and burnout have reported conflicting results. For example, Di Trani et al. (2021) recruited 267 Italian healthcare workers to respond to a questionnaire requesting self-reported burnout perceptions (MBI), resiliency self-perceptions, and self-reported tolerance for ambiguity. In contrast to the results reported by Di Monte et al. (2020), Di Trani et al. demonstrated that resiliency scores significantly predicted each MBI factor in a series of regression models (exhaustion: β = -.27, p = .01; cynicism: β = -.33, p = .01; reduced personal accomplishment: β = -.44, p = .01), suggesting that resiliency may operate on several dimensions of burnout simultaneously. However, Hetzel-Riggin et al. (2019) demonstrated differential relationships between resiliency and MBI factors in a mediation model derived from survey responses of 76 nurses. The scholars found that resiliency was a significant direct predictor of personal accomplishment (β = .48, p = .01), while resiliency was unrelated to both exhaustion (β = -.02, *n.s.*) and cynicism (β = -.05, *n.s.*). Moreover, Kapusuz and Cavus (2019) analyzed survey responses from 416 Turkish public institution workers and observed no significant relationships between resiliency and any of the three MBI factors when self-efficacy was included in the model as a control variable; greater self-efficacy, however, did significantly predict lower personal accomplishment scores in a separate regression model (β = -.38, p = .01).

Kapusuz and Cavus' (2019) results support the notion that resiliency mainly reduces perceived burnout by preserving work-related self-efficacy; thus, the observed relationship between burnout and resiliency in other studies may arise from measurement overlap that exists between the professional accomplishment factor of the MBI and self-efficacy instruments. However, one small meta-analysis of five studies (N = 1,169*)*

examined the relationship between resiliency and the three burnout factors measured by the MBI (Deldar et al., 2018). The results of the meta-analysis revealed the strongest mean-corrected correlation coefficients existed between resiliency and exhaustion (r = -.55) followed by cynicism (r = -.39) with professional accomplishment emerging as the weakest correlate (r = -.25). Deldar et al. suggest that individuals who build greater self-efficacy become less prone to experiences of physical or emotional fatigue, thus reducing experienced burnout; in contrast, maintaining one's work-related self-efficacy was only weakly correlated to resiliency.

Despite debate surrounding the mechanisms by which psychological resiliency reduces perceived burnout, the limited empirical evidence consistently demonstrates a negative relationship between the two when overlapping constructs are excluded. Thus, organizations may become increasingly interested in reducing burnout via the construction of psychological resiliency when employees face unprecedented job demands, such as those impacting workers during and after the COVID-19 pandemic (Afshari et al., 2021). To that end, an expanding body of literature suggests workplace creativity may be one way to reduce work-related burnout via the facilitation of problem-focused cognition comparable to that underlying psychological resiliency.

Creativity and Burnout: Overview

Creativity as a construct refers to the generation of novel ideas, solutions, or products that are both *high quality* and *highly original* (Amabile, 1988). According to Amabile (1996; 1997), the *quality* dimension of creativity refers to the appropriateness, effectiveness, and usefulness of a proposed idea, while the *originality* dimension refers to aspects of the idea that are new or surprising (i.e., novel). Ideas or products must meet

both standards to be considered creative (Mumford & Gustafson, 1988; Runco & Jaeger, 2012). Remarking on competing conceptualizations of creativity, Rhodes (1961) proposed four perspectives through which creativity may be examined. Rhodes' "four *P's* of creativity" (1961, p. 307) include: the *person*, the *process*, the *press*, and the *product*. *Person* refers to the perspective of creativity as it relates to personality, intelligence, values, or other traits of creative individuals. *Process*, and the corresponding term 'creative process engagement' (CPE) refers to the perspective of examining creativity in terms of stages of cognition, perception, and communication that underly and drive creative endeavors or outcomes. *Press* examines the relationship between individuals engaging in creativity and aspects of their environment that facilitate or hinder such efforts. Finally, the *products* perspective refers to the examination of creativity via the analysis of generated solutions or outcomes. Despite differences in measurement approaches inherent among the perspectives, empirical research consistently demonstrates that creativity may play an important role in the reduction of burnout experiences.

For instance, Hammond et al. (2018) examined the relationship between innovative work behaviors (IWBs) and burnout among Irish human resources professionals following a period of downsizing (i.e., a significant, purposeful reduction in the total number of employees). The researchers drew from De Jong and Hartog's (2008) definition of IWBs as "an individual's behavior that aims to achieve the initiation and intentional introduction of new and useful ideas, processes, productions, or procedures" (p. 5). The researchers asked participants to self-report the extent to which they were involved in various innovative activities during work (Scott & Bruce, 1994), alongside

Wharton's (1993) emotional exhaustion scale as a proxy measurement for burnout. Participants also responded to a four-item scale targeting *voice-cost*, (i.e., a hindrance job demand reflecting the extent to which employees feel unable to openly discuss working conditions). The researchers observed that innovative work behaviors were negatively correlated to both burnout (r = -.18, p = .05) and employee self-reported turnover intentions (r = -.17, p = .05). Moreover, Hammond et al. demonstrated a moderation effect, such that innovative work behaviors predicted lower emotional exhaustion only when voice-costs were low (β = -.19, p = .01). When voice-costs were high, innovative work behaviors were unrelated to emotional exhaustion (β = .11, *n.s.*). Note that Hammond and colleagues collected responses for only the exhaustion dimension of burnout rather than all three commonly accepted factors. Moreover, some research suggests cognitive processes like creativity and resiliency may primarily operate on the reduced professional efficacy dimension, implying significant variance in participant responses may have been omitted (Kapusuz & Cavus, 2019). Still, the results described by Hammond et al. suggest that creativity engagement may be associated with a significant reduction in burnout, provided that hindrance job demands such as voice-cost do not prevent such benefits from actualizing.

Further, other empirical efforts have included the interplay of job characteristics and creativity in models of burnout. Li et al. (2019) hypothesized that creativity may mediate the negative relationship between psychological capital and work-related burnout. Psychological capital (PsyCap; Luthans et al., 2007) refers to a wide set of positive mental states. While there has been some debate concerning the inclusion/exclusion of specific constructs falling within PsyCap criteria, most scholars

agree that PsyCap largely refers to the dimensions of optimism, self-efficacy, hope, and resilience (Dawkins et al., 2013; Luthans et al., 2008; Newman et al., 2014). Li et al. hypothesized that nurses who maintain greater PsyCap were also more likely to experiment with coping strategies, adopt new ways of workings, and produce novel solutions to clinical problems leading to a reduction in burnout.

To test their hypothesis, Li et al. (2019) collected 200 Chinese emergency nurses' responses to the MBI, a measure of PsyCap validated by Zhang et al. (2010), as well as a measure of creative tendency (Lin & Wang, 1997). The creative tendency tool evaluates individual differences in personality traits corresponding to creativity, namely: risk-taking, curiosity, imagination, and challenge-seeking (Williams, 1980). Individuals who score highly on each of the four dimensions are thought to be more creative. In their analyses Li et al. controlled for a number of confounding variables, including: age, education, tenure, job satisfaction, and duration of work shift. Following the process to test for mediation outlined by Baron and Kenny (1986), Li et al. demonstrated that creative tendency partially mediated the negative relationship between PsyCap and burnout. Specifically, when creative tendency was added into the hierarchical regression model, the significant relationship between PsyCap and burnout was attenuated, albeit slightly (from: β = -.50, p = .01, to: β = -.45, p = .01). Overall, creative tendency also accounted for unique variance above and beyond control variables and PsyCap (β = -.14, p = .03, R^2 = .41; ΔR^2 = .02). Li et al. conclude that individuals who maintained greater optimism, self-efficacy, hope, and resilience were more willing to take risks and innovate to adapt during work in response to negative job characteristics, thus reducing experienced work-related burnout.

Notably, some initial research suggests that individuals do not only have to be creative during work to experience reduced burnout. One study by Shahrebabaki (2015) explored the relationship between work-related burnout and creativity by examining self-reported creative behaviors across a wide range of life domains. Shahrebabaki recruited 213 teachers to respond to a survey battery containing the MBI as well as the Creative Behavior Inventory – Short Form (CBI-SF; Dollinger, 2011). The CBI-SF collects information regarding individuals' past creative involvement in various domains, including: visual arts, crafts, literature, music, performing arts, and mathematics/sciences. Notably, the short form of the scale targets "everyday creativity" (Silvia et al., 2012, p. 21), or lower-level, common efforts of creation that are distinguishable from higher-level eminent creative accomplishments (e.g., a novice painting for their own enjoyment versus Hans Zimmer composing a masterpiece). Shahrebabaki observed that greater everyday creative involvement was significantly correlated with each MBI burnout dimension (exhaustion: $r = -.47$, $p = .05$, cynicism: $r = -.19$, $p = .05$; personal accomplishment: $r = .77$, $p = .05$), such that greater engagement with everyday creativity was associated with less burnout.

Further, Shahrebabaki (2015) constructed a structural equation model (SEM) situating four indicators of time management ability as predictors of MBI burnout scores, along with CBI-SF creativity scores listed as a superordinate predictor. Analyzing the direct effects of creativity on burnout, Shahrebabaki found that everyday creativity predicted lower emotional exhaustion ($\beta = -.42$, $p = .05$), lower cynicism ($\beta = -.07$, $p = .05$), and greater personal accomplishment ($\beta = .71$ $p = .05$), with the direct effect of creativity on personal accomplishment emerging as the strongest relationship. When time

management ability was included as mediators in the model, however, the relationship between everyday creativity and cynicism became insignificant (β = .01, *n.s.*). Notably, the SEM displayed moderate-to-low indices of fit (BCFI = .89, RMSR = .11; RMSEA = .14; HFI = 77) indicating additional research is needed before high-levels of confidence can be placed in the pattern of results. Overall, Shahrebabaki's work offers preliminary results suggesting that individuals who engage in creative efforts, even those that are outside the occupational domain, may experience less burnout during work.

Creativity and Burnout: The Potential of Creative Adaptability

Another related avenue of creativity research concerns the extent to which creativity serves as a coping mechanism that facilitates greater well-being. Scholars argue that engaging with creative activities represents an important way that people cultivate and amplify positive self-perceptions in the face of adversity, contributing to greater psychological resilience and overall well-being (Corry et al., 2014, 2015). While the relationship between engagement in creative endeavors and enhanced well-being may not have direct implications for burnout, most scholars agree that burnout and well-being represent antithetical constructs (Maslach et al., 2001; Williamson et al., 2018). Moreover, prominent models of well-being define the construct as feelings of meaningfulness, social engagement, optimism, and self-esteem (Ryan & Deci, 2001; Diener et al., 2010). Such dimensions are directly opposed to indicators of burnout originally identified by Maslach and Jackson (1981), who described purposelessness, social detachment, despair, and fatigue. Thus, a positive association between creativity and well-being may provide periphery support for a negative creativity-burnout

relationship, whereby individuals who engage with the creative process are less likely to experience burnout.

Indeed, an emerging body of literature does suggest that the ability to be creative is a key skill related to improved well-being. Orkibi (2021) proposed that *creative adaptability* refers to one's capacity to generate new and useful ideas in response to stressful situations. According to Orkibi, when individuals encounter stressful situations or obstacles preventing goal achievement, they deploy adaptive responses (i.e., cognitive styles, behaviors, etc.) aimed at reducing stress or circumventing such obstacles. However, responses that are only adaptive, but not creative, are either ineffective at reducing stress or rely on strategies used in the past that may be less relevant to the present situation (i.e., low originality or low quality). In contrast, Orkibi hypothesized that individuals with high levels of creative adaptability are capable of conceiving new strategies/approaches that are both highly relevant to the presenting problem and highly effective at adapting to stressful situations, thus improving one's experienced well-being.

To test their hypothesis, Orkibi (2021) conducted a series of analyses to investigate the potential implications of creative adaptability on participants' well-being. Orkibi recruited 310 Israeli adults during the peak of the COVID-19 outbreak and invited participants to respond to series of questionnaires. Participants were presented with Orkibi's creative adaptability scale, as well as: Karwowski's (2016) creative self-efficacy measure, the openness dimension of the Big-5 personality inventory (John et al., 2008), and the World Health Organization's (WHO) well-being index (WHO-5; Topp et al., 2015). Orkibi also asked participants to respond to two items indicating the extent to which individuals were impacted by the COVID-19 pandemic. Using a Likert-type scale

ranging from 1 (Not at All) to 5 (A Great Deal), participants responded to: “To What extent have you been personally affected by the Coronavirus pandemic?”, and “How concerned are you about the Coronavirus pandemic?”.

Constructing a SEM, Orkibi (2021) demonstrated that the positive relationship between creativity adaptability and well-being was fully mediated by creativity self-efficacy (indirect effect: $\beta = 0.11$, $SE = .03$, $p = .01$; direct effect: $\beta = .12$, *n.s.*; total effect: $\beta = 0.23$, SE = .07, 95% CI [0.047, 0.177]; $R^2 = .22$). Next, Orkiki evaluated a moderation model where creative adaptability moderated the negative relationship between Coronavirus concern and well-being. Specifically, Orkibi hypothesized that higher levels of creative adaptability would decrease the effect of Coronavirus concern on well-being. Orkibi demonstrated that Coronavirus concern did significantly and negatively predict well-being ($\beta = -.44$; $p = .01$), and the interaction term constructed between creative adaptability and Coronavirus concern was statistically significant ($\beta = .09$; $p = .05$). Probing the interactions revealed that the negative relationship between Coronavirus concerns and well-being was attenuated when individuals reported higher levels of creative adaptability. Thus, Orkibi concluded that creative adaptability may provide a buffering effecting against the negative impacts of stressful events.

In a follow-up study, Orkibi et al. (2021) sought to extend the generalizability of creative adaptability research by evaluating supported models in different cultures and countries. The researchers recruited a total of 1,569 adults from Israel (n = 310), United States (n = 312), Italy (n = 378) and China (n = 569) during the COVID-19 pandemic. Participants responded to a series of survey questionnaires including: Orkibi’s (2021) creativity adaptability scale, Karwowski’s (2016) creative self-efficacy scale, Sinclair &

Wallstons's (2004) resiliency scale, and a well-being scale adapted from Watson et al. (1988). The researchers aimed to both replicate the results of Orkibi (2021) across diverse samples, and to evaluate the strength of multiple mediators (i.e., creative self-efficacy, and resiliency) in a parallel mediation analysis. Parallel mediation models provide statistical evidence of the relative strength of several mediators operating simultaneously on a criterion while accounting for the shared variance between the mediators (Kane & Ashbaugh, 2017). The analysis yielded several notable results.

First, Orkibi et al. (2021) failed to replicate previous findings of a full mediation effect of creative self-efficacy on the relationship between creative adaptability and well-being in an Israeli sample. Rather, in the Israeli and Italian samples resiliency emerged as a significant full mediator between creative adaptability and well-being, and in the Chinese sample resiliency emerged as a significant partial mediator. Creative self-efficacy was not a significant mediator in the Israeli and Italian samples, but creative self-efficacy did partially mediate the relationship in the Chinese sample. Surprisingly, the American sample displayed a different pattern of results. Creative self-efficacy fully mediated the relationship between creative adaptability and well-being, and resiliency failed to emerge as a significant mediator un the U.S. sample. Overall, Orkibi et al. provide robust evidence that creative adaptability remains an important antecedent of well-being across countries. However, the exact mechanism by which creative adaptability influences well-being remains obscure and may vary along cultural lines.

Given that past research suggests job demands serve as key stressors for employees, Orkibi (2021) and Orkibi et al.'s (2021) pattern of results suggest that creative adaptability may play an important role in reducing work-related burnout

experiences. Notably, Bakker et al. (2005) demonstrated that job resources exhibit a buffering effect against the deleterious impacts of stress arising from job demands, leading to lower employee burnout when resources are high. Orkibi (2021) situates creative adaptability as "one's ability to respond creatively and adaptively respond to stressful situations" (p. 3); thus, it follows that creative adaptability may demonstrate a similar buffering effect against work-related burnout. Moreover, empirical efforts by Xanthopoulou (2007) revealed that personal resources play an active role in reducing burnout by facilitating more positive self-appraisals. Likewise, Orkibi and colleagues demonstrated that creative self-efficacy (i.e., a positive appraisal of one's own creative abilities) may mediate the relationship between creative adaptability and well-being in some cultures. Under Xanthopoulou's framework, creative adaptability may represent a novel personal resource that may reduce the burnout experience at work.

Unfortunately, the link between creative adaptability and burnout has not been explicitly studied since Orkibi's (2021) validation. Broadly, past efforts coinvestigating creativity and burnout tend to approach creativity in terms of personality, innovative behaviors, or general involvement in creative activities. Thus, there is an opportunity to investigate two relevant and understudied creativity constructs in the context of work-related burnout: creative adaptability, and creative process engagement.

Creativity and Burnout: A Process Perspective

While extant empirical literature supports an inverse creativity-burnout relationship, research linking engagement in specific processes of creative thought (i.e., the process perspective; Rhodes, 1961) is sparse. The present study aims to address this

deficit and explore the capacity for CPE to act as a resiliency-building coping mechanism in and of itself, thus reducing employees' experienced burnout over time.

Indeed, the cognitive process perspective may be particularly relevant in the context of burnout and resiliency. Prevalent process models of creativity mirror features of constructive coping mechanisms as described by Janssen (2000), such that creativity is situated as inherently goal-oriented and problem-focused cognition (e.g., Guilford, 1967; Simon & Newell, 1971). In fact, scholars debate whether creativity and problem-solving reflect one universal cognitive process (i.e., creative problem-solving) as opposed to two distinct psychological operations (Fink et al., 1992; Marsh et al., 1996). Despite the debate, researchers agree that several common processes coexist across cognitive models of creativity and cognitive models of problem-solving (Basadur, 1994; 1997; Reiter-Palmon & Illies, 2004). Moreover, prevalent cognitive process models emphasize adaptation rather than avoidance to overcome obstacles by delineating a recursive and cyclical mechanism (Guilford, 1967; Mumford et al., 1991). That is, prevalent process models of creativity propose unsatisfactory outcomes or obstacles arising in later processes prompt re-engagement (i.e., recurve) to earlier processes to ensure ultimate success. The recurve mechanism aligns strongly with conceptualizations of psychological resiliency, such that resilient individuals are thought to maintain the capacity to 'bounce-back' following failure and re-engage with efforts leading to success (Luthans et al., 2007). Additionally, the mechanism whereby psychological resiliency is thought to mitigate burnout mirrors key dimensions of creativity. Sweetman et al. (2010) emphasized psychological resiliency is a process by which individuals enact positive (i.e., appropriate) adaptations (i.e., solutions) to dynamic environments via positive deviance

(i.e., novelty). Thus, individuals who engage in the creative problem-solving process may mitigate experienced burnout via the practice of goal-oriented and adaptive cognition aimed at conceiving effective, novel solutions despite obstacles or setbacks.

Unfortunately, the link between CPE and burnout has not been explicitly studied and represents a significant gap in the creativity-burnout literature. A few select studies have tangentially examined the relationship by administering measures of creativity and/or problem-solving that overlap with CPE but fail to capture the construct in its entirety. For example, Derekhshanrad et al. (2019) conducted a small study of 50 occupational therapists to explore how problem-solving processes may ameliorate the negative impacts of job demands and reduce burnout. The researchers collected participants' responses to the MBI, the Social Problem-Solving Inventory (SPSI, D'Zurilla et al., 2002) and a creativity characteristics questionnaire. While the SPSI does not reference creativity specifically, the tool measures engagement with cognitive processes associated with problem-solving across domains. For example, one item states, "When I have a problem to solve, I try to identify what obstacles are keeping me from getting what I want". In a series of simple regression models, the researcher demonstrated that both problem-solving engagement (β = -.45, p = .03) and self-reported creativity characteristics (β = -.06, p = .01) negatively predicted concurrent MBI burnout scores.

Similarly, Alonso et al. (2020) collected survey responses from Spanish healthcare professionals regarding creative processes and MBI burnout, reporting no significant correlation between the two. However, the researchers deployed the CREA creativity measure in their study design. The CREA evaluates individuals' capacity to design and conceive multiple questions when presented with some stimulus image.

Individuals' scores are determined by the number and quality of questions that are generated. Thus, the CREA disproportionately emphasizes a single creative process, referred to as idea generation (Mumford et al., 1991), rather than evaluating a host of cognitive processes driving creative productions. Indeed, there are validated measurement tools, such as the 11-item questionnaire developed by Zhang and Bartol (2010), that captures a more holistic measure of CPE via multiple dimensions reflecting different creative processes. While both Derekhshanrad et al. and Alonso et al. (2020) provide valuable preliminary evidence, the studies underscore the necessity for further investigations into how CPE relates to employee burnout experiences.

Notably, one recent study directly investigated the relationship between CPE and well-being during the COVID-19 pandemic. Tang et al. (2021) drew from a body of literature that observed a tendency for creative accomplishments to flourish following exposure to a crisis or disaster (e.g., Damian & Simonton, 2014, 2015). Tang and colleagues hypothesized that individuals who were strongly impacted by the COVID-19 pandemic may display greater engagement with creative endeavors, which in turn should facilitate greater well-being post-pandemic. To test their hypotheses, Tang et al. recruited 1,420 participants from China (n = 489), Germany (n = 599), and the United States (n = 332) employed across a wide variety of occupational industries, including: healthcare, manufacturing, financial services, media, design, and agriculture. Participants provided responses on a self-report measure indicating the degree to which COVID-19 impacted their daily lives, as well as responses to two creativity instruments: Zhang and Bartol's (2010) CPE scale, and Forgeard's (2013) perceived creative growth scale (i.e., the extent to which motivation to be creative increased). Participants also provided responses to two

measures of well-being: flourishing (i.e., engagement, purposefulness, optimism; Diener et al., 2010) and social connectedness (i.e., belonging; Lee & Robbins, 1998).

