DISSERTATION

AN EXAMINATION OF THE RELATIONSHIPS BETWEEN VOCATIONAL IDENTITY, HARDINESS, MEANINGFUL WORK, BURNOUT, AND WORK ENGAGEMENT

Submitted by

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ABSTRACT

AN EXAMINATION OF THE RELATIONSHIPS BETWEEN VOCATIONAL IDENTITY, HARDINESS, MEANINGFUL WORK, BURNOUT, AND WORK ENGAGEMENT

A cross-sectional study was conducted to expand the Job Demands-Resources (JD-R) model and personal resources within the model. The association between vocational identity as a personal resource and two criterion variables of burnout and work engagement were examined in a sample of 255 full-time U.S. working adults using Amazon's Mechanical Turk to collect survey data. JD-R is situated within occupational stress research that incorporates burnout and work engagement as the two primary constructs other variables are related to. Vocational identity has seen very little research in working adult samples and has been limited to career development outcomes. Minimal examination has been conducted of core features of identity within the JD-R model. Therefore, this study explored vocational identity as a personal resource that predicts burnout and work engagement, hypothesizing a negative relationship with the former and positive relationship with the latter. Results indicated vocational identity had significant main effects on both work engagement and burnout. Additionally, the perception that one's work is meaningful was examined as an important job resource hypothesized to explain the relationship between the main predictor and criterion variables as a mediator. Results also indicated that meaningful work significantly mediated the direct effects of vocational identity on work engagement and burnout. Since stress is a natural part of work, one's stress appraisal and coping style has a significant influence on well-being outcomes. Hardiness, which is a personality style that influences how one may effectively cope with stress, is viewed as an important personal resource. It was hypothesized that hardiness moderated the strength of the direct relationship between vocational identity and the criterion variables, as well as the strength of the relationship with the meaningful work

mediator. A proposed moderated mediation model was tested where vocational identity predicted burnout and work engagement through the mediating relationship of meaningful work. The mediated effect was expected to be stronger for those higher in hardiness. Results revealed that hardiness only had a moderating effect on the relationship between vocational identity and the exhaustion subscale of burnout, but no significant moderating effect was detected for the other two burnout subscales or any of the three work engagement subscales. Results also showed no detectable moderating effect of hardiness on the indirect relationship of vocational identity on work engagement and burnout through meaningful work.

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INTRODUCTION

Work is an important part of most adults' lives and a significant contributing factor to well-being, in both positive and negative terms (Albrecht, 2013; Steger & Dik, 2009a, 2009b). Engagement in one's work is a concept that has become increasingly popular for both employees and the organizations in which they work (Bakker, Schaufeli, Leiter, & Taris, 2008). Characterized as a state in which a person feels deeply interested and absorbed in what they are doing while deriving a sense of energy (Bakker et al., 2008; Saks & Grumman, 2014; Schaufeli & Bakker, 2006), work engagement contributes to a sense of meaningfulness and flourishing (Chalofsky & Krishna, 2009; Hart, Cotton, & Scollay, 2015; Kahn & Fellows, 2013). More engagement in one's work contributes to positive outcomes, such as increased task performance and improved job satisfaction (Simpson, 2009). Conversely, the antipode to work engagement – burnout – involves a sense of depleted energy, cynicism, and the sense that one's efforts do not matter (Maslach, Schaufeli, & Leiter, 2001; Schaufeli, Leiter, & Maslach, 2009). Negative consequences that result from burnout include impaired task performance and diminished physical and psychological health (Maslach, Jackson, & Leiter, 2016). Organizations are interested in employee burnout and work engagement because of their collective impact to the organization. More engaged employees with reduced potential for experiencing burnout relate to reduced turnover rates, greater efficiency, higher productivity, and more commitment to their organization (Halbesleben, 2010; Schaufeli & Salanova, 2008).