In the pooled sample of all participants across nations, Tang et al. (2021) observed that CPE was moderately, positively, and significantly correlated with flourishing well-being (r = .37, p = .01) but uncorrelated with social connectedness (r = .04, *n.s.*). Further, the scholars constructed a measurement model situating flourishing well-being and social connectedness as separate outcomes of COVID-19 impact, with CPE and perceived creative growth acting as serial mediators of the relationship. The researchers confirmed their measurement model via a confirmatory factor analysis (CFA) that demonstrated acceptable fit indices (x^2(614) = 2,503.18, CFI = .94, TLI = .94, RMSEA = .047, SRMR = .04). Conducting a series of path analyses, Tang et al. demonstrated that CPE followed by creative growth serially mediated the relationship between COVID-19 impact and flourishing well-being, but not social connectedness, in the pooled sample across nations. Specifically, strong impacts of COVID-19 predicted greater CPE (β = .23, p = .01), CPE predicted greater perceived creative growth (β = .57, p = .01), and greater creative growth predicted greater flourishing well-being (β = .18, p = .01). The direct effect of CPE on flourishing well-being was also significant (β = .28, p = .01), while the direct effect of CPE on social connectedness failed to reach significance (β = -.03, *n.s.*).

Overall, Tang et al.'s (2021) results provide strong evidence for a link between creative process engagement and certain dimensions of well-being. The scholars conclude that creativity represents a significant means for individuals to cope with adversity such as disaster, and individuals who explicitly engage with creative processes

may experience important benefits for their overall psychological health. Moreover, Tang et al.'s study directly investigated CPE using a measurement tool that included multiple creative processes (Zhang & Bartol, 2010), thus increasing confidence that observed relationships account for a holistic perspective of CPE. Regarding burnout, however, Tang et al.'s results offer mixed implications. The researchers demonstrated that creativity may be unrelated to facilitating the social connectedness dimension of well-being. Maslach and Jackson (1981) described 'depersonalization' and later 'cynicism' as an indicator of burnout whereby caregivers become detached and aloof from the recipients of their work. In other words, burned out individuals (especially caregivers) experience less social relatedness; therefore, mechanisms that reduce burnout ought to reduce a sense of detachment. Tang et al.'s results suggest that CPE does not impact social connectedness, failing to explicitly support a creativity-burnout relationship via a reduction of the cynicism dimension. However, some research suggests that individual differences in perception impact the degree to which hindrance demands cascade into burnout (Podsakoff et al., 2007). Tang et al. found that CPE facilitates flourishing well-being dimensions: engagement, purpose, and optimism. As discussed, Xanthopoulou et al. (2007) demonstrated that individuals who maintain greater personal resources, namely optimism and self-esteem, experience less burnout arising from the exhaustion dimension. Despite such overlap in findings, no previous effort has explicitly examined the impact of CPE on burnout.

Creativity and Burnout: Integration

Positive psychology researchers agree that psychological resiliency is a key predictor of greater well-being (Luthans, 2002; Siu et al., 2009), and preliminary

evidence reveals that psychological processes that construct greater self-perceptions may attenuate employee burnout experiences (Kapusuz & Cavus, 2019). Given that 1) prevalent models of creativity mirror those of psychological resiliency and 2) Orkibi et al. (2021) demonstrated creative adaptability impacts well-being via creative self-efficacy scores, creativity constructs may represent a significant mechanism by which employees reduce experienced burnout. Indeed, scholars utilizing various conceptualizations of creativity demonstrate convergent empirical evidence that creativity is associated with either greater well-being or reduced work-related burnout. Namely, research suggests both the ability to generate novel and appropriate ideas in response to stressful situations (i.e., creative adaptability) and engagement with specific cognitive processes underlying creative thought (i.e., CPE) may be beneficial for employees. However, neither CPE nor creative adaptability has been explicitly investigated in the context of burnout, and thus no previous empirical effort has sought to tease apart the unique contributions of the two.

Moreover, previous empirical investigations situated both creative adaptability and CPE as first-order predictors of burnout/well-being outcomes without consideration for superordinate antecedents. There is robust empirical support that certain workplace characteristics, namely job demands, are associated with increased employee burnout regardless of employee appraisal of the demand (Bakker et al., 2005; Crawford et al., 2010). In response, researchers have called for robust model development that situates the interplay of target constructs in the context of situational or environmental variables (Bakker, 2015). To that end, the present research seeks to investigate the unique contributions that both CPE and creative adaptability play in the job-demands-burnout relationship. Specifically, situating CPE and creative adaptability as parallel mediators in

the job-demands-burnout relationship may reveal 1) to what extent the two creativity constructs impact employee experiences and 2) which mediating constructs emerge as comparatively more influential (see Figure 1).

Hypotheses

Drawing from Xanthopoulou et al. (2007) who demonstrated a full mediation relationship during their investigation of job resources, I anticipate job demands may be modelled similarly. Moreover, both psychological resiliency and creative processes refer to adaptive and problem-focused cognition that serve to implement novel and effective solutions to experienced obstacles/adversity despite setbacks or failure (Guilford et al., 1967; Luthans et al., 2007; Mumford et al., 2001; Sweetman et al., 2010). Further, creative adaptability has been shown to facilitate greater well-being via the construction of greater creative self-efficacy in certain samples (Orkibi et al. 2021). Given empirical findings linking various conceptualizations of creativity to both reduced burnout (Hammond et al., 2018; Li et al., 2019) and greater well-being (Orkibi, 2021), I argue that CPE and creative adaptability may operate simultaneously and independently in reducing the employee burnout experience.

Workplace characteristics, namely job demands, are thought to foster an environment where the capacity to generate new and useful ideas (i.e., creative adaptability) may become necessary to cope with stressors. Notably, the burnout construct is situated as three independent dimensions: exhaustion, cynicism, and reduced professional efficacy (Schaufeli et al., 1996). Thus, researchers must construct and evaluate a series of models that may display differing results when alternate burnout dimensions are investigated. For instance, there are conflicting empirical findings

reporting either CPE predicts the exhaustion dimension of burnout (Derekhshanrad et al., 2019) or that no relationship between the two was detected (Alonso et al., 2020). While creative adaptability and exhaustion have not been explicitly co-examined, the creative adaptability construct is defined as the ability to respond effectively to stressful situations (Orkibi, 2021). Given that job stress is consistently associated with greater exhaustion self-reports (Demerouti et al., 2001; Maslach & Jackson, 1981), I anticipate (see Figure 1 for a summary):

> **Hypothesis 1**: Creative adaptability will fully mediate the positive relationship between job demands and exhaustion, while CPE will partially mediate the relationship. Creative adaptability will emerge as a stronger mediator of the relationship compared to CPE.

The cynicism dimension of burnout refers to the phenomenon where employees become depersonalized, socially isolated, and emotionally detached from the workplace (Maslach & Jackson, 1981). Notably, creativity scholars demonstrated that while CPE does predict greater well-being, CPE was unrelated to measures of social connectedness (Tang et al., 2021). In contrast, I anticipate that creative adaptability may represent one way that employees are able to overcome social isolation at work and remain engaged. However, there is no empirical evidence explicitly linking creative adaptability to reduced employee cynicism. Thus:

> **Hypothesis 2**: Creative adaptability will partially mediate the positive relationship between job demands and cynicism. Creative adaptability will emerge as a stronger mediator of the relationship compared to CPE.

Finally, research suggests that psychological resiliency primarily impacts the reduced professional efficacy dimension of burnout (Hetzel-Riggin et al, 2019; Kapusuz & Cavus, 2019). Given the overlap between the framework of psychological resiliency and CPE, I anticipate that CPE will operate similarly to reduce employee burnout. Additionally, Orkibi et al. (2021) demonstrated that self-efficacy constructs may play a mediating role in the relationship between creative adaptability and greater well-being. Given this pattern of results, I anticipate:

> **Hypothesis 3**: Both CPE and Creative adaptability will partially mediate the positive relationship between job demands and reduced professional efficacy. CPE will emerge as a stronger mediator of the relationship compared to creative adaptability.

Method

Participants

Power

The present study converges several constructs that have rarely been co-examined: the cognitive process perspective of creativity, creative adaptability, employee burnout, and prominent workplace characteristics (i.e., resources and demands). In turn, there are few studies providing definitive insights regarding anticipated effect sizes and corresponding a priori sample size targets. Drawing from the disparate research avenues reveals varying effect sizes both within each respective domain, and differential effect sizes among predictor variables and the three dimensions of the MBI-GS. For example, Lee and Ashforth's (1999) meta-analysis examining the relationship between job demands and burnout reported medium (.20) to large (.60) mean-corrected correlation

coefficients for emotional exhaustion, small (.06) to large (.50) coefficients for cynicism, and small (.01) to medium (.22) coefficients for reduced professional efficacy. Similar results were replicated by Alarcon's (2011) meta-analysis. Regarding the effect of creativity on burnout, recent efforts by Derekhshanrad et al. (2019) report medium standardized regression coefficients, ranging from .28 to .44, depending on the instrument administered.

Taking a conservative estimate by anticipating a small overall effect size (.10), requiring a moderate significance level (a = .05) and providing a power requirement of .90, a power analysis revealed that a minimum of 170 participants are needed to observe the desired effects. However, scholars recommend utilizing a two-wave time-lagged study design to maximize confidence in results when evaluating mediation models (Maxwell & Cole, 2007). Anticipating an attrition rate of approximately 35 – 40% and an additional removal of 10 – 15% of responses due to quality concerns, a total of 500 employed participants were recruited to respond to two survey questionnaires separated by a time lag of three weeks.

Recruitment

Participants were identified and recruited via the Prolific professional responder service. Prolific acts as a third party that connects researchers to survey-takers and mediates compensation and participant-identification services. The Prolific platform was selected due to its capacity to identify and remove bad actors utilizing machine-learning algorithms, internet bots/scripts, and/or deep-fake programs that provide seemingly genuine, but nonetheless fake responses to a multitude of surveys for financial gain. Further, one recent evaluation (Douglas et al., 2023) of online survey response quality for

human-subjects research revealed that participants on Prolific were significantly more likely to: pass attention-checks embedded in surveys, provide meaningful responses to open-ended questions, follow administrator instructions, remember previously presented information, and present unique IP and geolocation addresses (indicating a genuine responder) compared to those participants from Amazon MTurk, Qualtrics, and an online undergraduate student sample.

Prolific also allows for the inclusion of participants based on demographic and performance parameters. The 500 participants were limited to those that maintained at least a 51% response approval rate on past surveys, are proficient in English, based in the USA, and are verified as being employed at least part-time (minimum of 20 hours per week). In the present two-wave design, participants received compensation for each survey administration independently. The first survey administration consisted of 41 Likert-type items and was estimated to take eight minutes to complete; participants received $1.85 for participation (a compensation rate corresponding to an estimated $13.85 per hour). The second survey consisted of 27 items and was estimated to take five minutes to complete; participants received $1.25 for their participation (a compensation rate corresponding to an estimated $15 per hour). Overall, participants that completed both survey waves received $3.10 for a total of 13 minutes of participation corresponding to an estimated functional hourly rate of $14.30.

Sample and Descriptive Statistics

500 U.S. adult participants responded to the Time 1 wave of the questionnaire. 475 participants provided Time 2 responses three weeks later yielding a 5% attrition rate. Participant responses that failed to accurately reply to two out of three attention checks

were removed from further analyses. 39 responses (8.2%) were removed due to such data quality concerns, resulting in a functional sample of 436 participants.

The mean age of participants was 40 years old (*SD* = 12.36). Approximately half of participants self-identified as men (51.40%), 45.20% self-identified as women, 2.80% as "nonbinary", and 0.40% as "transgender". Participants self-described as mostly "Caucasian/White" (72.20%), followed by "African American/Black" (11.70%), and "Hispanic/Latino(a)" (5.30%). See Table 1 for gender and race/ethnicity frequency information. 22% of participants reported "high-school diploma / GED" as their highest level of education attained, while 13.80% reporting attaining an "Associate's degree", 41.50% attaining a "Bachelor's degree", 17.40% reported achieving a "Master's degree", and 5% reported completing a "Doctoral degree". Education frequency information is provided in Table 2.

Approximately half (49.50%) of participants were married or in a domestic partnership, and 41.30% self-reported being single and never married. 7.30% of participants reported being divorced, and less than 1% of participants self-identified as widowers. A minority of participants (42.90%) reported having children. Participants who were parents reported an average of 2.03 children (*SD* = 0.99). Participants self-categorized into bands of yearly household income (U.S. dollars) as an indicator of their socioeconomic status. The highest frequency of responses (18.80%) reporting a yearly household income between $40,001 and $60,000. Examining the highest/lowest bands revealed 6.9% of participants reported a yearly income of more than $200,000, while 5.30% of participants reported earning less than $20,000 a year. See Table 3 for

additional information regarding marital, parental, and socioeconomic status from the present sample.

A majority (57.60%) of participants self-reported working 40 hours weekly; 25.90% of participants reported working between 20 and 40 hours weekly. See Table 4 for additional information on reported weekly working hours. Participants reported an average of 6.99 years (*SD* = 6.86) of tenure in their current employment. The longest tenure in years reported in the sample was 39 years in current role, with 9.20% of participants self-reporting less than one year in current role. Last, participants self-reported their job industry using the United States Bureau of Labor Statistics (USBLS) job categories. 13.30% of respondents reported working in the "Healthcare and Social Assistance" industry, 13.10% in the "Educational Services" industry, and 11.70% in the "Professional, Scientific, and Technical Services" industry. See Table 5 for additional information on the present sample's professional industry frequencies.

Procedure

Study Design

Parallel mediation is inherently a causal model (Hayes, 2012). Observed effects in the dependent variable are hypothesized to be directly attributed to changes in the independent variables and interpreting any reverse association is considered inappropriate (Jose, 2016). Further, a host of studies have revealed that cross-sectional mediation designs produce unreliable inferences and temporal linkages among variables are necessary to enhance confidence in results (e.g., Maxwell & Cole, 2007; O'Laughlin et al., 2018; Selig & Preacher, 2009). Following such scholars' recommendations, I applied a two-wave survey design utilizing a time interval consisting of three weeks. In both

survey administrations, all scales within the questionnaire appeared in a randomized and counterbalanced manner to avoid sequence effects and minimize common method bias that threatens confidence in any observed statistical effects (MacKenzie & Podsakoff, 2012). Items within scales appeared in a random order to minimize common method bias and order effects (Podsakoff et al., 2003). Following Groves et al. (2012), items from the same scale co-appeared throughout the survey rather than appearing in a fully random manner. This practice is thought to increase participant satisfaction with the survey-taking process, promote the logical flow of the questionnaire, and ultimately prevent participant frustration or confusion.

Measurement

The present study evaluates a series of parallel mediation models examining the effects of job demands on burnout, mediated in parallel by CPE and creative adaptability. The following instruments were administered to capture levels of the target variables. For a full list of all measures, see Appendix A. For a graphical depiction of which measures are presented per survey wave, see Figure 2. Cronbach's alpha reliability coefficient from the present study is provided in Table 6.

Job Demands. While empirical research suggests both hindrance and challenge demands may increase job-related stress and subsequent burnout experiences, scholars do agree that the two represent distinct categories of workplace characteristics (Bakker et al., 2005; Crawford et al., 2010). Thus, I selected an instrument that differentiates job demand typologies while also capturing distinct forms of demands within both categories. Albrecht (2015) assembled an 18-item instrument that identifies three forms of challenge demands and three forms of hindrance demands. Albrecht also provided evidence for the

factorial validity of the challenge and hindrance demands scales via Marsh's (1987) target coefficient 2 (TC_2). The TC_2 value represents the ratio of a higher-order model compared to a freely correlated first-order model "after adjusting for the lack of fit attributable to the first order indicators in both models" (Albrecht, 2015, p. 75). The TC_2 value for both the hindrance and challenge demand factors exceeded the minimum threshold of .90 as recommended by Marsh (1987), indicating that the proposed factor structure was supported. Overall, a confirmatory factor analysis yielded an acceptable fit of the full measurement model ($x^2(185)=1{,}405$; GFI = .88; NFI = .89; TLI = .95; CFI = .96; RMSEA = .04).

Challenge Demands. Albrecht's (2015) job demand instrument drew from Karasek (1979) and Morgeson and Humphrey (2006) to propose a three-factor structure of challenge demands including: workload, information processing, and problem-solving. *Workload* refers to the number of tasks or volume of work facing employees in their occupational roles. *Workload* is measured via three items where participants respond on a five-point Likert-type scale ranging from 1 (Not at all) to 5 (To a great extent). An example workload item is: "To what extent is there not enough time for you to do your job?". *Information processing* refers to the need for employees to monitor or interpret a great deal of information during work. *Information processing* is measured via three items adapted from the Work Design Questionnaire (WDQ; Moregson & Humphrey, 2006) where participants respond on a seven-point Likert-type scale ranging from 1 (Strongly agree) to 7 (Strongly disagree). An example information processing item is: "My job requires me to analyze a lot of information." *Problem solving* was also adapted from the WDQ and reflects the need for employees to be creative at work or solve unique

problems. *Problem solving* is measured via three items falling on a seven-point Likert-type scale ranging from 1 (Strongly agree) to 7 (Strongly disagree); for example: “My job often involves dealing with problems that I have not met before.”

Hindrance Demands. Similarly, Albrecht (2015) proposed a three-factor structure of hindrance demands including: emotional demands, role ambiguity, and role conflict. Emotional demands refer to the need to perform emotional labor at work, or maintain a calm, neutral demeanor despite facing emotionally laden situations. The three-item *emotional demands* scale was adopted from the Frankfurt Emotion Work Scale (FEWS; Zapf et al., 2001) and is measured on a five-point Likert-type scale ranging from 1 (Not at all) to 5 (To a great extent). An example item of emotional demands is: “To what extent do you have to suppress your own true feelings to give a ‘neutral’ impression”. *Role ambiguity* was adopted from House et al. (1983) and refers to the perception that one’s tasks or responsibilities are not clearly defined or nebulous in nature. An example role ambiguity item is: “I do not have a clear idea of what is expected of me in my role”. *Role conflict* was measured from items taken from Peterson et al. (1995) and refers to the extent that employees are required to pursue conflicting or seemingly incompatible goals. For example, one item states: “In my job I receive incompatible requests from two or more people”.

Both *role ambiguity* and *role conflict* contain three items measured on a seven-point Likert-type scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). In the present model, job demands served as the predictor variable and responses were collected in the first wave of data collection.

Creative Process Engagement. Engagement with creative processes was captured via Zhang and Bartol's (2010) creativity instrument. Participants respond to 11 items indicating the extent to which they engage with three core processes of creativity: *problem identification* (three items*), information searching and encoding* (three items), and *idea generation* (five items). Participants respond using a Likert-type scale ranging from 1 ("Never") to 5 ("Very Frequently"). An example item of *problem identification* is: "I think about problems from multiple perspectives"; an example *information searching and encoding* item is: "I consult a wide variety of information"; and an example *idea generation* item is: "I generate a significant number of alternatives to the same problem before I choose the final solution". The researchers also reported the results of a structural equal model demonstrating that the fit indices for three first-order factors fell within the acceptable range ($x^2(41) = 93.42$; CFI = .97; GFI = .96. RMSEA = .06). In the present model, creative process engagement is situated as a mediator variable, and responses were collected during the first wave of data collection.

Creative Adaptability. Orkibi (2021) validated a three-factor structure of creative adaptability. Overall, Orkibi's creative adaptability scale contains nine items, and participants indicate the extent to which the statement describes them using a 1 ("Not at All Like Me") to 5 ("Very Much Like Me") Likert-type scale. Examining the subscales, *behavioral creative adaptability* (three items) refers to the tendency for individuals to adopt new ways of acting to reduce the negative impacts of stressful situations. Similarly, c*ognitive creative adaptability* (three items) and *emotional creative adaptability* (three items) refer to the tendency of the individual to think of new ideas and adopt new emotions to successfully adapt to and overcome stressful situations,

respectively. Example items include: “When in a stressful situation, I adopt new behaviors that help me through it” and “I come up with a number of original ideas to effectively deal with as stressful situation”. In the present model, creative adaptability is situated as a mediator variable; responses were collected during the first wave of survey administration.

Burnout. Following the recommendations of several burnout researchers (e.g., Bakker et al., 2002; Schutte et al., 2000) the Maslach Burnout Inventory – General Survey (MBI-GS; Schaufeli et al., 1996) was used to record participant burnout experiences. The MBI-GS captures burnout using 16 items across three distinct dimensions: *exhaustion* (five items), *cynicism* (five items), and *reduced professional efficacy* (six items). The survey asks participants to respond to a series of statements using a Likert-type scale indicating the frequency that they experience a series events. The scale ranges from 1 (“Never”) to 7 (“Everyday”), with higher scores indicating greater burnout. An example *exhaustion* item is: “I feel emotionally drained from my work”; an example *cynicism* item is: “I have become less interested in my work since I started this job”; and an example *reduced professional efficacy* item is: “In my opinion, I am good at my job” (reverse-coded). Richardsen and Martinussen (2005) examined the psychometric properties of the MBI-GS and found the instrument demonstrated robust factorial validity across four varying occupational groups. The researchers also conducted a CFA to confirm the factor structure of the MBI-GS, finding that a three-factor model demonstrated excellent fit compared to both a unidimensional and two-dimensional model ($x^2(99) = 491.53$; GFI = .92; TLI = .91; CFI = .92; RMSEA = .08). Further, the results of a multigroup analysis testing comparative model fit for the four occupational

groups demonstrated that the three-factor structure fit the data equally well across occupations. In the present model, burnout is situated as the criterion variable, and thus responses to the burnout instrument were collected during the second wave of data collection.

Demographics. Participants also responded to a series of demographic questionnaires designed to capture necessary information to describe the sample adequately. Participants self-reported their: age, gender, race/ethnicity, highest level of education attained, yearly household income, marital status, their number of children, job title, number of hours worked weekly, tenure in current position, and job industry. The list of job industry options was gathered from the United States Bureau of Labor Statistics (USBLS, 2023). Demographic information was collected during the second wave of survey responses.

Attention Checks. Given the use of an online sample, three questions intended to determine attentiveness were embedded at random throughout both survey administrations, resulting in a total of six attention checks. An example attention check item is: “If you are paying attention, select ‘Strongly disagree’”. Participants who fail two out of the three attention checks were removed from further analyses.

Statistical Analyses

Parallel Mediation Overview

The parallel mediation model is a statistical technique that examines the role of two mediating variables (M1; M2) in the relationship between an independent variable (X) and a dependent variable (Y; Kane & Ashbaugh, 2017). That is, multiple mediator variables are hypothesized to work in parallel to explain the relationship between the

independent and dependent variables. Examining multiple mediators in parallel allows analysts to determine the relative contributions of each mediator on the direct effect of X on Y while accounting for the shared variance among mediators (Hayes, 2022). Thus, parallel mediation models provide information regarding the 'importance' of different variables in a causal model. Note that parallel mediation is distinct from serial mediation, where one mediator is thought to be causally related to another mediator which in turn influences the values in a criterion. In contrast, mediators in parallel mediation are thought to be either orthogonal or correlated, but do not causally influence one another. In the present study, I examine the relative impact of CPE (M1) and creative adaptability (M2) on the relationship between job demands (X) and the three dimensions of employee burnout (Y1; Y2; Y3). Through bootstrapping and an examination of total, total direct, direct, and indirect effects, the parallel mediation analysis provide insights into the degree that the demands-burnout relationship is impacted by creativity, and which creativity constructs are associated with the dimensions of burnout.

Results

Assumption Testing

Following the recommendations of Kane and Ashbaugh (2017), I evaluated the data to determine if the pattern of observations is appropriate for parallel mediation. Parallel mediation testing utilizes ordinary least squares (OLS) to generate standardized path coefficients in a predictive model (Hayes, 2023). Thus, collected data must adhere to the assumptions of regression to minimize inconsistency of standard error and increase confidence in observed parameter coefficient estimates. First, each study variable was evaluated via a normal Q-Q plot to determine if observed data adheres to the assumption

of normality. The Q-Q plot compares data distribution quantiles against the standardized theoretical distribution to provide evidence that the observations are appropriate to analyze via OLS. See Appendix B for resulting Q-Q plots. Further, collected data was examined via a normal predicted-probability (P-P) plot to determine if observed residuals of regression models are normally distributed. A P-P plot compares the empirical error terms of predicted observations against the predicted value of residuals derived from three separate multiple regression models of criterion variables. See Appendix C for resulting P-P plots. Examining the P-P and Q-Q plots reveals that all study variables adhere to the idealized diagonal line (Cohen et al., 2003), providing evidence that the assumption of normality was not violated.

Observed data values must also display equality of variance (i.e., homoscedasticity). To evaluate the presence of homoscedasticity I generated a series of scatterplots that situated predicted values against residuals from three multiple regression models of criterion variables. Scatterplots that provide evidence for homoscedasticity resemble a random distribution of plotted points (Hayes, 2022). See Appendix D for scatterplot charts displaying observed residual variance. Examining resulting scatterplots for exhaustion and cynicism reveals that residual values display a random distribution. In contrast, the scatterplot for the reduced professional efficacy (RPE) dimension of burnout revealed a slight cone-shaped distribution on standardized values below zero, suggesting that error terms when calculating predicted values of RPE do not follow a consistent pattern at negative standard deviations (i.e., heteroscedasticity). Still, parameter estimates and beta coefficients remain unbiased in the presence of heteroscedasticity, and the resulting confidence intervals during significance testing likely remain unaffected in low

degrees of heteroscedasticity given sufficient power (Cohen et al., 2003). However, addressing heteroscedasticity is simple and provides greater confidence in the results of significance testing. Thus, I followed the recommendations of Cohen et al. and conducted a natural log transformation of observed RPE values to normalize heteroscedastic residuals. The natural log-transformed values were used in all regression analyses of RPE.

OLS models are less robust to violations of multicollinearity among predictor variables, as multicollinearity inflates estimated standardized coefficient values and increases the likelihood of Type I errors. Hayes et al. (2022; 2023) recommend predictor variables display Pearson correlation coefficient (*r*) values of less than .80, and Cohen et al. (2003) recommend variance inflation factors (VIF) among predictors and criterion variables remain below 4.0 to maintain confidence in path estimates. Additionally, Tabachnick and Fidell (2001) recommend that predictor variables maintain 'tolerance', or acceptable levels of variance that remain independent from other predictors in the model (i.e., predictor variance not accounted for). Tabachnick and Fidell conclude that high observed tolerance (i.e., greater than .50) reduces the chance that multicollinearity is present, increases confidence in observed standardized coefficients, and reduces the likelihood of a Type I error. A correlation matrix containing all study variables and calculated Cronbach's alpha is included in Table 6. Calculated VIF and tolerance values between predictors and the criterion are included in Table 7.

Examining the correlation matrix reveals no strong (i.e., $r > .80$) Pearson correlation coefficients exist among predictor variables. Likewise, calculated VIF values all remain below 4.0, and applying a strict threshold of .50 reveals that all predictor

variables maintained acceptable levels of tolerance. Together, the present results provide robust evidence that the assumption of multicollinearity is not violated in collected data. However, examining the correlation matrix reveals a strong positive association (r = .75) between the cynicism and exhaustion dimensions of burnout. To maximize confidence in the results of subsequent mediation analyses, I evaluated the factor structure of the burnout instrument via confirmatory factor analysis (CFA).

Confirmatory Factor Analysis: Burnout

The strong positive correlation between exhaustion and cynicism scores may represent a source of multicollinearity among criterion variables. While OLS procedures are robust to multicollinearity among criterion variables, the present effort seeks to understand the impact of creativity constructs on different forms of burnout arising from job demands. Strong correlation coefficients among construct dimensions could indicate significant measurement overlap and the inability to differentiate distinct facets of a higher-order construct. To determine whether the MBI-GS differentiates between exhaustion and cynicism despite high correlation coefficients I adopted a model comparison methodology by evaluating two competing CFA models: a two-factor solution collapsing exhaustion and cynicism onto a common factor alongside reduced professional efficacy, and a three-factor solution representing exhaustion, cynicism, and reduced professional efficacy fixed onto their own factors separately. The CFAs were conducted in R using the Lavaan structural equation modelling (SEM) package using maximum likelihood estimation and nonlinear minimization. Using the Lavaan package, I performed a chi-square (χ^2) difference analysis of variance (ANOVA) between the competing nested CFA models to evaluate whether the reduction in the chi-square

statistic (i.e., goodness-of-fit indicator) was significant relative to the degrees of freedom gained. If the three-factor model displays a chi-square statistic significantly lower than the two-factor model, and the difference in the chi-square values ($\Delta\chi^2$) is significant, it suggests that the additional complexity of the three-factor model is justified statistically.

Results of the two-factor CFA yielded weak model fit ($\chi^2(103) = 1{,}207.14$, p = .01, CFI = .81, TLI = .79, RMSEA = .16, SRMR = .10), while the three-factor model displayed moderate, but conventionally acceptable, model fit ($\chi^2(101) = 717.55$, p = .01, CFI = .90, TLI = .88, RMSEA = .10, SRMR = .07). A chi-squared difference test between the two models revealed the three-factor model displayed a significantly lower chi-squared compared to the two-factor model ($\Delta\ \chi^2(2) = 489.59$, $p = .01$), indicating a better fit for the three-factor model over the two-factor model. This outcome is also supported by improvements in comparative fit index (CFI) from .81 in the two-factor model to .90 in the three-factor model, and in the Tucker-Lewis index (TLI) from .79 to .88. Additionally, the root mean square error of approximation (RMSEA) decreased from .16 to .10, and the standardized root mean square residual (SRMR) improved from .10 to .07 in the three-factor model. The pattern of results suggest that a three-factor model of burnout not only fits the data significantly better than the two-factor model but also offers a more accurate representation of the underlying structure of the dataset.

Common Method Bias Testing

Common method bias produces spurious correlations among study variables and thus reduces confidence in generated standardized coefficients during OLS path analysis (Siemsen et al., 2010). Given the present study utilized two questionnaires applying similar response formats, common method bias may represent a threat to the validity of

observed results. Notably, Min et al. (2016) demonstrated that time-lag designs, as in the present study, significantly reduce the consistency effect that arises from similar data collection modalities and response scales. Still, Podsakoff et al. (2024) argue that time-lag designs alone are insufficient to prevent common method bias from adversely impacting the observed relationships between study constructs.

Thus, I conducted the Harmon single-factor test (HSFT) as a statistical evaluation for the presence of common method bias. The HSFT utilizes an exploratory factor analysis with a principal axis factor extraction method and single fixed factor to determine if variable indicators load onto one superordinate construct. If the total variance extracted by the single factor exceeds 50%, common method bias likely influences the observed relationship among study constructs. The results of a HSFT revealed that a single factor solution extracted 19.65% of the variance among indicators, suggesting that common method bias did not influence observed relationships in the present data. See Appendix E for additional information on the results of the HSFT.

It is noteworthy that the HSFT has received some criticism from psychometricians as a method of addressing common method bias. Recently, Podsakoff et al. (2024) argued that the HSFT is only a conservative estimate for the presence of common method bias, as the solution assumes the common variance will load onto a single factor. Thus, the HSFT fails to account for or identify common method bias arising from multiple sources. However, other scholars have defended the approach. Employing Monte-Carlo simulated data approximating true population variance, Fuller et al. (2016) demonstrated that common variance arising from methodology must achieve higher levels than previous thought (approximately accounting for 60% of observed variance) to

significantly impact observed standardized coefficients. Fuller et al. concluded that the HSFT does have limitations but remains powerful enough to detect the presence of common method bias in situations where such bias is strong enough to significantly impact observed relationships.

Covariate Analysis

Statistical control is necessary when individual characteristics correlate with observed variance in collected data (Steiner et al., 2010). Failure to account for such systematic error variance has been shown to bias calculated path estimates (Mayer et al., 2014), increase the band width of subsequent confidence intervals (Cohen et al., 2002), and ultimately increase the risk of a Type II error. Thus, I examined the present data to determine if any demographic attributes were significantly correlated with study construct scores. Specifically, the Pearson (*r*) correlation coefficient was calculated in the case of co-examining scale-type variables (e.g., age). A correlation matrix of study variables situated against demographic data is provided in Table 8. Examining the correlation matrix reveals that age, highest education level attained, socioeconomic status, and job tenure each display significant Pearson correlation coefficients regarding variables analyzed in the present study. The confounding influence of these variables was controlled by including the list in all statistical models, thus removing the variability in the criterion associated with such variables. Additionally, a series of one-way analyses of variance (ANOVA) were conducted to determine if any significant mean differences exist between categories of nominal variables (gender, race). No statistically significant mean differences were observed.

Parallel Mediation Results

Broadly, the present hypotheses assert self-reported job demands (X) predict time-lagged burnout scores (Y) mediated in parallel by CPE and/or creative adaptability (M1; M2). Given that scholars recognize two distinct forms of job demands (hindrance versus challenge; Podsakoff et al., 2007) and three distinct dimensions of burnout (exhaustion, cynicism, reduced professional efficacy; Schaufeli et al., 1996), six parallel mediation models were necessary to test the proposed hypotheses. I utilized the PROCESS macro version 4 (Hayes, 2023) in SPSS to generate path estimates for each evaluated model. Utilizing ordinary least squares (OLS) path analysis, the PROCESS macro calculates: the total effect of X on Y, the direct effect of X on Y, and the indirect effect of X on Y through each mediator (M1; M2) independently. The PROCESS macro performs bootstrapping to estimate the standardized path coefficients of the indirect effect. The results of statistical significance testing at the $p = .05$ (2-tailed) level are also provided for all path coefficients.

Challenge Job Demands. The first set of mediation models situate challenge job demands as the predictor of each burnout dimension separately, mediated in parallel by creative process engagement (CPE) and creative adaptability. Evidence of a significant direct effect of the independent variable on potential mediators is necessary to provide support for the proposed mediation model. A path analysis model evaluating the direct effect of challenge demands on CPE controlling for the effects of covariates was significant, $F(5, 430) = 17.75$, $p < .01$, $R = .41$, $R^2 = .17$, $MSE = 0.25$. Variance observed in challenge demands accounted for 17% of the variance observed in self-reported CPE. Challenge demands emerged as a significant positive predictor of CPE ($B = 0.30$, $\beta = .39$,

$t(430) = 8.70$, $p < .01$, $LLCI = 0.23$, $ULCI = 0.37$), such that greater reported challenge demands were associated with greater engagement in creative processes. For further information, refer to Table 9.

Next, an OLS path analysis examining the direct effect of challenge demands on creative adaptability controlling for covariate effects was also significant, $F(5, 430) = 5.63$, $p < .01$, $R = .25$, $R^2 = .06$, $MSE = 0.57$, indicating that reported levels of challenge demands significantly predict variance within creative adaptability. Specifically, variance observed in challenge demands accounted for 6% of the variance observed in self-reported creative adaptability. Challenge demands emerged as a significant positive predictor of creative adaptability ($B = 0.26$, $\beta = .24$, $t(430) = 5.01$, $p < .01$, $LLCI = 0.16$, $ULCI = 0.37$), such that greater reported challenge demands were associated with greater levels of self-reported creative adaptability. Additional information is provided in Table 10. Given the present statistical evidence suggests that challenge demands represent a significant predictor of the mediating variables CPE and creativity adaptability, further analyses are appropriate to determine if a mediation model (full or partial) is supported when situating different burnout dimensions as the final criterion. Specifically, I evaluated: the total effect of X on Y, the direct effect of X on Y, and the indirect effects of X on Y through each mediator.

Criterion 1: Exhaustion. The total effect (i.e., the impact of X on Y without accounting for mediators in the OLS model) of challenge demands on time-lagged exhaustion scores controlling for covariates was significant $F(5, 430) = 17.49$, $p < .01$, $R = .41$, $R^2 = .17$, $MSE = 2.81$. Challenge demands emerged as a significant positive predictor of exhaustion ($B = 0.87$, $\beta = .34$, $t(430) = 7.42$, $p < .01$, $LLCI = 0.64$, $ULCI =$

1.10), such that greater self-reported challenge demands were associated with greater time-lagged exhaustion scores. Variance observed in challenge demands accounted for 17% of the variance observed in self-reported time-lagged exhaustion. For further information, refer to Table 11.

Additionally, the direct effect of challenge demands on exhaustion controlling for both the effects of covariates and the influence of mediators (i.e., CPE, creative adaptability) was significant $F(7, 428) = 19.49$, $p < .01$, $R = .49$, $R^2 = .24$, $\Delta R^2 = .07$, $MSE = 2.58$. Variance observed in challenge demands, CPE, and creative adaptability together accounted for 24% of the variance observed in self-reported exhaustion after three weeks. Challenge demands emerged as a significant positive predictor of exhaustion ($B = 1.16$, $\beta = .45$, $t(428) = 9.49$, $p < .01$, $LLCI = 0.92$, $ULCI = 1.42$), such that greater reported challenge demands were associated with greater time-lagged exhaustion scores above and beyond the effects of CPE and creative adaptability. CPE emerged as a significant negative predictor of exhaustion ($B = -0.66$, $\beta = -.20$, $t(428) = -3.75$, $p < .01$, $LLCI = -1.00$, $ULCI = -0.31$), suggesting that greater engagement with creative cognitive processes was associated with lower exhaustion scores after three weeks. Creative adaptability also emerged as a significant negative predictor of exhaustion ($B = -0.33$, $\beta = -.14$, $t(428) = -2.89$, $p < .01$, $LLCI = -0.56$, $ULCI = -0.11$), suggesting that greater self-reported creative adaptability was associated with lower levels of exhaustion after three weeks. Additional information is provided in Table 12. Given the relationship between challenge demands and exhaustion remained statistically significant despite the inclusion of proposed mediators (CPE, creative adaptability), the present pattern of evidence

provides support for a partial mediation model, thus providing partial support for Hypothesis 1.

The indirect effect represents the extent to which the relationship between X and Y is mediated by M1 and/or M2. To determine the indirect effect of challenge demands on exhaustion through each mediator independently, I conducted a bootstrapping procedure utilizing a 5,000 parameter resample and a confidence internal of 95%. The indirect effect of challenge demands on time-lagged exhaustion through CPE emerged as negative and significant (β = -.08, p < .01, *BLLCI* = -0.14, *BULCI* = -0.03). Similarly, the indirect effect of challenge demands on time-lagged exhaustion through creative adaptability emerged as negative and significant (β = -.03, p < .01, *BLLCI* = -.06, *BULCI* = -.01). See Table 13 for additional information on the results of bootstrapping. The present pattern of results provides several insights.

First, a partial parallel mediation model whereby CPE and creative adaptability partially and independently mediate the positive relationship between challenge demands and exhaustion was supported (partially supporting Hypothesis 1). That is, challenge demands were associated with both greater exhaustion (burnout) and greater creativity. However, the present results suggest challenge demands also exert a negative indirect effect on exhaustion due to the influence of CPE and creative adaptability. Additionally, CPE, rather than creative adaptability emerged as the stronger mediator of the challenge demands-exhaustion relationship, (partially failing to support Hypothesis 1). While observed effect sizes are small, the standardized path coefficient of the indirect effect through CPE emerged as more than twice as strong as that describing the influence of

creative adaptability. See Figure 3 for a graphical depiction of the supported partial parallel mediation model including standardized path coefficients.

Criterion 2: Cynicism. The total effect (i.e., the impact of X on Y without including mediators in the OLS model) of challenge demands on time-lagged cynicism scores controlling for covariates was significant $F(5, 430) = 5.62$, $p < .01$, $R = .25$, $R^2 = .06$, $MSE = 2.75$, indicating that reported levels of challenge demands were associated with reported cynicism scores after three weeks. Challenge demands emerged as a significant positive predictor of cynicism ($B = 0.37$, $\beta = .15$, $t(430) = 3.19$, $p < .01$, $LLCI = 0.14$, $ULCI = 0.60$), such that greater self-reported challenge demands were associated with greater time-lagged cynicism scores. Variance observed in challenge demands alone accounted for 6% of the variance observed in self-reported time-lagged cynicism. For further information, refer to Table 14.

Additionally, the direct effect of challenge demands on cynicism controlling for the effects of covariates (i.e., education, socioeconomic status, tenure, age) while including both mediators in the model (i.e., CPE, creative adaptability) was significant $F(7, 428) = 9.34$, $p < .01$, $R = .36$, $R^2 = .13$, $\Delta R^2 = .07$, $MSE = 2.56$. Variance observed in challenge demands, CPE, and creative adaptability together accounted for 13% of the variance observed in self-reported cynicism after three weeks. Challenge demands emerged as a significant positive predictor of cynicism ($B = 0.63$, $\beta = .26$, $t(428) = 5.16$, $p < .01$, $LLCI = 0.39$, $ULCI = 0.86$), such that greater reported challenge demands were associated with greater time-lagged cynicism scores above and beyond the effects of CPE and creative adaptability. CPE did emerge as a significant negative predictor of cynicism ($B = -0.54$, $\beta = -.17$, $t(428) = -3.09$, $p < .01$, $LLCI = -0.88$, $ULCI = -0.20$), suggesting that

greater engagement with creative cognitive processes was associated with lower cynicism scores after three weeks. Creative adaptability also emerged as a significant negative predictor of cynicism (B = -0.35, β = -.16, $t(428)$ = -3.07, $p < .01$, $LLCI$ = -0.58, $ULCI$ = -0.13), suggesting that greater self-reported creative adaptability was associated with lower levels of cynicism after three weeks. Additional information is provided in Table 15. Given the relationship between challenge demands and cynicism remained statistically significant despite the inclusion of proposed mediators (CPE, creative adaptability), the present pattern of evidence provides support for a partial mediation model, thus providing partial support for Hypothesis 2.

Moreover, a bootstrapping procedure utilizing a 5,000 parameter resample and a confidence interval of 95% revealed significant indirect effects. The indirect effect of challenge demands on time-lagged cynicism scores through CPE emerged as negative and significant (β = -.07, $p < .01$, $BLLCI$ = -.12, $BULCI$ = -.02). Similarly, the indirect effect of challenge demands on time-lagged cynicism through creative adaptability emerged as negative and significant (β = -.04, $p < .01$, $BLLCI$ = -.07, $BULCI$ = -.01). See Table 16 for additional information regarding bootstrapping results.

Akin to the pattern of results observed during the evaluation of exhaustion, the present findings suggest CPE represents the stronger creativity mediator of the challenge demands-cynicism relationship (partially failing to support Hypothesis 2). Greater self-reported challenge demands were significantly associated with both greater creativity and greater cynicism; however, standardized indirect effects between creativity constructs and cynicism (burnout) were significant and negative. The pattern of results suggests challenge demands are indirectly associated with lower cynicism via the influence of

CPE and creative adaptability. See Figure 4 for a graphical depiction of the resulting standardized path coefficients.