The Job Demands-Resources (JD-R) model is a prominent and well-researched theory that incorporates work engagement and burnout together within an overall framework that describes antecedents to those constructs, outcomes related to work engagement and burnout, and various interactions that help to increase or decrease work engagement and burnout. In simple terms, JD-R posits that work engagement or burnout result from a ratio between the demands experienced at work

and the resources available to effectively cope with and address those demands (Bakker & Demerouti, 2007; Bakker, Demerouti, & Sanz-Vergel, 2014). If one's available resources (both intrinsic and extrinsic) are robust enough to meet and exceed the challenges of the demands at work, then engagement may be experienced. However, if the demands outstrip resources, then burnout is a likely possibility. Within the notion of job resources in the JD-R model there is a subconstruct called *personal resources* (Bakker et al., 2014; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007) that differentiates between extrinsic job resources, such as supervisor support, compensation, and healthy work environment, and personal resources intrinsic to the individual, like personality characteristics and affective disposition (such as being typically optimistic when faced with stress). Personal resources are viewed as more stable over time and add to external job resources in meeting the demands of work. The personal resources construct is a relatively recent addition to the JD-R model, and more research is recommended to examine the various components that may be conceptualized within it.

Two constructs that may be conceptualized as personal resources and offer interesting additions to the JD-R body of research are vocational identity and hardiness. Vocational identity, which is how clear and assertive one may be about their interests, skills, abilities, and values as they relate to work and how they may play out in a career (Skorikov & Vondracek, 2007; Skorikov & Vondracek, 2011), has a substantive history of examination in the literature in terms of its relation to career development and career decision-making outcomes – predominantly in adolescent and young adult college student populations. However, there is a significant gap in the literature pertaining to vocational identity and relationships with individual and organizational outcomes for working adults. Hardiness is a personality style characterized by predominantly viewing stressful circumstances as challenges to be met rather than avoided; maintaining a felt sense of personal control when under stress; and maintaining and persisting in commitments to personal and organizational goals during stressful circumstances (Kobasa, 1979, 1982; Maddi, 2002). A large proportion of hardiness research has been about its stress buffering

effects and physical/psychological health maintenance; particularly burnout prevention (Eschleman, Bowling, & Alarcon, 2010; Maddi, 2002). Interesting research has also been done investigating hardiness and positive work-related outcomes, such as work engagement (e.g., Lo Bue, Taverniers, Mylle, & Euwemea, 2013). More of such research is needed.

The notion that work can be a source of meaning both within work roles and to overall meaning in life has also been an increasingly prominent line of research (Steger & Dik, 2009a). Experiencing meaning through work has been defined as deriving deep satisfaction from one's work, feeling that work contributes to a common good, and that work facilitates personal growth (Rosso, Dekas, & Wrzesniewski, 2010; Steger & Dik, 2009b). As such, it can be an important job resource viewed through the JD-R model, and likely contribute to reduced vulnerability for burnout and enhanced capacity for work engagement. There has been some research examining meaningful work predicting work engagement (see Fairlie, 2011; and Steger, Littman-Ovadia, Miller, Menger, & Rothman, 2012), but little also studying meaningful work as a possible buffer to burnout (Krok, 2016).

The aim of this study was to further examine the JD-R model with a specific focus on expanding the personal resources component with employed adults. Vocational identity, hardiness, and meaningful work as predictors of burnout and work engagement were incorporated in a novel way through the JD-R model to investigate the interactions between those predictors and their direct and indirect relationships to burnout and work engagement as outcomes. Specifically, this study tested a moderated mediation model where vocational identity was hypothesized to positively correlate with work engagement and negatively correlate with burnout. Those relationships were expected to be mediated through meaningful work. The mediating effect of meaningful work was hypothesized to be moderated by hardiness, with higher hardiness believed to increase the indirect mediated positive relationship between vocational identity and work engagement and increasing the indirect negative relationship of vocational identity with burnout.

LITERATURE REVIEW

Burnout and Work Engagement

Burnout and work engagement were the two criterion variables for this study. They are defined here, and then further elaborated on in the discussion below regarding the theoretical model that integrates both.