Criterion 3: Reduced Professional Efficacy. The total effect of challenge demands on reduced professional efficacy (RPE) scores controlling for covariates failed to achieve statistical significance, $F(5, 430) = 4.95$, $p = .12$, $R = .23$, $R^2 = .05$, $MSE = 0.86$, indicating that reported levels of challenge demands alone are not associated with RPE scores after a time lag of three weeks ($B = -0.10$, $\beta = -.08$, $t(430) = -1.57$, $p = .12$, $LLCI = -0.23$, $ULCI = 0.03$). The surprising finding suggests that challenge demands are unrelated to time-lagged RPE scores. For further information, refer to Table 17. Moreover, the results of a bootstrapping protocol utilizing a 5,000 parameter resample and a confidence interval of 95% failed to demonstrate statistically significant indirect effects of challenge demands on RPE through both CPE ($\beta = -.06$, $BLLCI = -.13$, $BULCI = .00$, *n.s.*) and creative adaptability ($\beta = -.05$, $BLLCI = -.08$, $BULCI = .01$, *n.s.*). The pattern of results suggests that creativity does not mediate a proposed relationship between challenge demands and RPE, thus failings to provide support for Hypothesis 3.

Hindrance Job Demands. The next set of mediation models situate hindrance job demands as the predictor of each burnout dimension separately, mediated in parallel by creative process engagement (CPE) and creative adaptability. First, evidence of a significant direct effect between the independent variable and potential mediators is necessary to provide support for the proposed mediation models. The OLS coefficient estimate of the direct effect between hindrance demands on CPE controlling for covariates did achieve statistical significance, $F(5, 430) = 2.35$, $p = .04$, $R = .16$, $R^2 = .03$, $MSE = 0.29$. The overall model accounted for 3% of the variance observed in self-

reported CPE. However, hindrance demands failed to emerge as a significant predictor of CPE above and beyond controlled covariates (B = 0.02, β = .04, t(430) = 0.79, p = .43, $LLCI$ = -0.04, $ULCI$ = 0.09), indicating that that hindrance demands were not related to self-reported CPE. For further information, refer to Table 18.

Less promising results were observed when estimating the direct effect between hindrance demands and creative adaptability; the OLS path estimate, controlling for covariates, failed to achieve statistical significance, F(5, 430) = 0.60, p = .70, R = .08, R^2 = .01, MSE = 0.60. The overall model accounted for only 1% of the variance observed in creative adaptability, and hindrance demands failed to emerge as a statistically significance antecedent of creative adaptability (B = 0.02, β = .02, t(430) = 0.37, p = .71, $LLCI$ = -0.07, $ULCI$ = 0.11). Additional information is provided in Table 19. The present pattern of results demonstrate that hindrance demands were not associated with targeted creativity constructs serving as proposed mediators; thus, further evaluation of proposed mediation models is inappropriate.

Supplemental Analyses

Challenge demands failed to demonstrate a significant total effect on the RPE dimension of burnout, and hindrance demands failed to emerge as a significant antecedent of the proposed mediating creativity variables. Further OLS path estimations of the relationship between creativity and burnout were inappropriate. As a result, the present analyses omit an explicit evaluation of a general predictive model describing the relationships between key study variables (e.g., creativity) and burnout. To provide post-hoc information across all dimensions of burnout and both forms of job demands, I constructed a series of three hierarchical linear models regressing burnout dimension

scores separately onto covariates (first block), both forms of job demands (second block), and both creativity variables (third block).

Exhaustion. A hierarchical multiple regression model of exhaustion on challenge and hindrance demands while controlling for the effects of observed covariates yielded statistically significant results ($F(6, 429) = 32.60$, $p = .01$, $R = .56$, $R^2 = .31$, $\Delta R^2 = .25$, $MSE = 2.33$), suggesting that the two distinct forms of job demands together predict time-lagged exhaustion scores. Indeed, hindrance demands emerged as a significant positive predictor of exhaustion ($B = 0.94$, $\beta = .42$, $t(429) = 9.49$, $p = .01$, $LLCI = 0.75$, $ULCI = 1.14$), indicating that greater hindrance demands are associated with greater self-reported exhaustion scores after a three-week interval. Similarly, challenge demands emerged as a significant positive predictor of exhaustion ($B = 0.39$, $\beta = .15$, $t(429) = 3.27$, $p = .01$, $LLCI = 0.15$, $ULCI = 0.62$), suggesting that greater challenge demands predict greater self-reported exhaustion scores after three-weeks. Notably, the two forms of job demands alone accounted for 25% of the variance in exhaustion scores above and beyond controlled covariate variables.

In a subsequent step, creative process engagement (CPE) and creative adaptability were added to the hierarchical multiple regression model of exhaustion. The overall model regressing exhaustion on job demands and creativity constructs together yielded statistically significant results ($F(8, 427) = 29.97$, $p = .01$, $R = .60$, $R^2 = .36$, $\Delta R^2 = .05$, $MSE = 2.18$), suggesting that job demands and creativity together predict exhaustion scores while controlling for covariate effects. As expected, both hindrance job demands ($B = 0.86$, $\beta = .39$, $t(427) = 8.87$, $p = .01$, $LLCI = 0.67$, $ULCI = 1.06$) and challenge job demands ($B = 0.65$, $\beta = .25$, $t(427) = 5.19$, $p = .01$, $LLCI = 0.41$, $ULCI = 0.90$) emerged

as significant positive predictors of exhaustion scores, suggesting that greater job demands are associated with greater exhaustion while controlling for the effects of CPE and creative adaptability. In contrast, CPE emerged as a significant negative predictor of time-lagged exhaustion scores (B = -0.48, β = -.14, t(427) = -2.93, p = .01, $LLCI$ = -0.80, $ULCI$ = -0.16), suggesting greater self-reported CPE is associated with lower exhaustion scores three weeks later. Creative adaptability also emerged as a significant negative predictor of exhaustion (B = -0.31, β = -.13, t(427) = -2.90, p = .01, $LLCI$ = -0.52, $ULCI$ = -0.10), indicating that greater creativity adaptability scores predicted lower exhaustion after three weeks. The addition of the two creativity constructs to the multiple regression model accounted for 5% of the variance in exhaustion scores above and beyond the effects of job demands. Together, job demands and creativity accounted for 36% of the variance in exhaustion. The results of the hierarchical multiple regression models of exhaustion are provided in Table 20.

Cynicism. Next, a hierarchical multiple model regressing cynicism on challenge and hindrance demands while controlling for the effects of observed covariates yielded statistically significant results (F(6, 429) = 25.68, p = .01, R = .51, R^2 = .26, ΔR^2 = .22, MSE = 2.16), suggesting that the two distinct forms of job demands together predicted time-lagged cynicism scores. Indeed, hindrance demands emerged as a significant positive predictor of cynicism (B = 1.04, β = .50, t(429) = 10.88, p = .01, $LLCI$ = 0.85, $ULCI$ = 1.23), indicating that greater hindrance demands predicted greater self-reported cynicism scores after a three-week interval. Challenge demands failed to emerge as a significant predictor of cynicism (B = -0.17, β = -.07, t(429) = -1.45, p = .15, $LLCI$ = -0.39, $ULCI$ = 0.06). Together, job demands and covariates accounted for 26% of the

variance in cynicism scores. Job demands alone accounted for 22% of the variance in cynicism scores above and beyond covariate variables.

In the next step, creative process engagement (CPE) and creative adaptability were added to the hierarchical multiple regression model of cynicism. The overall model regressing cynicism scores on job demands and creativity constructs together yielded statistically significant results ($F(8, 427) = 23.53$, $p = .01$, $R = .55$, $R^2 = .31$, $\Delta R^2 = .04$, $MSE = 2.05$), suggesting that job demands and creativity together predict time-lagged cynicism scores while controlling for covariate effects. Hindrance job demands ($B = 0.97$, $\beta = .47$, $t(427) = 10.33$, $p = .01$, $LLCI = 0.79$, $ULCI = 1.16$) emerged as a significant positive predictors of cynicism scores, suggesting that greater hindrance demands are associated with greater cynicism despite including creativity in the regression model. As expected, challenge demands replicated the results of the previous step and failed to emerge as a significant predictor of cynicism scores ($B = 0.06$, $\beta = .02$, $t(427) = 0.46$, $p = .65$, $LLCI = -0.83$, $ULCI = 0.30$).

Creativity constructs were added to the regression model in a subsequent step. CPE emerged as a significant negative predictor of time-lagged cynicism scores ($B = -0.34$, $\beta = -.11$, $t(427) = -2.12$, $p = .03$, $LLCI = -0.65$, $ULCI = -0.03$), suggesting greater self-reported CPE is associated with lower cynicism scores three weeks later. Creative adaptability also emerged as a significant negative predictor of cynicism ($B = -0.32$, $\beta = -.15$, $t(427) = -3.14$, $p = .01$, $LLCI = -0.53$, $ULCI = -0.12$), indicating that greater creativity adaptability scores predict lower cynicism after three weeks. The addition of the two creativity constructs to the multiple regression model accounted for 4% of the variance in exhaustion scores above and beyond the effects of job demands. Together, job demands

and creativity accounted for 31% of the variance in exhaustion. The results of the hierarchical multiple regression models of cynicism are found in Table 21.

Reduced Professional Efficacy. A hierarchical multiple regression model of reduced professional efficacy (RPE) on challenge and hindrance demands while controlling for the effects of observed covariates yielded statistically significant results ($F(6, 429) = 10.52$, $p = .01$, $R = .36$, $R^2 = .13$, $\Delta R^2 = .08$, $MSE = 0.79$), suggesting that the two distinct forms of job demands together predicted time-lagged RPE scores. Hindrance demands emerged as a significant positive predictor of RPE ($B = 0.35$, $\beta = .30$, $t(429) = 6.03$, $p = .01$, $LLCI = 0.24$, $ULCI = 0.46$), indicating that greater hindrance demands are associated with greater self-reported RPE scores after a three-week interval. Challenge demands also emerged as a significant, albeit negative, predictor of RPE ($B = -0.28$, $\beta = .21$, $t(429) = -4.07$, $p = .01$, $LLCI = -0.42$, $ULCI = -0.16$), suggesting that greater challenge demands predict lower self-reported RPE scores after three-weeks. Together, job demands and covariates accounted for 36% of the variance in RPE scores, with job demands alone accounting for 8% of the variance in RPE scores above and beyond covariate variables.

In a subsequent step, creative process engagement (CPE) and creative adaptability were added to the hierarchical multiple regression model of RPE. The overall model regressing RPE on job demands and creativity constructs together yielded statistically significant results ($F(8, 427) = 13.72$, $p = .01$, $R = .45$, $R^2 = .20$, $\Delta R^2 = .08$, $MSE = 0.73$), suggesting that job demands and creativity together predict RPE scores while controlling for covariate effects. As expected, hindrance job demands ($B = 0.30$, $\beta = .26$, $t(427) = 5.34$, $p = .01$, $LLCI = 0.19$, $ULCI = 0.41$) remained a significant positive predictor of RPE

scores, suggesting that greater hindrance demands are associated with greater RPE measured three weeks later. However, challenge demands failed to emerge as a statistically significant predictor of RPE (B = -0.12, β = .09, t(427) = -1.60, p = .11, $LLCI$ = -0.26, $ULCI$ = 0.03).

Regarding creativity, CPE emerged as a significant negative predictor of time-lagged RPE scores (B = -0.25, β = -.14, t(427) = -2.62, p = .01, $LLCI$ = -0.43, $ULCI$ = -0.06), suggesting greater self-reported CPE is associated with lower RPE scores three weeks later. Creative adaptability also emerged as a significant negative predictor of RPE (B = -0.25, β = -.20, t(427) = -4.02, p = .01, $LLCI$ = -0.37, $ULCI$ = -0.13), indicating that greater creativity adaptability scores predicted lower RPE after three weeks. The addition of the two creativity constructs to the multiple regression model accounted for 7.60% of the variance in RPE scores above and beyond the effects of job demands. Together, job demands and creativity accounted for 20% of the variance in RPE. The results of the hierarchical multiple regression models of RPE are provided in Table 22.

Discussion

Work-related burnout is a social, economic, and humanitarian problem. Burnout-related absenteeism, turnover, and low worker productivity is estimated to cost large organizations a yearly average of $8,000 per worker, or a $6.3 billion sunk cost to the U.S. economy yearly (Han et al., 2019). Work-sponsored health insurance plans are shouldering much of the additional $190 billion annual cost arising from adverse health outcomes. Thus, work-related burnout is directly contributing to inflated costs for organizations, lower health quality for employees, and most grievously, 120,000 worker deaths on average yearly (Goh et al., 2015). Simultaneously, organizations are

increasingly emphasizing the need for employees to think creatively, generate high-quality solutions to novel problems, develop new proficiencies, and adapt to a rapidly evolving technology landscape (e.g., generative A.I., A.I. assistants, etc.; Li, 2022; Shalley & Gilson, 2004). Indeed, creative problem-solving has been identified as one of the most crucial skills for 21st century workers (National Research Council, 2012), and the 2020 World Economic Forum (WEF; Schwab & Zahidi, 2020) estimated that at least half of the world's employee population would require reskilling after 2025 to remain viable in an increasingly competitive marketplace.

The present situation presents a paradox for modern organizations. Past evidence suggests that all forms of job demands are associated with increased levels of burnout among employees (Crawford et al., 2010). Given that the requirement to develop new skills and/or engage in creative problem solving will represent an expansion of demands placed on employees, the question becomes: how can organizations encourage creative thinking and prepare their workforce for the future, while reducing the costs associated with negative employee health outcomes and burnout? The results of the present study offer some insight into mitigating the burnout problem, and make significant contributions to the extant creativity, burnout, and job demands areas of study.

To summarize, the present study demonstrated that the relationship between challenge demands and two dimensions of burnout (exhaustion, cynicism) is partially mediated in parallel by creative process engagement (CPE) and creative adaptability. In other words, challenge demands exerted a multivalenced influence on self-reported burnout levels. While observed effect sizes were small, the present results replicate previous efforts demonstrating greater challenge demands are indeed associated with

greater burnout; moreover, an OLS path analysis revealed challenge demands are associated with both greater engagement in creative cognitive processes and greater creative adaptability, which in turn exerts a negative (i.e., reducing) influence on self-reported burnout in a time-lagged design. Thus, challenge demands were directly associated with greater burnout, yet indirectly associated with lower burnout via the influence (i.e., partial mediation) of creativity arising in response to challenge demands. Bootstrapping indirect pathway coefficients revealed that CPE represents the 'stronger' (i.e., more influential) creativity construct in the challenge demands-burnout relationship. Overall, the supported partial mediation models suggest that the direct positive effect between challenge demands and burnout remains a concern for organizations and employees. However, negative indirect effects operating via creativity suggest that organizational leaders and policies may be able to mitigate employees' exhaustion and cynicism experiences.

Implications for Creativity and Burnout

The finding that challenge demands, but not hindrance demands, predicted two creativity constructs independently contributes to a series of inconsistent findings reporting job demands may: promote creativity (Janssen, 2000; Sacramento et al., 2013), reduce creativity (Amabile, 1996), or display curvilinear effects on creativity (Baer & Oldham, 2006; Byron et al., 2010). However, previous empirical efforts have either operationalized job demands as constraints or emphasized stress-inducing job-related obstacles (i.e., hindrances), thus potentially obfuscating indirect effects associated with challenge demands. Only two, but conflicting, previous empirical efforts explore the differential implications of challenge versus hindrance demands for creativity. Li and Li

(2016) constructed a SEM to demonstrate that challenge demands significantly predicted greater employee creativity, while hindrance demands were significantly associated with lower creativity. In contrast, Sun et al. (2020) provided Pearson correlation coefficients reporting that both challenge and hindrance demands were significantly associated with greater employee creativity. However, both studies utilized measures of creativity that emphasized divergent thinking (i.e., idea generation), rather than a holistic perspective of creative thought (e.g., Zhang & Bartol, 2010).

The present study represents the first effort to situate challenge versus hindrance demands as the antecedent of creative cognitive processes (i.e., CPE) and the ability to respond creatively to stressful situations (i.e., creative adaptability). The present results suggesting challenge demands, but not hindrance demands, are associated with creativity aligns with a pattern of findings reported in the domain of motivational psychology. Kim and Beehr (2018) demonstrated that challenge demands predicted employees' psychological empowerment and self-efficacy scores, while hindrance demands predicted greater psychological strain and negative self-perceptions of ability. LePine et al. (2004) observed that while both challenge and hindrance demands prompt greater employee exhaustion, challenge demands were significantly associated with increased task performance, partially mediated by greater motivations to learn. The evidence provided by Kim and Beehr as well as LePine and colleagues prompts a potential explanation as to why a significant challenge-creativity association is not replicated with regards to hindrance demands: empirical evidence suggests challenge demands support positive self-perceptions and/or motivate individuals to generate novel solutions to overcome stressful situations.

However, the present results partially fail to support such a conclusion. Both the total effect of challenge demands and the indirect effect of challenge demands through creativity constructs were unrelated to the reduced professional efficacy dimension of burnout, which refers to a reduction in positive self-perceptions in the domain of work. That is, the present parallel mediation analysis failed to replicate an expected relationship of more positive self-views arising after an increase in work-related challenge demands. Moreover, a supplemental hierarchical regression model revealed the association between challenge demands and efficacy became insignificant after creativity constructs were added to the model in a subsequent step. Still, it must be noted that the present study did not include motivational constructs in statistical models; thus, the implications of greater motivation for creativity in the context of challenge demands remains unclear.

Despite some differences, extant literature and the present results both support the notion that challenge demands represent unique stressors that prompt creative thinking. Further, creativity was observed to mitigate experienced burnout arising from challenge demands, but not hindrance demands. In many ways, the finding that creativity reduces the burnout experience arising from challenge demands is not surprising. Within the field of positive psychology, beneficial reactions that arise in response to stressors represent a specific form of coping mechanism referred to as positive adaptation (Sweetman et al., 2010), or positive deviance (Luthans 2002; Luthans et al., 2007). These approaches are viewed as constructive, rather than detrimental (i.e., avoidant), coping approaches that result in positive personal and organizational outcomes (Janssen, 2000; Lazarus & Folkman, 1984; Perrez & Reicherts, 1992).

Akin to creativity, positive deviations refer to change-oriented and adaptive behaviors directed towards the implementation of a novel and effective solution to stress-inducing stimuli. Psychological resiliency has been identified as a particularly relevant ability associated with an increase in employee well-being, as the construct is defined as the capacity to bounce-back from failure, question long-held assumptions, and remain content in highly ambiguous situations (Wagnild & Young, 1993). While it is possible that creative thinking merely contributes to the construction of psychological resiliency, it must be noted that psychological resiliency and prominent models of creativity share several defining features (Amabile, 1996; Leone et al., 2023). Cognitive process models of creativity describe a 'recurve' process whereby failure in later processes results in further activity in earlier processes to overcome obstacles and ultimately implement a more creative solution despite the initial setback (Mumford et al., 1991). Likewise, creative adaptability specifically refers to one's capacity to deploy novel and effective behavioral, emotional, and cognitive strategies in response to a stressful situation. Considering the considerable overlap in the conceptualizations of creativity and coping mechanisms, I argue creativity operates as a unique form of constructive coping in and of itself. That is, employees utilize creative thinking as a constructive reaction to challenging demands, and greater engagement with creative cognition yields favorable outcomes for employee experiences. In other words, a stressful situation requiring growth (i.e., challenge demand) necessitates novel and effective adaptations (i.e., creativity) which also manages the detrimental fatigue (exhaustion) and detachment (cynicism) that naturally occurs in response to challenge job demands.

Indeed, creativity may be a uniquely situated coping mechanism for the reduction of work-related burnout arising from challenge demands. Put simply, creativity is inherently growth oriented (Cropley, 2000; Kaufman, 2018). Situations where routinized solutions are adequate do not require engagement with cognitive processes aiming to define situational parameters (i.e., problem construction), ideate potential solutions (i.e., idea generation), and/or evaluate competing alternatives (i.e., idea evaluation). In contrast, it is expected and perhaps necessary that individuals will engage in positive deviance to generate novel and effective strategies when faced with challenging demands. That is, given challenge demands refer to workplace characteristics that promote growth (i.e., change, progression), routinized or 'tried-and-true' solutions are not expected to deviate individuals' abilities above and beyond their current baseline (Kennel et al., 2019; Reiter-Palmon et al., 2021). Thus, individuals who apply greater creative thinking in response to challenge demands are more likely to 'rise to the occasion' and conceive, select, and implement solutions/strategies that result in more favorable outcomes (Rietzschel et al., 2010). It follows that the benefits of higher-quality strategy/solution conception may yield fewer setbacks and less redundancy in efforts, contributing to lower exhaustion due to a reduction in overall workload (Goh et al., 2020).

Similarly, the present results suggest higher-quality strategy/solution generation contributes to lower cynicism, or feelings of detachment from work arising from the perception that one's contributions lack impact or a greater significance. Employees who engage with presenting problems in constructive (i.e., creative) ways display self-directed positive adaptations to implement original and effective solutions in the face of ambiguous or stressful situations (Orkibi et al., 2021). That is, creative thinking provides

structure to nebulous problems and makes key connections between seemingly broad or disparate concepts to generate a unified and appropriate solution (Tegano, 1990; Zenasni et al., 2008). Indeed, the generation of ideas/solutions that are both effective and novel (i.e., creative) implies such a broader evaluative perspective, as individuals must assess and anticipate the implications of ideas beyond the scope of their immediate tasks. In other words, the generation of effective solutions implies a consideration into how one's work supports the goals of the organization at large (Amabile, 1996; Mumford, 1991). This evaluative perspective emphasizes the relevance of one's tasks, and may enhance employee recognition that their contributions are significant to the organization's objectives, thereby elevating their tasks with a heightened sense of purpose and meaningfulness (i.e., lower cynicism; Cohen-Meitar et al., 2009).

Another novel observation concerns the comparative importance of two distinct creativity constructs for the challenge demand-burnout relationship. I hypothesized that creative adaptability would emerge as the stronger antecedent of both exhaustion and cynicism, while CPE would be partially associated with exhaustion and reduced professional efficacy. The predictions were not supported; rather, CPE emerged as the stronger antecedent of exhaustion and cynicism while no association was observed for reduced professional efficacy, implying that CPE represents the more important creativity construct for reducing the employee burnout experience. While observed effect sizes are considered small as defined by Cohen et al. (2013), it is noteworthy that the standardized path coefficients between CPE and burnout dimensions were approximately twice as strong as those observed between creative adaptability and burnout.

The pattern of results is surprising given creative adaptability is defined as the ability to generate creative solutions during stressful situations, and exhaustion is typically regarded as the "stress" or "fatigue" dimension of burnout. However, empirical evidence suggests that self-efficacy fully mediates the relationship between creative adaptability and well-being in certain samples (Orkibi et al., 2021). Given that challenge demands were not associated with self-perceptions (i.e., professional self-efficacy) in the current study, a weak creative adaptability-burnout relationship may also be expected. The association between CPE and exhaustion was expected, and replicates findings reported by Derekhshanrad et al. (2019).

The observed link between CPE and cynicism, however, is novel and surprising. The present results partially conflict with previous efforts documented by Tang et al. (2021) who reported that CPE was uncorrelated with social connectedness. While the cynicism dimension of burnout does include aspects of social disengagement, cynicism also involves feelings of detachment from one's work and a sense that one's role or contributions are meaningless. The present results and those of Tang et al. together imply that CPE is more strongly associated with feelings of work engagement and one's impact/importance at work, but not associated with feelings of social connectedness. Unfortunately, the measurement model supported by MBI validation efforts does not conceptualize cynicism as a composite of several distinct facets (Maslach & Jackson, 1981; Schaufeli et al., 1996). Items reflecting sentiments of social detachment, lack of enthusiasm, and meaninglessness all load onto a single "cynicism" factor together. Thus, it is difficult to tease apart unique or differential relationships between competing subdimensions of cynicism and CPE.

Still, a link between meaningfulness and other perspectives of creativity has been supported in extant literature (Kaufman, 2018; Sherman & Shavit, 2017; Tavares, 2018), suggesting a similar association may be supported utilizing the present CPE construct. Further, the generation of effective solutions implies a consideration of how one's work supports overall organizational goals (Amabile, 2018; Amabile et al., 1996); thus, the present results demonstrating a significant negative CPE-cynicism relationship fit into currently accepted theory (Oldham & Bear, 2012). The results of Tang et al. (2021) should not be ignored, however, as the present avenue of research represents only a nascent understanding of the creativity-burnout relationship. Future research utilizing diverse samples and methods is necessary to form a consensus regarding how CPE impacts cynicism arising in response to challenge demands.

Above and beyond the finding that creativity mitigates the challenge-burnout relationship, the observed lack of impact for two distinct creativity constructs on the hindrance-burnout relationship should be noted. In some ways, such a pattern of results may be expected. Cognitive process engagement (CPE) assumes a cognitive perspective of creativity concerning mental operations and processes that underly the generation of creative products. Considering hindrance demands are conceptualized as workplace characteristics that drain cognitive resources, distract attention away from taskwork, and impose constraints on autonomy (Crawford et al., 2010), the lack of association with CPE may stem from a disruption of cognitive operations.

Within the framework of the creative cognitive process perspective, hindrance demands may prevent or limit individual's capability to progress through creative processes (Mumford et al., 1991). Under Mumford et al.'s process model, obstacles

encountered in later processes (e.g., implementation planning) result in a recurve to earlier processes (e.g., problem identification and construction) where further cognitive work is required to overcome the barrier to progress. Thus, hindrance demands may entrench individuals in the process of attempting to understand the parameters of their situation, for example, and limit the generation of potential solutions. Still, it is important to note that the present study did not observe a significant negative relationship between hindrance demands and CPE, as one may expect if hindrance demands diminished CPE outright. Given the interpretation of null results is inappropriate, it remains unclear how exactly hindrance demands operates on CPE. The present results do suggest, however, that burnout arising from hindrance demands remains an impactful problem for employees and, unfortunately, creativity does not appear to improve employee experiences when facing such conditions.

Regarding creative adaptability, the absence of a significant association with hindrance demands was initially surprising. Creative adaptability is conceptualized as the ability to generate creative responses in the face of stressful situations. Given robust empirical evidence demonstrates hindrance demands prompt greater stress and exhaustion (Cavanaugh et al., 2000; Podsakoff et al., 2007), it may be expected that the creative adaptability construct is well-situated to emerge as criterion of hindrance demands. However, the lack of an observed association does fit within the present argument that creativity represents a unique constructive coping mechanism. Hindrance demands are thought to elicit defensive rather than adaptive cognitive responses (LePine et al., 2004). That is, hindrance demands are associated with increased stress reactions that prioritize immediate coping, avoidance, and anxiety responses rather than the

flexible divergent thinking associated with creative adaptability (Orkibi, 2021; Turgut et al., 2017). Additionally, creativity is thought to flourish in ambiguous situations (Caniels & Rietzschel, 2015; Liu et al., 2011; Zenasni et al., 2008). Given hindrance demands represent impactful constraints that diminish autonomy and prompt destructive coping approaches, employees facing hindrance demands may experience a suppressed inclination or ability to generate novel ideas and may favor more conservative, less innovative approaches during problem-solving. However, the present null results are unable to support such speculation, and future research is needed to determine if hindrance demands remain merely unrelated to creative adaptability or represent a negative influence on creative potential.

Implications for Job Demands and Burnout

Moreover, the present results are meaningful given the broader discourse regarding job demands and burnout. Crawford et al.'s (2010) work remains the sole meta-analytic effort to tease apart the unique influences of challenge versus hindrance demands on employee burnout, despite calls for greater granularity in understanding the nuances of the JD-R model (e.g., Lesener et al., 2019). Crawford et al. found that both challenge and hindrance job demands were associated with greater levels of employee burnout, despite a positive association between challenge demands and employee engagement. The authors conclude that the increase in engagement associated with greater challenge demands does not translate into a reduction of the burnout experience. However, Crawford et al. reported meta-analytic relationships at the construct-level rather than analyzes differences at the dimension-level as recommended by burnout scholars (Maslach & Jackson, 1981). Thus, meta-analytic evidence describing the differential

relationships between challenge versus hindrance demands and different dimensions of burnout is lacking. The present study represents a step forward in addressing this deficit.

Notably, the present results replicate Crawford et al.'s (2010) findings in that hindrance demands consistently emerge as a positive predictor of all three burnout dimensions. However, in the context of creativity challenge demands were observed to exert a significant positive effect on the exhaustion and cynicism dimensions of burnout, but no relationship was detected for the reduced professional efficacy dimension. Such findings are directionally congruent with Crawford et al. and extend such efforts by demonstrating that the link between challenge demands and burnout appears to operate via exhaustion and cynicism primarily, whereas hindrance demands appear to increase the full breadth of burnout dimensions. That is, the pattern of results suggests that when employees experience burnout in response to challenge demands, the main negative aspects of their experience involve feelings of being: overworked, exhausted, less socially connected, and more psychologically distant from their work and/or peers.

Crawford et al. (2010) contend that while both challenge and hindrance demands were associated with increased burnout, challenge demands represented the less 'harmful' antecedent as challenge demands were correlated with greater employee engagement scores. The present results provide tangential support for the notion that challenge demands are less detrimental for employee burnout; hindrance demands were significantly and positively associated with all three burnout dimensions, while challenge demands were only associated with exhaustion and cynicism when creativity is co-examined. Further, the burnout associated with challenge demands may be mitigated partially when employees engage with creative processes and/or display greater creative

adaptability. The relationship between hindrance demands and burnout, in contrast, was not observed to mitigated by creativity in the present study.

The finding that challenge demands primarily operate via exhaustion and cynicism, rather than all three dimensions, is in some ways surprising. It is intuited and expected that both forms of job demands are associated with greater scores on the exhaustion dimension, and several empirical efforts have demonstrated this relationship (e.g., Bakker et al., 2004; Tuxford & Bradley, 2014; Xanthopoulou et al., 2007). Regarding the efficacy dimension, empirical evidence demonstrates that employees tend to perceive challenge demands as opportunities to display competence and a willingness to adopt new responsibilities (Boswell et al., 2004; Cavanaugh et al., 2000). Thus, the lack of evidence supporting challenge demands as an antecedent of reduced professional efficacy fits within the currently accepted dichotomous model of job demands (LePine et al., 2004).

In contrast, the observed positive direct association between challenge demands and cynicism presents a novel finding that conflicts with past empirical efforts. Notably, there are few direct empirical investigations into the differential relationship between challenge/hindrance demands and unique burnout dimensions, and scholars who have engaged in such efforts report differing findings. Yao et al. (2015) reported the results of a SEM that demonstrated challenge demands were significantly and negatively associated with both cynicism and inefficacy scores, concluding that an increase in challenge demands may only result in burnout due to an increase in workload (i.e., exhaustion). Tangential, but conflicting, evidence was presented by Tong et al. (2021) who observed a significant positive correlation between challenge demands and cynicism; however, Tong

and colleagues did not report the total or total direct effect of challenge demands on cynicism in their evaluated analytical model. The present study extends the efforts of Tong et al. and presents empirical evidence suggesting that feelings of cynicism may remain a significant risk when employees experience additional challenge demands.

Interpreting their pattern of results, Yao et al. (2015) argue that challenge stressors may increase employee sentiments of involvement or visibility with respect to the broader organization, thus resulting in lower cynicism experiences. While other researchers have demonstrated a negative relationship between high-involvement work practices (i.e., involving employees in decision-making) and cynicism scores (Kilroy et al., 2016), the link between experienced challenge demands and increased employee sentiments of involvement/visibility has not been empirically investigated. Alternatively, Guidetti et al. (2022) proposed that challenge demands presented in an environment of high job insecurity (i.e., apprehension/fear for one's continued employment) may increase employee cynicism due to feelings of meaninglessness surrounding the demand. That is, employees who are concerned about layoffs may consider any additional job demand, regardless of growth potential, to be pointless or unnecessary when the risk of termination is high or inevitable. Given the lack of a consensus concerning the link between challenge demands and cynicism, additional research is necessary to tease apart the unique impact of challenge demands on employee experiences.

Practical Implications

The present study emphasizes the inherent risk that leaders face when providing employees with opportunities to develop new skills, take on additional responsibilities, and demonstrate high levels of competency or mastery. Even though employees may

desire such challenges, managers should expect that the additional burden will result in some level of increased work-related burnout. However, novel results documented by the present study suggest that promoting employee creativity represents one way to reduce burnout arising from challenging work demands, but creativity may not be effective at mitigating the burnout arising from hindrance demands. Thus, managers and organizational leaders are encouraged to understand the difference between such distinct workplace characteristics and implement workplace policies and management strategies that limit hindrances and promote creativity.

Concerning identifying challenge demands versus hindrance demands, managers and/or leaders may consider the outcomes of the demands they place on their followers. For example, leaders should consider the amount of information their employees require to be effective in their roles. Role ambiguity, or feeling of uncertainty surrounding one's responsibilities and expectations, is a key hindrance demands that limits employees' ability to perform work tasks in a manner congruent with broader organizational goals. Thus, if leaders do not provide employees with enough details surrounding their role's key functions, they are likely increasing the hindrance demand burden employees are experiencing and increased burnout is expected.

Simultaneously, information management represents an opportunity for leaders to introduce challenge demands, and thus growth opportunities for their followers. Leaders who provide too much structure or direction in how work is conducted may impose restrictions on employee autonomy and prevent the identification of work efficiencies or novel procedures that yield cost savings. In contrast, leaders who describe a vision or

goal and empower employees with the freedom to explore solutions present a positive challenge demand and may facilitate greater employee creativity.

Indeed, scholars recommend a myriad of similar strategies for leaders to encourage creative thought. During project planning, leaders may budget additional time in the early stages of the project specifically for employees to explore the presenting problem, and research past approaches, potential obstacles, and available tools (Katila & Shane, 2005). Leaders may also provide increased access to information gathering technology, such as databases, academic journals, or emerging large language models (LLMs) powered by artificial intelligence (Haase & Hanel, 2023; Reiter-Palmon & Linnell, 2023). Such resources may aid in the generation of potential solutions by increasing the width and breadth of knowledge available to employees, as well as providing a means to rapidly ideate a series of simple ideas that may be further refined and evaluated (Runco, 2023). Finally, leaders can help construct an environment conducive for creativity by defining a vision or goal for employees to pursue, but allowing the employee to select how the vision is achieved (Reiter-Palmon & Illies, 2004). The present study suggests that when challenge demands are introduced alongside such strategies, employees experience lower levels of work-related burnout and may achieve challenging goals without risking adverse health or professional outcomes.

Limitations and Future Directions

While the novel findings described in the present study are impactful for broader theory and practice, the study is not without its limitations. It is important to note that Orkibi's (2021) creative adaptability instrument utilized in the present design does capture creative cognition via the cognitive adaptability subscale. Thus, the observed

relationship between construct-level creative adaptability and burnout dimensions may, in fact, be driven primarily via creative cognition; in contrast, behavioral and emotional perspectives of creativity may be less useful in understanding the challenge demand-burnout relationship. However, the present parallel mediation analyses are incapable of providing the level of nuance necessary to generate this conclusion. Future research is necessary to determine exactly how and why creative adaptability impacts certain dimensions of employee burnout. Future efforts may also seek to evaluate the mediating effects of creativity on the job-demands-burnout relationship in the presence of additional relevant variables. The present study represents an important first step in documenting the role creativity plays in reducing employee burnout but does not rule out the contributions of other unexpected intermediating constructs.

Indeed, the present research was primarily focused on the role that creativity played in the job demands-burnout relationship; thus, the inclusion of other key variables may have enhanced the specificity of the present results. For example, future efforts may replicate the time-lagged design of the present study but expand the list of targeted variables to include construct such as: motivation to learn, growth versus fixed mindsets, creative self-efficacy, and/or psychological empowerment. Such constructs concern the extent to which individuals differ in their perception of their own abilities (e.g., efficacy, mindsets), as well as their inclination to perceive challenges as opportunities rather than obstacles (e.g., motivation, empowerment), which may impact the degree to which creativity is able to mitigate the burnout experience.

In pursuit of enhanced specificity, future efforts analyzing additional constructs of interest may consider utilizing structural equation modeling (SEM) to construct latent

variables composed of individual-level survey items, including modeled error terms. The resulting path analyses may uncover the precise mechanism by which key variables, or facets/dimensions, impact burnout scores while accounting for the broader network of other potentially relevant variables. One key future direction concerns past findings suggesting that CPE is uncorrelated with social isolation (Tang et al., 2021) while the present effort demonstrated CPE partially mediates the relationship between challenge demands and cynicism. I propose the difference in findings may arise from the conflation of isolation and meaninglessness inherent in the currently accepted conceptualization of the cynicism construct. Thus, future efforts may aim to further refine the factor structure of cynicism, and evaluate the differential effects that CPE has on social isolation versus meaninglessness more explicitly.

Another limitation of the present study is that the effect of creativity on the challenge-burnout relationship is implicit rather than explicit. That is, the present study did not evaluate the effectiveness of the solutions participants implemented in response to the challenge demands they experienced at work. Thus, it is not obvious if greater CPE and creative adaptability indeed yielded more novel and effective solutions for the present sample. While empirical evidence suggests greater CPE is associated with greater creative performance (Zhang & Bartol, 2010), the creative adaptability construct is relatively new and has not yet been evaluated in the context of creative productions. Future research may seek to address this limitation by documenting the solutions employees utilized in response to challenge demands and rating ideas on the dimensions of novelty and effectiveness (i.e., the consensual assessment technique; Amabile, 1982). Future researchers applying this approach may provide greater confidence that the

application of creative solutions, rather than greater creative thinking alone, is the driver of the observed reduction in burnout scores.

Finally, it must be noted that the body of research into how creativity impacts the relationship between workplace characteristics and burnout is still in its infancy. While the present study represents a meaningful first step into targeted evaluations of such constructs, various conflicting results in extant literature point to a nebulous overall understanding. Thus, I call on future researchers to replicate the design of the present study in the presence of additional variables, while recruiting diverse samples, and targeting various industries. A convergent body of research findings is necessary to develop more robust theory describing exactly how and when different kinds of employees may improve their experiences by utilizing creative thinking.

Conclusion

Work-related burnout is a serious and continued issue for the U.S. economy, organizations, and employees alike. Intense workplace characteristics (i.e., job demands) are associated with negative employee health outcomes, increased fatigue, increased turnover, and greater costs for organizations. Utilizing a time-lagged design, the present study evaluated a series of parallel mediation models to understand how the burnout experience may be ameliorated by two different creativity constructs. Results demonstrated that both greater creative process engagement and creative adaptability were associated with a reduction in two key burnout dimensions: exhaustion and cynicism, but not professional efficacy. Further, creativity was observed to reduce experienced burnout only when employees face challenge demands, and the hindrance demand-burnout relationship remained robust in the face of creativity constructs. Still, in

the context of challenge demands, creative process engagement emerged as the stronger antecedent of reduced burnout experiences over creative adaptability. While further research is needed to understand underlying mechanisms, the present study represents an important first step towards understanding the role that greater creativity plays in reducing employee burnout and enhancing the employee experience.

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Table 1

Sample Frequencies: Race/Ethnicity and Gender

Characteristic	*n*	*%*
Race		
African American / Black	51	11.7%
Asian American / Pacific Islander	26	6%
Caucasian / White	315	72.2%
Hispanic / Latina / Latino	23	5.3%
Middle Eastern	1	0.2%
Multiracial	17	3.9%
Native American / First Peoples	3	0.7%
Gender		
Female	197	45.2%
Male	224	51.4%
Nonbinary	12	2.8%
Other	1	0.2%
Transgender man	1	0.2%
Transgender woman	1	0.2%

Note: N = 436; Participant mean age = 40 (*SD* = 12.36).

Table 2

Sample Frequencies: Education

Characteristic	*n*	*%*
Highest Education Level Attained		
High school diploma / GED	97	22.2%
Associate's degree	60	13.8%
Bachelor's degree	181	41.5%
Master's degree	76	17.4%
Doctoral degree (Ph.D., MD, JD, etc.)	22	5%

Note: $N = 436$; Participant mean age = 40 ($SD = 12.36$).

Table 3

Sample Frequencies: Household Demographics

Characteristic	*n*	*%*
Marital Status		
Married, or domestic partnership	216	49.5%
Single, never married	180	41.3%
Divorced	32	7.3%
Separated	4	0.9%
Widowed	4	0.9%
Parental Status		
Has children	187	42.9%
No children	249	57.1%
Yearly Household Income		
Less than $20,000 yearly	23	5.3%
$20,001 - $40,000 yearly	59	13.5%
$40,001 - $60,000 yearly	82	18.8%
$60,001 - $80,000 yearly	71	16.3%
$80,001 - $100,000 yearly	56	12.8%
$100,001 - $120,000 yearly	39	8.9%
$120,001 - $140,000 yearly	25	5.7%
$140,001 - $160,000 yearly	29	6.7%
$160,001 - $180,000 yearly	8	1.8%
$180,001 - $200,000 yearly	14	3.2%
More than $200,000 yearly	30	6.9%

Note: $N = 436$; All monetary figures represent American dollars (USD); Participant mean age = 40 ($SD = 12.36$). For parents, the average number of children = 2.03 ($SD = .99$).

Table 4

Sample Frequencies: Reported Weekly Working Hours

Characteristic	*n*	*%*
Working Hours (weekly)		
20 hours	14	3.2%
Between 21 and 40 hours	113	25.9%
40 hours	251	57.6%
50 hours	43	9.9%
60 hours or more	15	3.4%

Note: $N = 436$; Lower bound of "20 hours per week" was selected as participants were required to be employed at least part-time to be eligible for the study. Response options reflect self-reported average weekly hours. Average tenure in current position = 6.99 years ($SD = 6.68$)

Table 5

Sample Frequencies: Current Professional Industry

Characteristic	*n*	*%*
Job Industry (USBLS)		
Accommodation and Food Services	19	4.4%
Administrative and Support	9	2.1%
Agriculture, Forestry, Fishing, Hunting	2	0.5%
Arts, Entertainment, and Recreation	16	3.7%
Construction	13	3%
Educational Services	57	13.1%
Finance or Insurance	27	6.2%
Healthcare and Social Assistance	58	13.3%
Information	30	6.9%
Management of Companies and Enterprises	5	1.1%
Manufacturing	28	6.4%
Other Services (Except Public Administration)	41	9.4%
Professional, Scientific, and Technical Services	51	11.7%
Public Administration	12	2.8%
Real Estate, Rental, or Leasing	7	1.6%
Retail Trade	38	8.7%
Transportation and Warehousing	13	3%
Utilities	4	0.9%
Waste Management and Remediation	1	0.2%
Wholesale Trade	5	1.1%

Note: $N = 436$; USBLS = United States Bureau of Labor Statistics.