Burnout. The construct of burnout as it relates to occupational health and performance has an extensive history of examination in the literature. Reviews by Maslach, Schaufeli, and Leiter (2001) and Schaufeli, Leiter, and Maslach (2009) note that the construct has been researched since the mid-1970s and has the benefit of a consensus definition and conceptualization in the literature. Burnout is a result of prolonged exposure to stressors that outstrip one's ability to cope effectively and is conceptualized to occur in three dimensions: *exhaustion*, *cynicism*, and *lack of professional efficacy*. Maslach et al. (2001) explained that exhaustion is the signature quality of burnout and the dimension first experienced when someone is classified as beginning to experience burnout. When one is unable to cope with or alter it, exhaustion then leads to the other two dimensions of cynicism and reduced personal accomplishment; then an interaction between all three dimensions occurs. Exhaustion relates to feelings of one's psychophysiological resources being significantly depleted. When exhausted, people typically cope through distancing themselves cognitively and emotionally from work demands which then leads to cynicism (Maslach et al., 2001; Maslach, Jackson, & Leiter, 2016). Cynicism typically manifests as a persistently callous, detached, and distant attitude toward the clients/customers one serves or toward one's subordinates – depending on one's work role – and the organization's stated goals and mission (Maslach et al., 2001; Maslach et al., 2016). When exhausted and cynical, people experiencing burnout also experience a lack of professional efficacy – feeling less competent, productive, and able to achieve goals (Maslach et al., 2001; Maslach et al., 2016). Exhaustion, cynicism, and lack of professional efficacy

all interact, increasing the likelihood of experiencing a range of negative physical and psychological health outcomes.

Work engagement. Compared to burnout, work engagement is a much more recent construct under study. There is no consensus in the literature about how to conceptualize engagement as it applies to work (Saks & Gruman, 2014; Schaufeli & Bakker, 2010). Schaufeli and Bakker (2010) further noted that there are two terms commonly tied to engagement: *employee engagement* and *work engagement*. Work engagement refers specifically to one's relationship with their work, while employee engagement refers to one's relationship with their organization. This study focuses on work engagement, and therefore will use that term throughout. In reviews by Schaufeli and Salanova (2007) and Schaufeli and Bakker (2010), those authors explained that there appear to be two primary approaches to conceptualizing work engagement. The first is Kahn's (1990) which is significantly connected to expressions of identity, in that work engagement is a harnessing of the self to one's work role to express a "preferred self." The expression of a preferred self occurs through putting into action as fully as possible cognitive and emotional facets in performance of a work role in accomplishing work tasks that foster increased connectiveness to both the work itself and the social world of work. For Kahn (1990), being more or less engaged depends on how connected to their work and others through their work someone is and how congruent their work role performance is to their preferred self. Kahn (1990) further explicated that being engaged depends on the degree to which a person derives meaning from their work and feel that they receive benefits from their efforts in the form of more ability to express their preferred selves in work roles.

The second primary definition of work engagement explained by Schaufeli and Salanova (2007) and Schaufeli and Bakker (2010) grew out of the research on burnout and was conceptualized as burnout's positive antipode along three contrasting dimensions of *vigor*, *dedication*, and *absorption* by Schaufeli, Salanova, González-Romá, and Bakker (2002). In that definition, work engagement is a

positive energetic state experienced through involvement in activities that are personally fulfilling and increase one's sense of efficacy. As the positive converse to burnout, work engagement relates to individuals being able to cope with the demands of their work and thrive in the face of challenges. The three dimensions of work engagement are defined as follows by Schaufeli and Salanova (2007) and Schaufeli and Bakker (2010). The first dimension of vigor is characterized by mental resilience, experiencing high energy, and exhibiting persistence and investment in work tasks. Vigor directly contrasts with the exhaustion dimension of burnout. Viewing work as a positive challenge, deriving inspiration from it, finding significance in it, and being strongly involved in one's work characterizes the dedication dimension. Absorption is the sense that one "loses themselves" in one's work through being fully concentrated and engrossed in accomplishing work tasks and where time seems to pass quickly. This is seen as promoting growth in terms of increasing one's sense of efficacy. Absorption contrasts with burnout's lack of professional efficacy dimension.