Table 6

Correlation Matrix, Descriptive Statistics, and Reliability of Study Variables

	M	*SD*	1.	2.	3.	4.	5.	6.	7.
1. Chall. Demands	3.53	0.71	**(.82)**						
2. Hind. Demands	2.64	0.82	.42**	(**.86)**					
3. Crea. Proc. Eng.	3.98	0.54	.40**	.04	**(.88)**				
4. Creative Adpt.	3.58	0.77	.23**	.02	.50**	**(.93)**			
5. Exhaustion	4.01	1.83	.33**	.50**	-.07	-.12*	**(.96)**		
6. Cynicism	3.69	1.70	.14**	.48**	-.13**	-.17**	.75**	**(.90)**	
7. Red. Prof. Eff.	2.07	0.95	-.07	.22**	-.24**	-.28**	.37**	.52**	**(.87)**

Note: N = 436; Pearson (r); *M* = mean value; *SD* = standard deviation; *$p < .05$ (2-tailed); **$p < .01$ (2-tailed). Cronbach's alpha (*a*) for each scale is reported on the diagonal in bold.
Chall. = Challenge; Hind = Hindrance; Crea. Proc Eng. = Creative Process Engagement; = Creative Adpt. = Creative Adaptability; Red. Prof. Eff. = Reduced Professional Efficacy.

Table 7

Variance Inflation Factors and Tolerance Values Between Predictors and Criterion Variables

	Burnout	
	Tolerance	VIF
Challenge Demands	.68	1.48
Hindrance Demands	.80	1.25
Creative Proc. Eng.	.66	1.53
Creative Adpt.	.75	1.33

Note: N = 436; Creative Proc. Eng. = Creative Process Engagement; = Creative Adpt. = Creative Adaptability; Red. Prof. Eff. = Reduced Professional Efficacy.

Table 8

Correlation Coefficients Between Demographic Variables and Construct Variables

	Age	Education	SES	Children Count	Job Tenure	Gender	Parental Status
Chall. Demands	-.03	.18**	.11*	-.08	.14**	-.03	.10
Hind. Demands	-.04	.00	-.03	.04	.03	.08	.06
Creative. Proc. Eng.	-.10*	.11*	.02	-.03	-.01	-.11	-.06
Creative Adpt.	-.04	-.04	-.06	.06	.01	-.02	.00
Exhaustion	-.23**	-.02	-.09	-.06	-.06	.10	-.10
Cynicism	-.17**	-.03	-.10*	-.03	-.08	.00	-.16
Red. Prof. Eff.	-.21**	.03	-.01	-.09	-.14**	-.01	-.12

Note: N = 436; *p < .05 (2-tailed); **p < .01 (2-tailed). Pearson (r) correlation coefficient reported for age, education, SES, children count, job tenure. Point bi-serial Pearson (*r*) coefficient reported for gender, parental status; Chall. = Challenge; Hind = Hindrance; Creative Proc. Eng. = Creative Process Engagement; Adpt. = Adaptability; Red. Prof. Eff. = Reduced Professional Efficacy. SES = socioeconomic status; Job Tenure = years in current role; Parental status = have children/do not have children.

Table 9

OLS Path Analysis: Coefficient Estimation of Challenge Demands and Covariates on CPE

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	3.00	.16	18.76**		17.75**	0.17	2.68	3.31
Chall. Demands	0.30	.03	8.70**	.39			0.23	0.37
Edu.	0.03	.02	1.31	.06			-0.01	0..07
SES	-0.01	.01	-0.97	-.05			-0.03	0.01
Tenure	0.00	.00	-0.44	-.02			-0.01	0.01
Age	0.00	.00	-1.56	-.08			-0.01	0.00

Note: N = 436. DF(5, 430). Mean squared error (MSE) = .25. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = challenge; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 10

OLS Path Analysis: Coefficient Estimation of Challenge Demands and Covariates on Creative Adaptability

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	2.94	.24	12.12**		5.63**	.06	2.47	3.42
Chall. Demands	0.26	.05	5.01**	.24			0.16	0.37
Edu.	-0.04	.03	-1.07	-.05			-0.11	0.3
SES	-0.02	.01	-1.27	-.06			-0.05	0.01
Tenure	0.00	.01	0.12	.01			-0.01	0.01
Age	0.00	.00	-0.52	-.03			-0.01	0.00

Note: N = 436. DF(5, 430). Mean squared error (MSE) = 0.57. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = challenge; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 11

OLS Path Analysis: Coefficient Estimation of Challenge Demands - Exhaustion Total Effect

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	2.78	0.54	5.14**		17.49**	.17	1.72	3.84
Chall. Demands	0.87	0.12	7.42**	0.34			0.64	1.1
Edu.	-0.05	0.08	-0.63	-0.03			-0.2	0.1
SES	-0.08	0.03	-2.35*	-0.11			-0.14	-0.01
Tenure	0	0.01	0.24	0.01			-0.02	0.03
Age	-0.03	0.01	-4.34	-0.22			-0.05	-0.02

Note: N = 436. DF(5, 430). Mean squared error (MSE) = 2.81. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = challenge; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 12

OLS Path Analysis: Coefficient Estimation of Challenge Demands - Exhaustion Total Direct Effect

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	5.74	0.7	8.14**		19.49**	.24	4.35	7.12
Chall. Demands	1.16	0.12	9.49**	0.45			0.92	1.40
CPE	-0.66	0.18	-3.75**	-0.20			-1.00	-0.31
Cre. Adpt.	-0.33	0.12	-2.89**	-0.14			-0.56	-0.11
Edu.	-0.04	0.07	-0.56	-0.03			-0.19	0.10
SES	-0.09	0.03	-2.85**	-0.13			-0.15	-0.03
Tenure	0.00	0.01	0.18	0.01			-0.02	0.03
Age	-0.04	0.01	-4.92**	-0.24			-0.05	-0.02

Note: N = 436. DF(7, 428). Mean squared error (MSE) = 2.58. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = challenge; CPE = creative process engagement; Cre Adpt = creative adaptability; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years); Age = years of age.

Table 13

Bootstrapped Indirect Effect Standardized Path Coefficients: Creativity and Exhaustion

	Stnd. Effect	BootSE	BLLCI	BULCI
Total Effect	-.11	.03	-.17	-.06
CPE	-.08	.03	-.14	-.03
Cre. Adpt.	-.03	.01	-.06	-.01

Note: 5,000 parameter resample; 95% CI; Stnd. = standardized; BootSE = bootstrapped standard error; BLLCI = bootstrapped lower limit confidence interval 95%; BULCI = bootstrapped upper limit confidence interval.

Table 14

OLS Path Analysis: Coefficient Estimation of Challenge Demands - Cynicism Total Effect

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	3.69	0.53	6.90**		5.62**	.06	2.64	4.74
Chall. Demands	0.37	0.12	3.19**	.15			0.14	0.6
Edu.	-0.01	0.08	-0.19	-0.01			-0.16	0.13
SES	-0.07	0.03	-2.08*	-0.11			-0.13	0
Tenure	0.01	0.01	-0.1	-0.01			-0.03	0.03
Age	-0.02	0.01	-3.06**	-0.16			-0.04	-0.01

Note: N = 436. DF(5, 430). Mean squared error (MSE) = 2.75. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = challenge; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 15

OLS Path Analysis: Coefficient Estimation of Challenge Demands - Cynicism Total Direct Effect

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	6.35	0.7	9.05**		9.34**	.13	4.97	7.73
Chall. Demands	0.63	0.12	5.16**	0.26			0.39	0.86
CPE	-0.54	0.18	-3.09**	-0.17			-0.88	-0.2
Cre. Adpt.	-0.35	0.12	-3.07**	-0.16			-0.58	-0.13
Edu.	-0.01	0.07	-0.16	-0.01			-0.16	0.13
SES	-0.08	0.03	-2.53*	-0.13			-0.14	-0.02
Tenure	0.01	0.01	-0.16	-0.01			-0.03	0.02
Age	-0.02	0.01	-3.51**	-0.18			-0.04	-0.01

Note: N = 436. DF(7, 428). Mean squared error (MSE) = 2.56. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = challenge; CPE = creative process engagement; Cre Adpt = creative adaptability; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years); Age = years of age.

Table 16

Bootstrapped Indirect Effect Standardized Path Coefficients: Creativity and Cynicism

	Stnd. Effect	BootSE	BLLCI	BULCI
Total Effect	-.11	.03	-.16	-.06
CPE	-.07	.03	-.12	-.02
Cre. Adpt.	-.04	.01	-.07	-.01

Note: 5,000 parameter resample; 95% CI; Stnd. = standardized; BootSE = bootstrapped standard error; BLLCI = bootstrapped lower limit confidence interval 95%; BULCI = bootstrapped upper limit confidence interval.

Table 17

OLS Path Analysis: Coefficient Estimation of Challenge Demands - RPE Total Effect

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	2.91	0.30	9.76**		4.95	.05	2.33	3.5
Chall. Demands	-0.10	0.06	-1.57	-0.08			-0.23	0.03
Edu.	0.05	0.04	1.23	0.06			-0.03	0.14
SES	-0.01	0.02	-0.35	-0.02			-0.04	0.03
Tenure	-0.01	0.01	-0.75	-0.04			-0.02	0.01
Age	-0.02	0.01	-3.68**	-0.20			-0.02	-0.01

Note: N = 436. DF(5, 430). Mean squared error (MSE) = 0.86. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = challenge; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 18

OLS Path Analysis: Coefficient Estimation of Hindrance Demands and Covariates on CPE

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	3.92	0.15	26.08**		2.35*	0.03	3.62	4.21
Hindr. Demands	0.02	0.03	0.79	0.04			-0.04	0.09
Edu.	0.06	0.02	2.44*	0.13			0.01	0.11
SES	-0.01	0.01	-0.66	-0.03			-0.03	0.01
Tenure	0.01	0.01	0.85	0.05			0.01	0.01
Age	-0.01	0.01	-2.27*	-0.12			-0.01	0.01

Note: N = 436. DF(5, 430). Mean squared error (MSE) = .29. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Hindr = hindrance; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 19

OLS Path Analysis: Coefficient Estimation of Hindrance Demands and Covariates on Creative Adaptability

Model	*B*	*SE*	*t*	β	*F*	R^2	LLCI	ULCI
Constant	3.76	0.22	3.37		0.60	.01	3.14	4.19
Hindr. Demands	0.02	0.05	0.37	0.02			-0.07	0.11
Edu.	-0.01	0.04	-0.32	-0.02			-0.08	0.06
SES	-0.02	0.01	-1.1	-0.06			-0.05	0.01
Tenure	0.01	0.01	0.88	0.05			-0.01	0.02
Age	0.01	0.01	-1.01	-0.06			-0.01	0.01

Note: N = 436. DF(5, 430). Mean squared error (MSE) = 0.60. * p = 0.5; ** p = .01. *B* = unstandardized beta coefficient; *SE* = standard error; β = standardized beta coefficient; R^2 = variance accounted for; LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Hindr = hindrance; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 20

Hierarchical Regression Model of Study Variables: Exhaustion

Model	*B*	*SE*	β	*t*	*F*	R^2	ΔR^2	LLCI	ULCI
Step 1									
Constant	5.63	0.40		13.97**	7.18**	.06	.06	4.84	6.42
Edu	0.04	0.08	0.02	0.47				-0.12	0.20
SES	-0.07	0.03	-0.10	-2.04*				-0.14	0.00
Tenure	0.02	0.01	0.07	1.36				-0.01	0.05
Age	-0.04	0.01	-0.26	-4.88**				-0.05	-0.02
Step 2									
Constant	1.74	0.50		3.45**	32.60**	.31	.25	0.75	2.73
Edu	-0.01	0.07	-0.01	-0.18				-0.15	0.13
SES	-0.06	0.03	-0.09	-2.08*				-0.12	0.00
Tenure	0.01	0.01	0.03	0.67				-0.02	0.03
Age	-0.03	0.01	-0.22	-4.72**				-0.05	-0.02
Hindr. Demands	0.94	0.10	0.42	9.49**				0.75	1.14
Chall. Demands	0.39	0.12	0.15	3.27**				0.15	0.62
Step 3									
Constant	4.17	0.67		6.20**	29.97**	.36	.05	2.84	5.49
Edu	-0.01	0.07	-0.01	-0.19				-0.15	0.12
SES	-0.07	0.03	-0.11	-2.54**				-0.13	-0.02
Tenure	0.01	0.01	0.03	0.60				-0.02	0.03
Age	-0.03	0.01	-0.23	-5.20**				-0.05	-0.02
Hindr. Demands	0.86	0.10	0.39	8.87**				0.67	1.06
Chall. Demands	0.65	0.13	0.25	5.19**				0.41	0.90
CPE	-0.48	0.16	-0.14	-2.93**				-0.80	-0.16
Cre. Adpt.	-0.31	0.11	-0.13	-2.90**				-0.52	-0.10

Note: $N = 436$. $p = 0.5$; ** $p = .01$. LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = Challenge; Hindr = hindrance; CPE = creative process engagement; Cre.Adpt. = creative adaptability; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 21

Hierarchical Regression Model of Study Variables: Cynicism

Model	*B*	*SE*	β	*t*	*F*	R^2	ΔR^2	LLCI	ULCI
Step 1									
Constant	4.90	0.38		12.90**	4.40**	.04	.04	4.16	5.65
Edu	0.02	0.08	0.02	0.29				-0.13	0.17
SES	-0.06	0.03	-0.10	-1.98*				-0.13	0.00
Tenure	0.01	0.01	0.02	0.41				-0.02	0.03
Age	-0.03	0.01	-0.18	-3.39**				-0.04	-0.01
Step 2									
Constant	2.54	0.49		5.24**	25.68**	.26	.22	1.59	3.50
Edu	0.03	0.07	0.02	0.37				-0.11	0.16
SES	-0.05	0.03	-0.08	-1.77				-0.11	0.01
Tenure	0.00	0.01	0.02	0.34				-0.02	0.03
Age	-0.02	0.01	-0.16	-3.39**				-0.04	-0.01
Hindr. Demands	1.04	0.10	0.50	10.88**				0.85	1.23
Chall. Demands	-0.17	0.11	-0.07	-1.45				-0.39	0.06
Step 3									
Constant	4.58	0.65		7.03**	23.54**	.31	.04	3.30	5.86
Edu	0.02	0.07	0.01	0.31				-0.11	0.15
SES	-0.06	0.03	-0.10	-2.18*				-0.11	-0.01
Tenure	0.00	0.01	0.01	0.29				-0.02	0.03
Age	-0.02	0.01	-0.17	-3.74**				-0.04	-0.01
Hindr. Demands	0.97	0.09	0.47	10.33**				0.79	1.16
Chall. Demands	0.06	0.12	0.02	0.46				-0.18	0.30
CPE	-0.34	0.16	-0.11	-2.12*				-0.65	-0.03
Cre. Adpt.	-0.32	0.10	-0.15	-3.14**				-0.53	-0.12

Note: $N = 436$. $p = 0.5$; ** $p = .01$. LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = Challenge; Hindr = hindrance; CPE = creative process engagement; Cre.Adpt. = creative adaptability; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Table 22

Hierarchical Regression Model of Study Variables: Reduced Professional Efficacy

Model	*B*	*SE*	β	*t*	*F*	R^2	ΔR^2	LLCI	ULCI
Step 1									
Constant	2.58	0.21		12.28**	5.55**	.05	.05	2.17	3.00
Edu	0.04	0.04	0.05	1.00				-0.04	0.13
SES	-0.01	0.02	-0.02	-0.39				-0.04	0.03
Tenure	-0.01	0.01	-0.05	-1.00				-0.02	0.01
Age	-0.01	0.00	-0.19	-3.53**				-0.02	-0.01
Step 2									
Constant	2.53	0.29		8.60**	10.52**	.13	.08	1.95	3.11
Edu	0.07	0.04	0.08	1.60				-0.02	0.15
SES	0.00	0.02	0.00	-0.04				-0.03	0.03
Tenure	0.00	0.01	-0.03	-0.52				-0.02	0.01
Age	-0.02	0.00	-0.20	-3.80**				-0.02	-0.01
Hindr. Demands	0.35	0.06	0.30	6.03**				0.24	0.46
Chall. Demands	-0.28	0.07	-0.21	-4.07**				-0.42	-0.15
Step 3									
Constant	4.05	0.39		10.44**	13.72**	.21	.08	3.29	4.81
Edu	0.06	0.04	0.08	1.57				-0.02	0.14
SES	-0.01	0.02	-0.02	-0.51				-0.04	0.02
Tenure	0.00	0.01	-0.03	-0.62				-0.02	0.01
Age	-0.02	0.00	-0.21	-4.29**				-0.02	-0.01
Hindr. Demands	0.30	0.06	0.26	5.34**				0.19	0.41
Chall. Demands	-0.12	0.07	-0.09	-1.60				-0.26	0.03
CPE	-0.25	0.09	-0.14	-2.62**				-0.43	-0.06
Cre. Adpt.	-0.25	0.06	-0.20	-4.02**				-0.37	-0.13

Note: $N = 436$. $p = 0.5$; ** $p = .01$. LLCI = lower limit confidence interval 95%, ULCI = upper limit confidence interval 95%; Chall = Challenge; Hindr = hindrance; CPE = creative process engagement; Cre. Adpt. = creative adaptability; Edu = highest education level attained; SES = socioeconomic status; Tenure = tenure in current role (years). Age = years of age.

Figure 1

Hypothesized Statistical Model

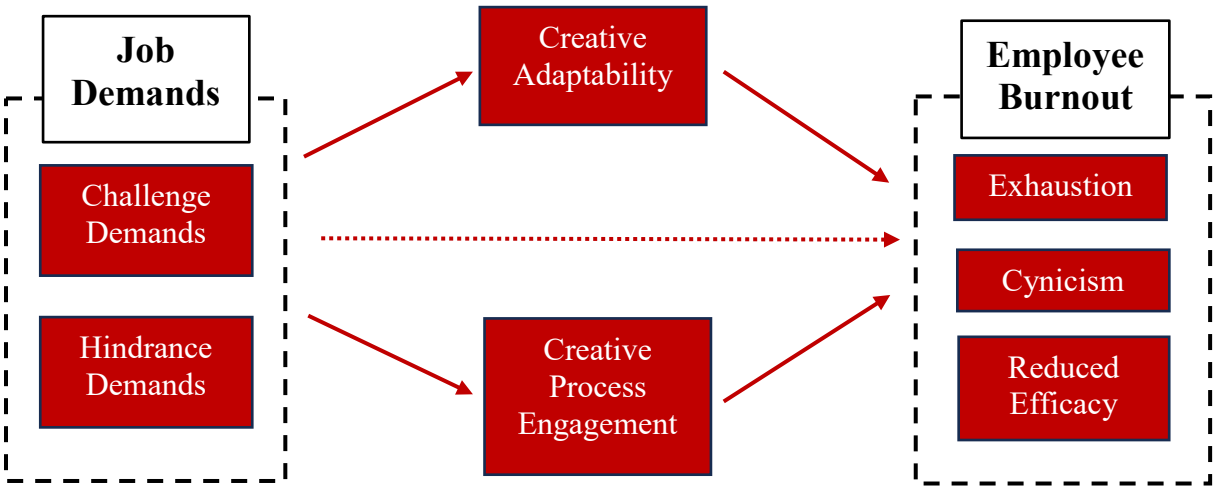


Figure 2

Measures Per Survey Wave

Time 1 Survey Battery

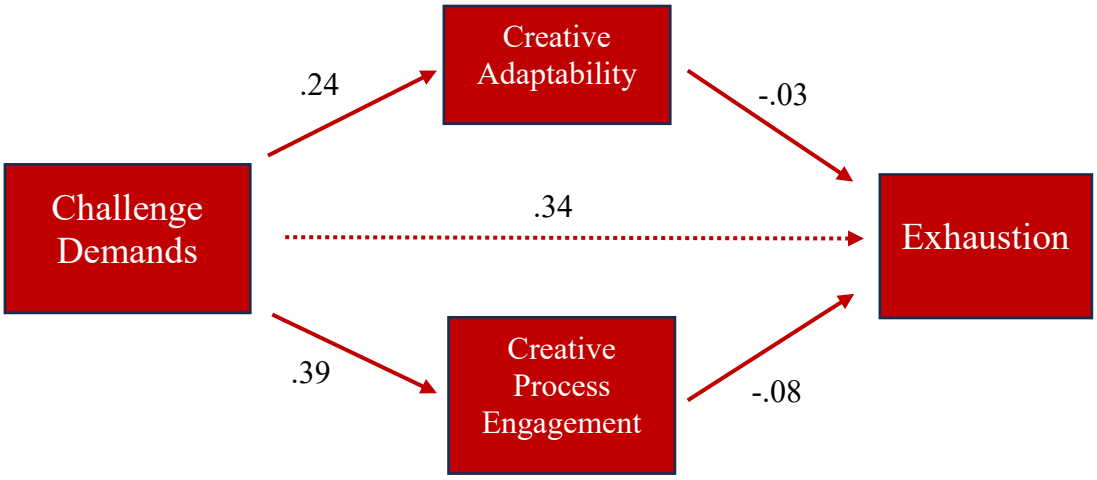
Construct	Citation	Number of Items
Job Demands - Challenge	Albretch, 2015	9
Job Demands – Hindrance	Albretch, 2015	9
Creative Process Engagement	Zhang & Bartol, 2010	11
Creative Adaptability	Orkibi, 2021	9
Attention Checks		3
		Total Items: 41

Time 2 Survey Battery

Construct	Citation	Number of Items
Burnout - Exhaustion	Schaufeli et al., 1996	5
Burnout - Cynicism	Schaufeli et al., 1996	5
Burnout – Reduced Prof. Efficacy	Schaufeli et al., 1996	6
Demographics		8
Attention Checks		3
		Total Items: 27

Figure 3

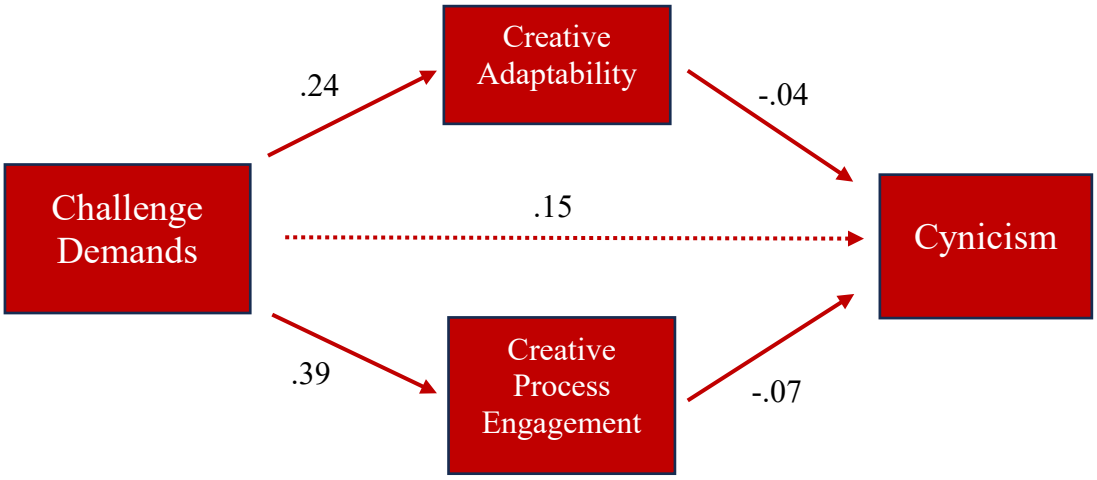
Supported Parallel Mediation Model: Exhaustion



Note: All values represent standardized OLS path coefficients. All values significant at the $p < .05$ level.

Figure 4

Supported Parallel Mediation Model: Cynicism



Note: All values represent standardized OLS path coefficients. All values significant at the $p < .05$ level.

Appendix A

List of Measures

Job Demands

Albrecht, S. L. (2015). Challenge demands, hindrance demands, and psychological need satisfaction. *Journal of Personnel Psychology 14*(2). 70-79. https://doi.org/10.1027/1866-5888/a000122

Scoring: 1 (Strongly Disagree); 2 (Disagree); 3 (Neither Agree nor Disagree); 4 (Agree); 5 (Strongly Agree)

Challenge Demands

Workload

1. There not enough time for me to do my job.
2. There an excessive amount of work in my job.
3. I experience a lot of ‘‘pressure’’ in my job.

Information Processing

4. My job requires that I juggle multiple tasks or activities at a time.
5. My job requires me to monitor a great deal of information.
6. My job requires me to analyze a lot of information.

Problem Solving

7. My job requires unique ideas or solutions to problems.
8. My job requires me to be creative.
9. My job often involves dealing with problems that I have not met before.

Hindrance Demands

Role Ambiguity

10. My job responsibilities are not clearly defined.

11. I feel uncertain about how much responsibility I have.

12. I do not have a clear idea of what is expected of me in my role.

Role Conflict

13. In my job I receive incompatible requests from two or more people.

14. Different people quite often ask me to do the same thing in different ways.

15. In my job I often get involved in situations in which there are conflicting requirements.

Emotional Demands

16. In my job, I have to deal with clients or colleagues who do not treat me with appropriate respect and politeness.

17. In my job, I have to suppress my own true feelings (e.g., irritation) to give a ‘‘neutral’’ impression.

18. In my job, I have to express certain feelings toward clients, customers, or colleagues that do not resemble the feelings I truly feel.

Creative Process Engagement

Zhang, X., & Bartol, K. M. (2010). The influence of creative process engagement on employee creative performance and overall job performance: a curvilinear assessment. *Journal of Applied Psychology, 95*(5), 862-873. https://psycnet.apa.org/doi/10.1037/a0020173

Scoring: 1 (Strongly Disagree); 2 (Disagree); 3 (Neither Agree nor Disagree); 4 (Agree); 5 (Strongly Agree)

Problem Identification

1. I spend considerable time trying to understand the nature of a problem.
2. I think about problems from multiple perspectives.
3. I decompose a difficult problem/assignment into parts to obtain greater understanding.

Information Searching and Encoding

4. I consult a wide variety of information.
5. I search for information from multiple sources (e.g., personal memories, others' experience, documentation, Internet, etc.).
6. I retain large amounts of detailed information in my area of expertise for future use.

Idea Generation

7. I consider diverse sources of information in generating new ideas.
8. I look for connections with solutions used in seemingly diverse areas.
9. I generate a significant number of alternatives to the same problem before I choose the final solution.
10. I try to devise potential solutions that move away from established ways of doing things.
11. I spend considerable time shifting through information that helps to generate new ideas.

Creative Adaptability

Orkibi, H. (2021). Creative adaptability: Conceptual framework, measurement, and outcomes in times of crisis. *Frontiers in Psychology, 11*, https://doi.org/10.3389/fpsyg.2020.588172

Scoring: 1 (Strongly Disagree); 2 (Disagree); 3 (Neither Agree nor Disagree); 4 (Agree); 5 (Strongly Agree)

Behavioral Creative Adaptability

1. When in a stressful situation, I adopt new behaviors that help me through it.
2. I behave in ways that are new to me to better deal with a stressful situation I am in.
3. I act in new ways to adapt to a stressful situation I am in.

Cognitive Creative Adaptability

4. To overcome a stressful situation, I think of it from new perspectives
5. When in a stressful situation, I think of it in a new way to better deal with it.
6. I come up with a number of original ideas to effectively deal with a stressful situation.

Emotional Creative Adaptability

7. I generate new and more helpful emotions for dealing with a stressful situation.
8. I respond emotionally in ways that are new to me to better tackle a problem.
9. I adopt a new emotional response to better deal with a stressful situations.

Burnout

Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). MBI-General Survey. In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *Maslach Burnout Inventory manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Scoring: 0 (Never); 1 (A few times a year or less); 2 (Once a month or less); 3 (A few times a month); 4 (Once a week); 5 (A few times a week); 6 (Everyday)

Exhaustion

1. I feel emotionally drained from my work.
2. I feel used up at the end of a work day.
3. I feel tired when I have to get up and face another day on the job.
4. Working all day is really a strain for me.
5. I feel burned out from my work.

Cynicism

6. I have become less interested in my work since I've started my job.
7. I have become less enthusiastic about my work.
8. I just want to do my job and not be bothered.
9. I have become more cynical about whether my work contributes to anything.
10. I doubt the significance of my work.

Reduced Professional Efficacy

11. I can effectively solve problems that arise in my work.
12. I feel I am making an effective contribution to what my organization does.
13. In my opinion, I am good at my job.
14. I feel exhilarated when I accomplish something at work.
15. I have accomplished many worthwhile things at my job.
16. At my work, I feel confident that I am effective at getting things done.

Demographics

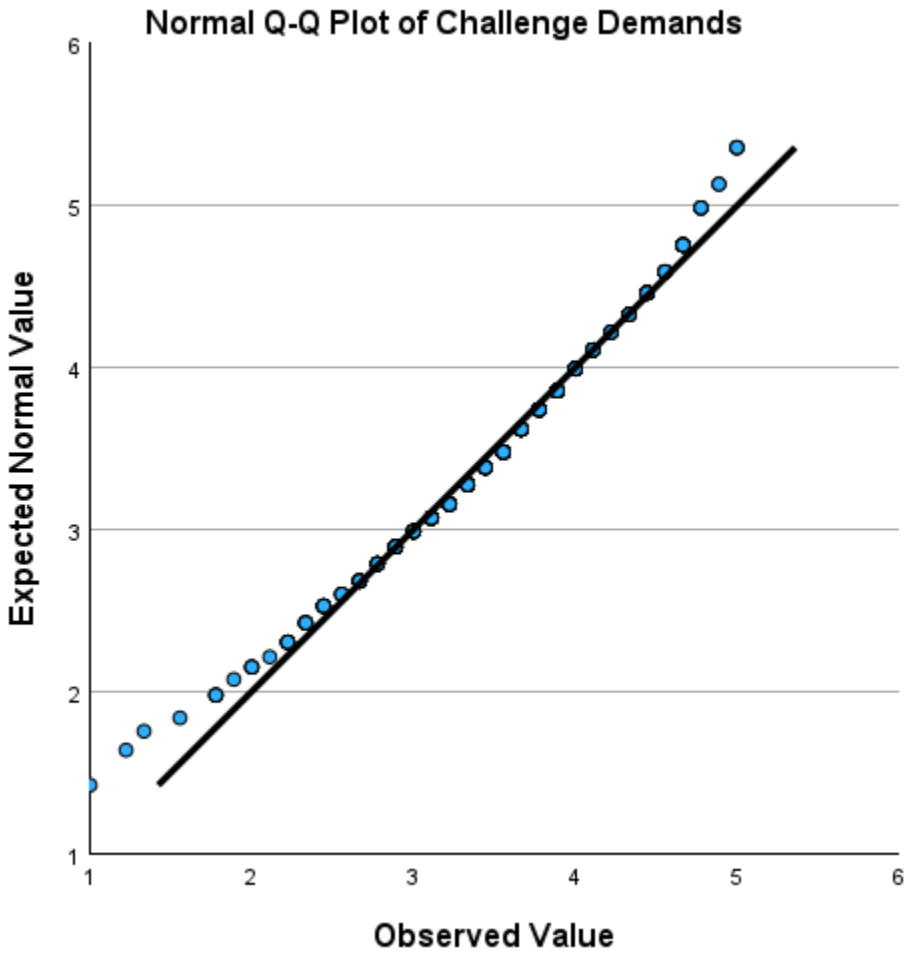
1. Please indicate your age. (drop down list, 18 – 99)
2. Please select the gender identity for which you most identify:
    - Male
    - Female
    - Nonbinary
    - Transgender man
    - Transgender woman.
    - Third gender.
    - Other
    - I do not wish to self-identify.
3. Please select the race/ethnicity with which you most identify:
    - African American/Black
    - Asian American/Pacific Islander
    - Caucasian/White
    - Hispanic/Latino/Latina
    - Middle Eastern
    - Native American / First Peoples
    - Multiracial
    - Other
4. Please indicate the highest level of education you have completed
    - Did not complete High School
    - High School Diploma / GED
    - Associates Degree
    - Bachelor's Degree
    - Master's Degree
    - Doctorate Degree (e.g., PhD, MD)
    - Prefer Not to Say
5. What is your current job title? (open-ended free response)
6. Typically, how many hours do you work weekly?
    - Less than 20 hours
    - Between 20 and 40 hours
    - 40 hours
    - 50 hours
    - 60 hours or more.
7. How long have you been in your current employment? ____ Years; _____Months
8. Please select the industry in which you currently work or most recently have worked (within past six months):

Sector #	Description
11	Agriculture, Forestry, Fishing and Hunting
21	Mining, Quarrying, and Oil and Gas Extraction
22	Utilities

23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Services (except Public Administration)
92	Public Administration