Schaufeli and Bakker (2010), building on Schaufeli and Salanova's (2007) review, proposed a synthesis of the two primary definitions of work engagement above with the incorporation of burnout. In that synthesis, work engagement is experienced as having a strong identification with work through enactment of a preferred self (i.e., along Kahn's (1990) definition) with high energy and a sense of fulfillment (i.e., along the definition of Schaufeli et al., 2002). The three dimensions of vigor, dedication, and absorption are then the operationalized means through which one experiences the positive effects of expressing one's preferred self. So, where work engagement is experienced as having high energy and strong identification with work, burnout is an opposite state of low energy and low or no identification with work. Schaufeli and Salanova (2007) viewed each of the three work engagement dimensions as operating on a continuum with the matching three for burnout. The vigor-exhaustion continuum relates to energy; dedication-cynicism relates to identification; absorption-inefficacy relates to growth. Figure 1

below illustrates the three work engagement dimensions with the matching ones for burnout along with the corresponding energy, identification, and growth continuums.

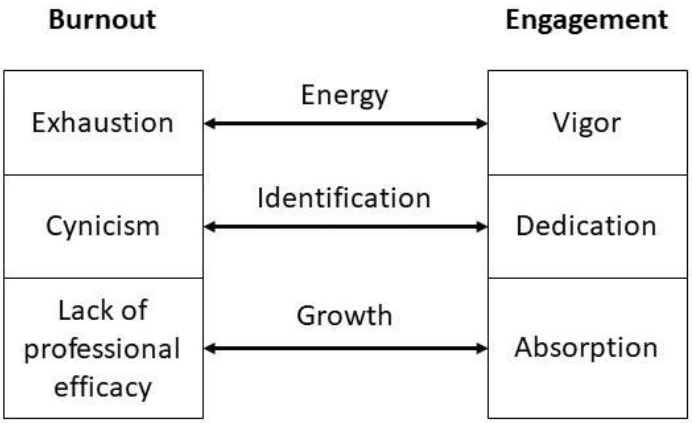


Figure 1. The relationship between burnout and work engagement. Recreated from Schaufeli and Salanova (2007), p. 141.

From Schaufeli and Bakker's (2010) proposition, Kahn's (1990) model of engagement that is a result of the ability to express a preferred self through work would lead to the interaction of the three dimensions of work engagement promoting a stronger sense of high energy, identification, and growth through work. That positive interaction effect would then reinforce and further promote the expression of a preferred self. This study used the synthesized conceptualization of work engagement where identification through enactment of a preferred self is a strong component. A prominent theoretical model that incorporates work engagement and burnout together is described below.

The Job Demands-Resources Model

The Job Demands-Resources (JD-R) model was developed out of and integrates the occupational health, motivation, and work stress research traditions. As explained by Bakker and Demerouti (2007), the model's primary premise is that across occupations and organizations, factors associated with work stress can be classified into work-related demands and resources. Workers' available resources relative

to the demands of work may buffer against or reduce stress-related costs and promote well-being; whereas if demands outstrip available resources, negative psychological and physical health consequences will occur. As emphasized in reviews by Bakker and Demerouti (2007), Bakker, Demerouti, and Sanz-Vergel (2014), Taris and Schaufeli (2016), Van den Broeck, Van Ruysseveldt, Vanbelle, and De Witte (2013), the JD-R model is the most widely cited and researched model of work engagement that also integrates burnout as the two main constructs that explain and predict workplace well-being in the context of stress and consequent individual and organizational outcomes.

In JD-R, antecedent to burnout and work engagement are *job demands* and *resources*, with resources being subdivided into *job resources* and *personal resources*. Job demands are various physical, psychological, emotional, social, or organizational aspects of work that require sustained psychophysiological effort on the part of the individual worker and are associated with strains that exact psychophysiological costs (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et al., 2013). Job demands are context-specific to one's workplace and role expectations. Examples include work pressure, work stress, workload, emotionally demanding interactions with clients/customers, and specific stressful events. Job demands are not necessarily negative but become so when they require high effort and are difficult to recover from. Further differentiated into *challenge stressors* and *hindrance stressors*, job demands may be experienced as innately negative (hindrances) or as potentially positive opportunities (challenges). Hindrance stressors are occurrences or characteristics of the workplace that interfere with or inhibit task and goal accomplishment (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et al., 2013). Bureaucratic demands perceived as "pointless," negative social environment at work, incompetence expressed by team members or supervisors are some examples of hindrance stressors. Challenge stressors are demanding aspects of work that are appraised as having the potential to promote personal growth and achievement (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et

al., 2013). High workload, high time pressure, and high responsibility may be challenge stressors if viewed by an individual as worth the discomfort and stress involved for their ability to provide desired rewards if those stressors are adequately met.