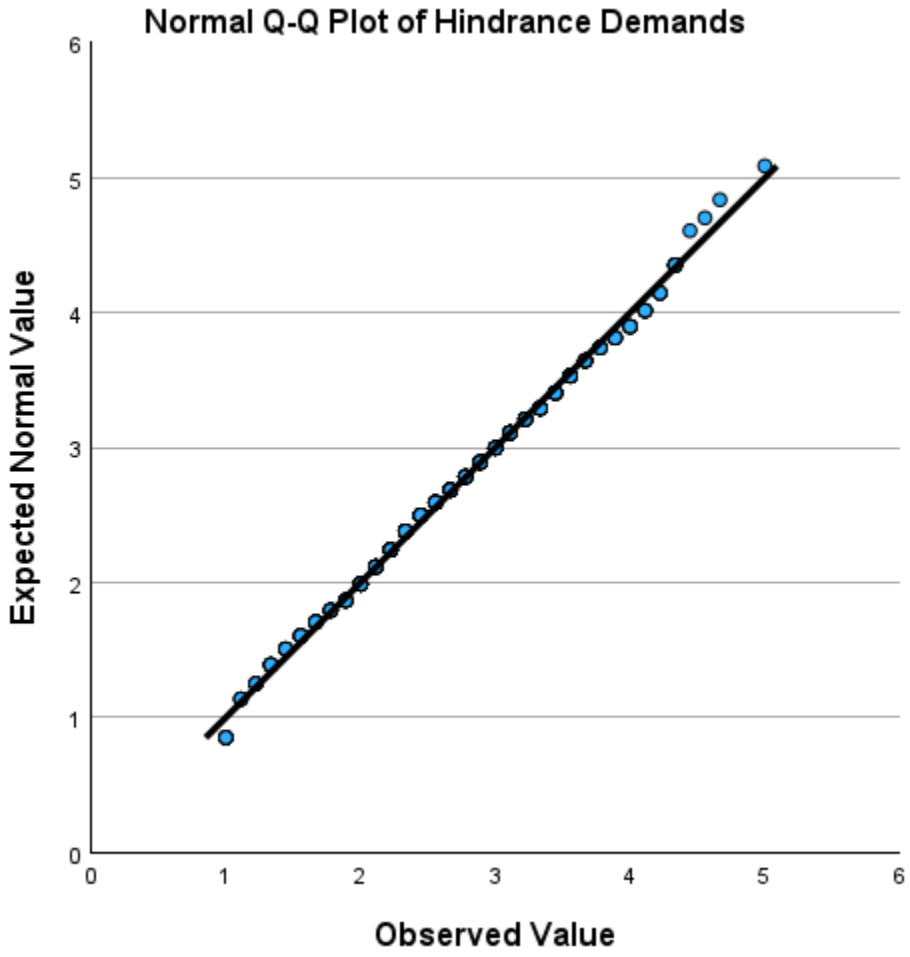
Appendix B

Assumption Testing: Q-Q Plot of Challenge Demands



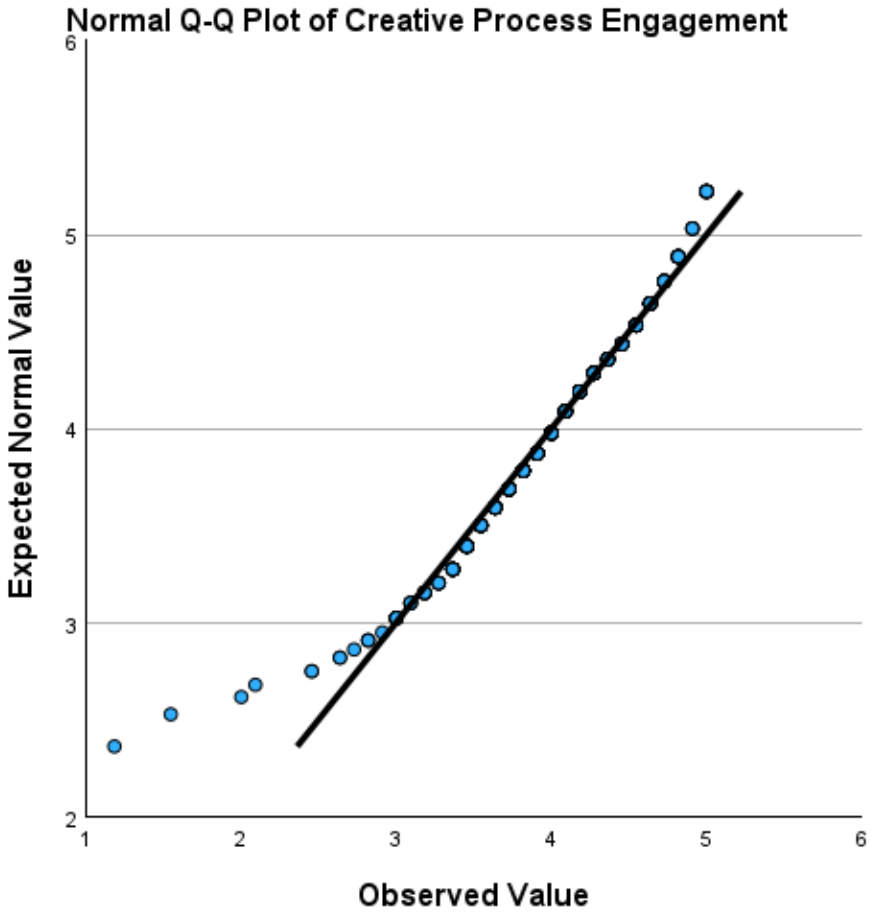
Note: N = 436

Assumption Testing: Q-Q Plot of Hindrance Demands



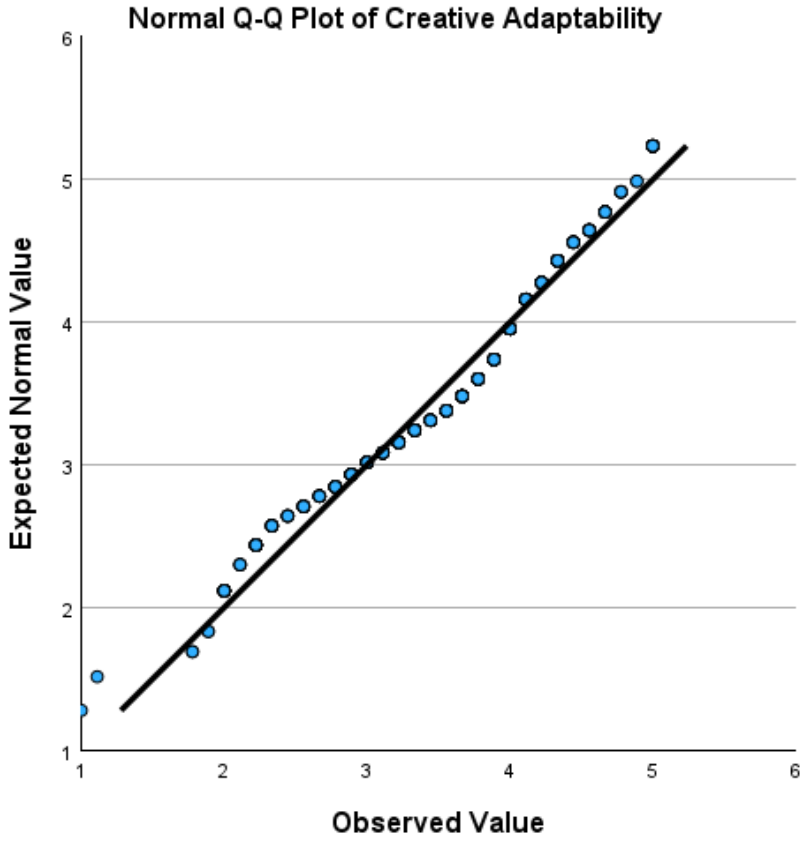
Note: N = 436

Assumption Testing: Q-Q Plot of Creative Process Engagement



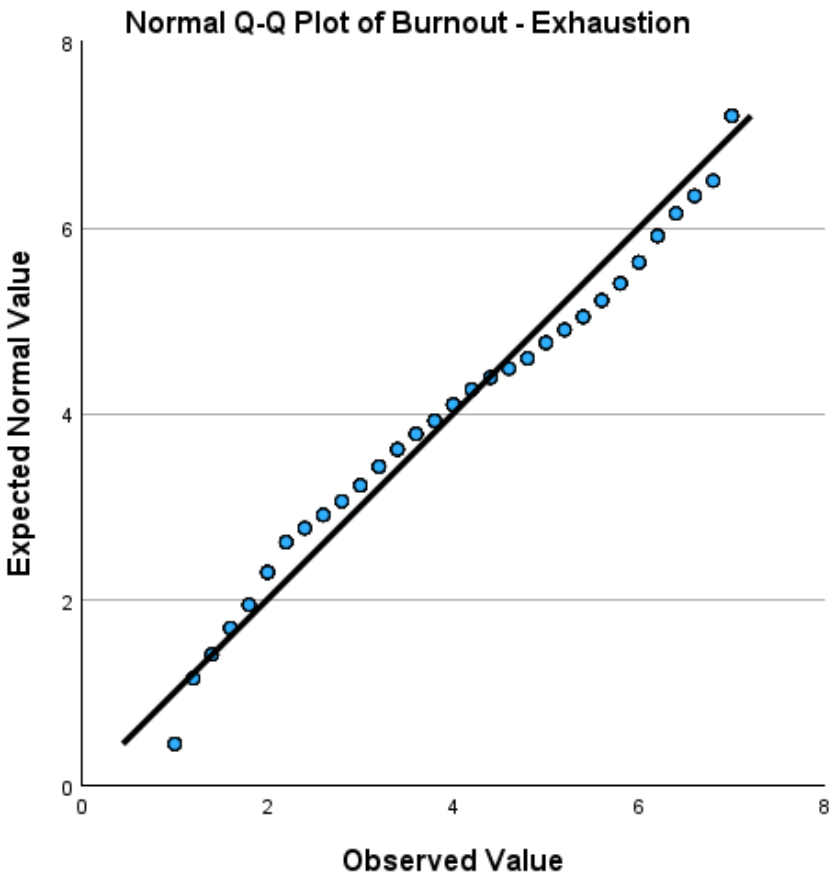
Note: N = 436

Assumption Testing: Q-Q Plot of Creative Adaptability



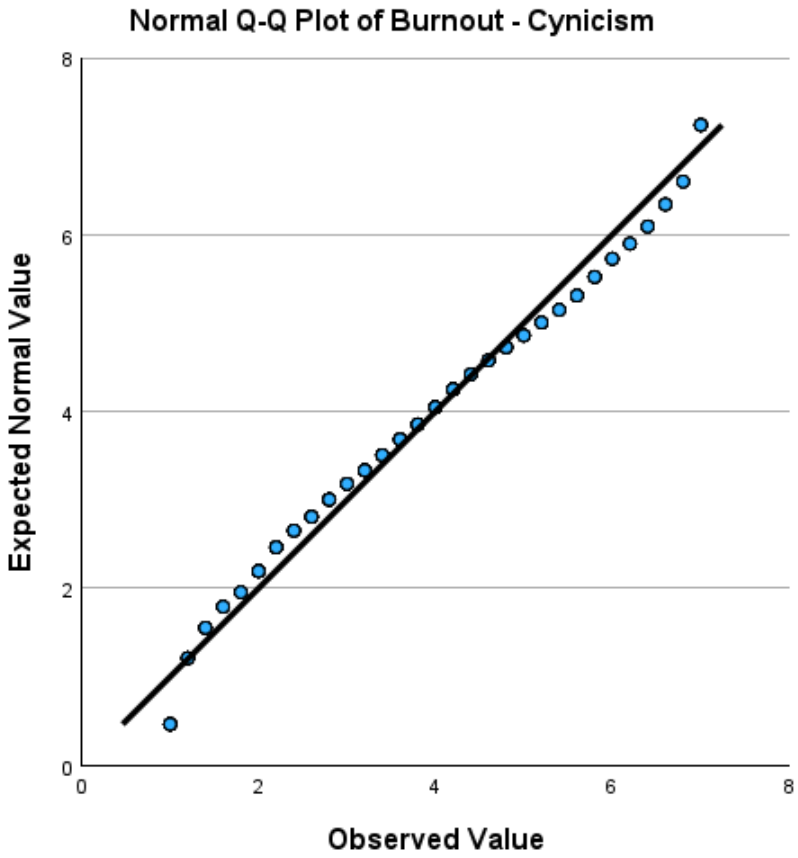
Note: N = 436

Assumption Testing: Q-Q Plot of Burnout – Exhaustion



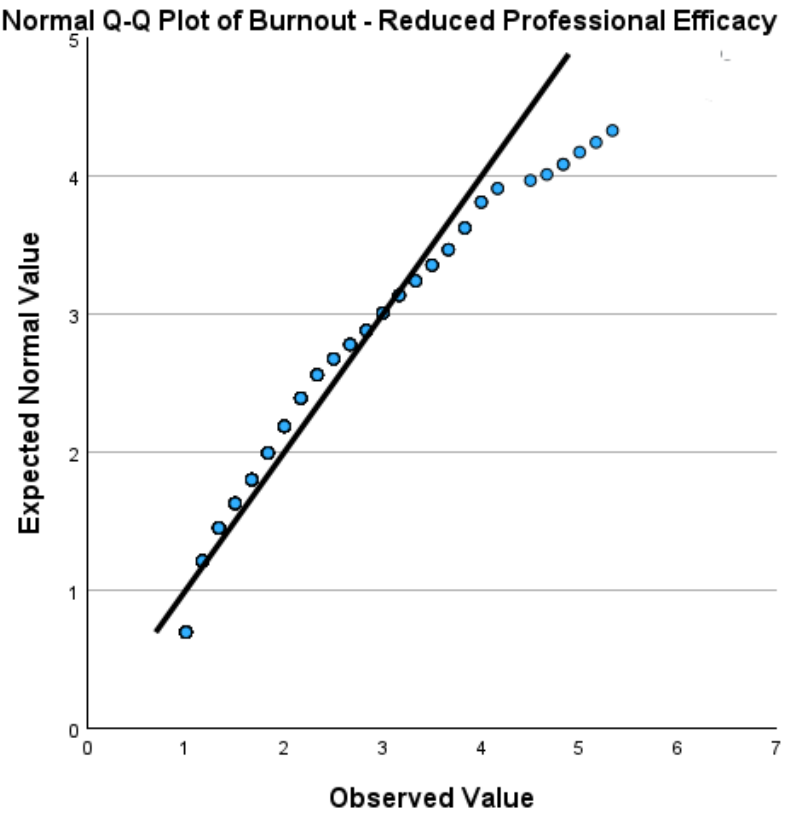
Note: N = 436

Assumption Testing: Q-Q Plot of Burnout – Cynicism



Note: N = 436

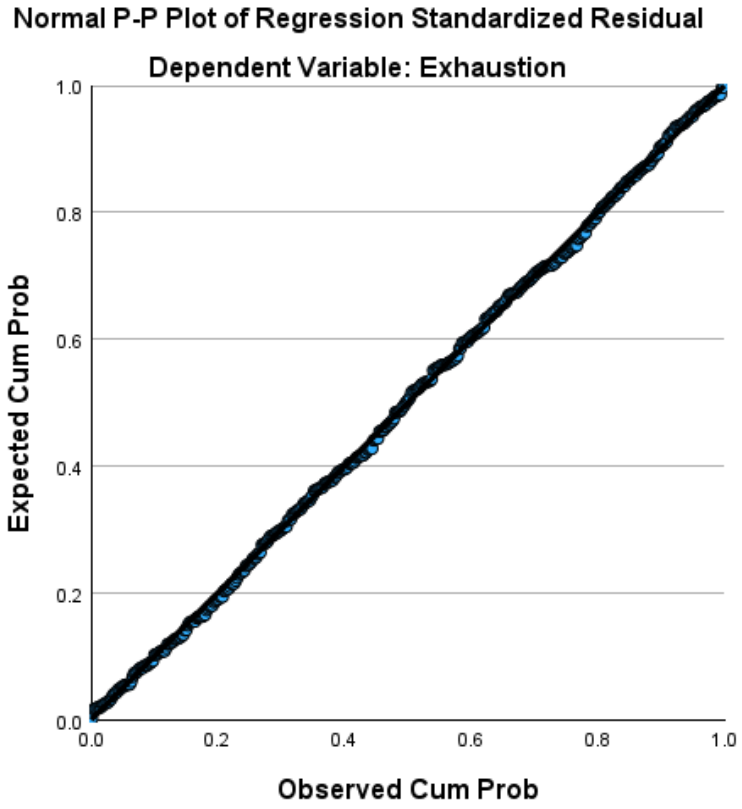
Assumption Testing: Q-Q Plot of Burnout – Reduced Professional Efficacy



Note: $N = 436$

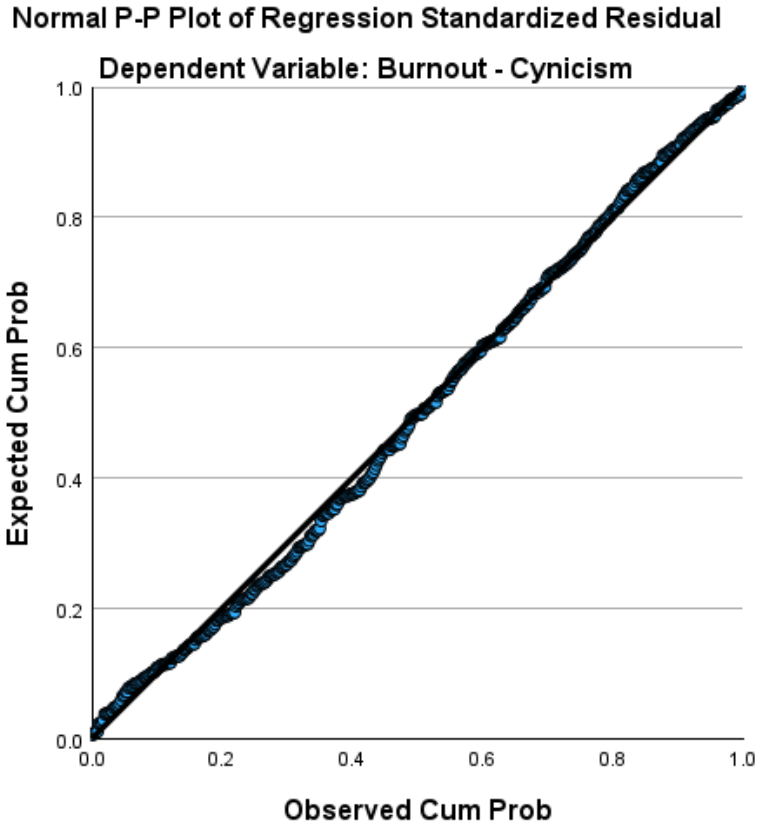
Appendix C

Assumption Testing: P-P Plot of Burnout – Exhaustion



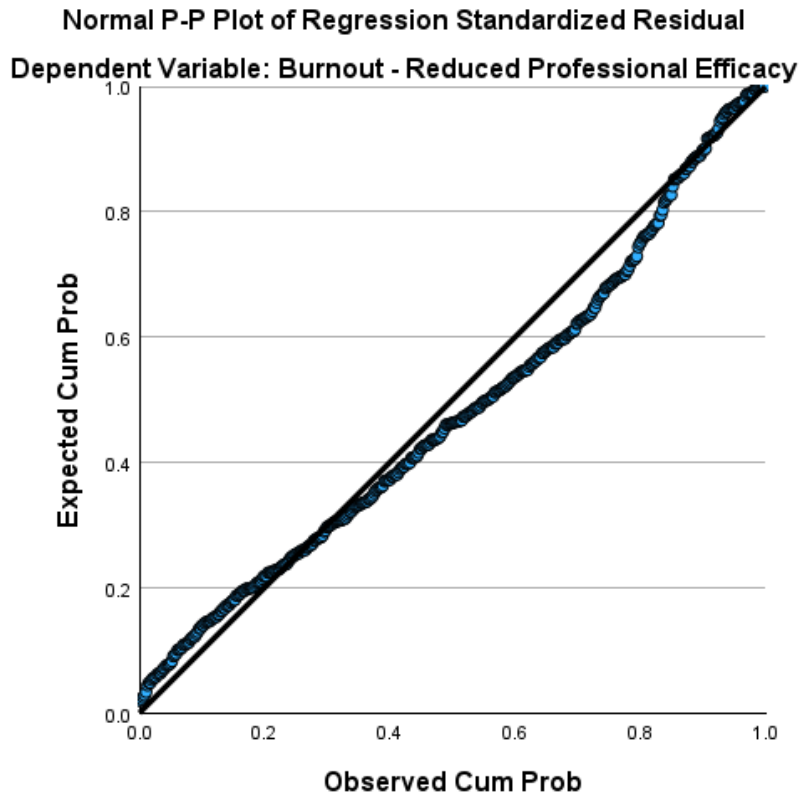
Note: N = 436*;* Expected Cum Prob = Expected Cumulative Probability; Observed Cum Prob = Observed Cumulative Probability

Assumption Testing: P-P Plot of Burnout – Cynicism



Note: N = 436*;* Expected Cum Prob = Expected Cumulative Probability; Observed Cum Prob = Observed Cumulative Probability

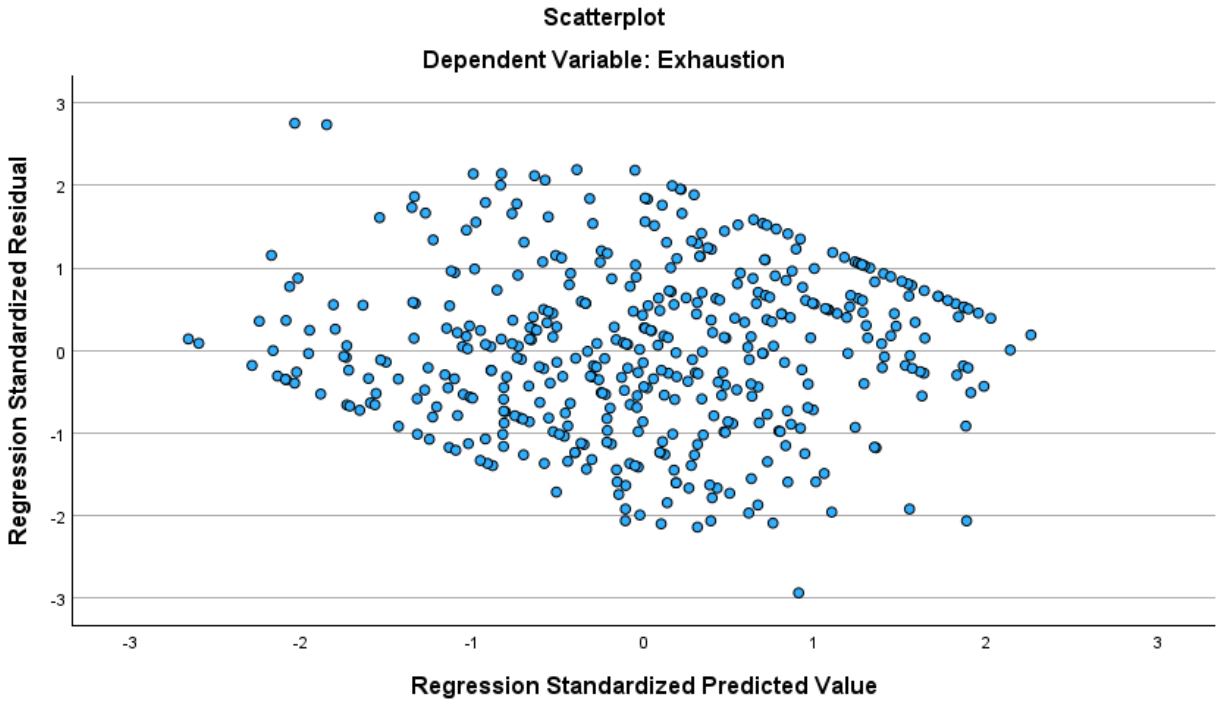
Assumption Testing: P-P Plot of Burnout – Reduced Professional Efficacy



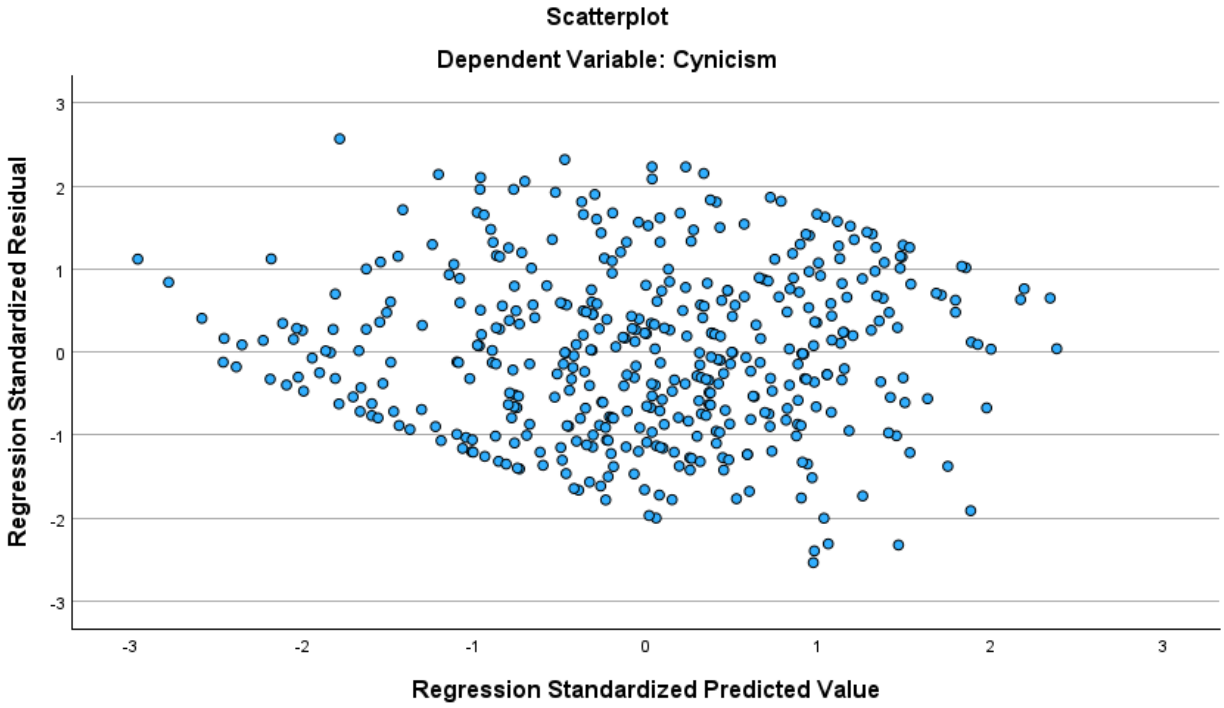
Note: N = 436*;* Expected Cum Prob = Expected Cumulative Probability; Observed Cum Prob = Observed Cumulative Probability

Appendix D

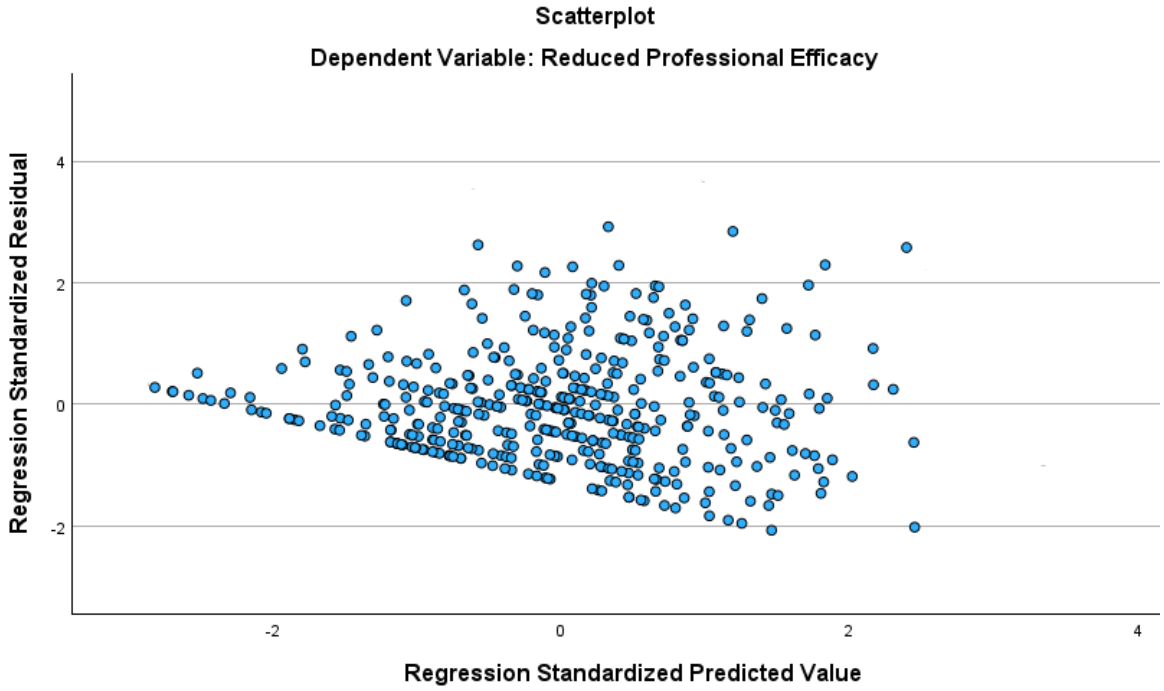
Assumption Testing: Scatterplot of Predicted and Standardized Residual Values for Burnout - Exhaustion



Assumption Testing: Scatterplot of Predicted and Standardized Residual Values for Burnout – Cynicism



Assumption Testing: Scatterplot of Predicted and Standardized Residual Values for Burnout – Reduced Professional Efficacy



Appendix E

Harmon Single Factor Test (HSFT): Variance Explained

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.30	20.92	20.92	10.61	19.65	19.65
2	9.33	17.28	38.20			
3	3.58	6.63	44.83			
4	2.98	5.53	50.36			
5	2.57	4.76	55.12			
6	1.92	3.56	58.68			
7	1.60	2.96	61.64			
8	1.29	2.40	64.04			
9	1.24	2.29	66.33			
10	1.12	2.07	68.40			
11	1.04	1.93	70.33			
12	1.00	1.86	72.19			
13	0.88	1.63	73.82			
14	0.74	1.38	75.19			
15	0.70	1.29	76.49			
16	0.68	1.25	77.74			
17	0.66	1.22	78.96			
18	0.64	1.18	80.14			
19	0.61	1.12	81.26			
20	0.57	1.05	82.31			
21	0.54	1.00	83.32			
22	0.51	0.95	84.27			
23	0.49	0.90	85.17			
24	0.48	0.89	86.06			
25	0.45	0.84	86.90			
26	0.43	0.80	87.69			
27	0.41	0.76	88.45			
28	0.41	0.75	89.20			
29	0.39	0.73	89.93			
30	0.37	0.69	90.62			
31	0.37	0.68	91.30			
32	0.35	0.64	91.94			
33	0.32	0.60	92.54			
34	0.30	0.56	93.10			
35	0.29	0.55	93.64			
36	0.29	0.53	94.18			
37	0.25	0.47	94.64			
38	0.24	0.45	95.10			
39	0.24	0.44	95.53			
40	0.22	0.41	95.95			
41	0.22	0.40	96.35			
42	0.21	0.39	96.74			
43	0.21	0.39	97.13			
44	0.20	0.37	97.50			
45	0.19	0.34	97.84			
46	0.17	0.32	98.16			
47	0.16	0.30	98.46			
48	0.15	0.28	98.74			
49	0.15	0.27	99.01			
50	0.13	0.24	99.25			
51	0.11	0.21	99.46			
52	0.10	0.19	99.65			
53	0.10	0.19	99.84			
54	0.09	0.16	100.00			

Note: N = 436; Method = principle axis factor.