Like job demands, job resources are context-specific aspects of one's work environment that may be physical, psychological, emotional, social, or organizational. However, job resources are those aspects of work that are functional in task accomplishment and achieving work goals, and that stimulate personal growth, learning, and development (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et al., 2013). They also serve to reduce job demands and their associated psychophysiological costs by providing the necessary means to meet those demands (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et al., 2013). Job resources can be provided at the organizational level (e.g., monetary compensation, career opportunities, benefits) or experienced at the interpersonal level (e.g., coworker and/or supervisor support, team climate, social activities). They can be part of one's specific position (e.g., role clarity, autonomy, participation in decision-making about work goals), and its task-level aspects (e.g., skill variety, task significance, performance feedback (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et al., 2013). While job resources are external to the self and context-specific to one's work environment, personal resources are a worker's individual characteristics and traits that also buffer against the strains of job demands and promote energetic engagement in work.

Personal resources are viewed as highly valued aspects of the self that relate to positive beliefs in oneself and the world, promote resilience in the face of stress, and contribute to one's potential to control and influence the work environment (Bakker & Demerouti, 2007; Bakker et al., 2014; Hobfoll, Johnson, Ennis, & Jackson, 2003; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). One's positive beliefs, stress resiliency, and sense of control predict goal-setting and goal-achievement, work motivation and performance, and job and life

satisfaction (Hobfoll et al., 2003). Other than the general definition of personal resources above, there is not a specific classification in the literature of what does or does not constitute a personal resource. Personal resources have been variously investigated as single dispositional personality traits that are relatively stable over time (e.g., hardiness, optimism, and emotional competence; see Garrosa, Moreno-Jiménez, Rodríguez-Muñoz, and Rodríguez-Carvajal, 2011); traits combined together as higher order personality constructs (e.g., sense of coherence; see Vogt, Hakanen, Jenny, and Bauer, 2016); and other constructs potentially more context-influenced and malleable that might also be defined as job resources (e.g., organizational-based self-esteem [see Xanthopoulou et al., 2007] and compassion satisfaction [see Tremblay and Messervey, 2011]).

As described by Bakker and Demerouti (2007), Bakker et al. (2014), Taris and Schaufeli (2016), and Van den Broeck et al. (2013), JD-R posits a dual process model where job and personal resources interact with job demands to predict burnout and work engagement. Burnout and work engagement are conceptualized as antipodes to each other where the dual processes lead to one or the other. The first is the energy-depleting or *health impairment process*. It is the pathway from job demands to burnout. The second process is the energetic or *motivational process* and is the pathway from job and personal resources to work engagement. Burnout and work engagement are then the two primary predictors of the range of negative (from burnout) and positive (from work engagement) outcomes at both the individual and organizational levels. In this dual process model, job and personal resources interact to have an additive effect that contribute to an individual's overall pool of resources available. A person's resources interact with the job demands they experience in the workplace. If sufficient, one's resources adequately buffer the strains posed by job demands in the process of going about one's work which mitigates the energy-depleting health impairment process and prevents burnout. When job demands are buffered adequately, personal and job resources provide the energy and motivation to accomplish work tasks and goals and contribute to work engagement. Taris and Schaufeli (2016) added that

personal resources can play a more complex part of the dual process model through three roles. One role is personal resources acting as antecedents or predictors of both job demands and job resources. A second role is in moderating the potential health-impairing strains posed by job demands on well-being. Third, personal resources can be mediators through which job resources may prevent burnout and enhance work engagement. For a visual representation of roles of job demands, job and personal resources, burnout, and work engagement in the JD-R dual process model, see Figure 2 below.

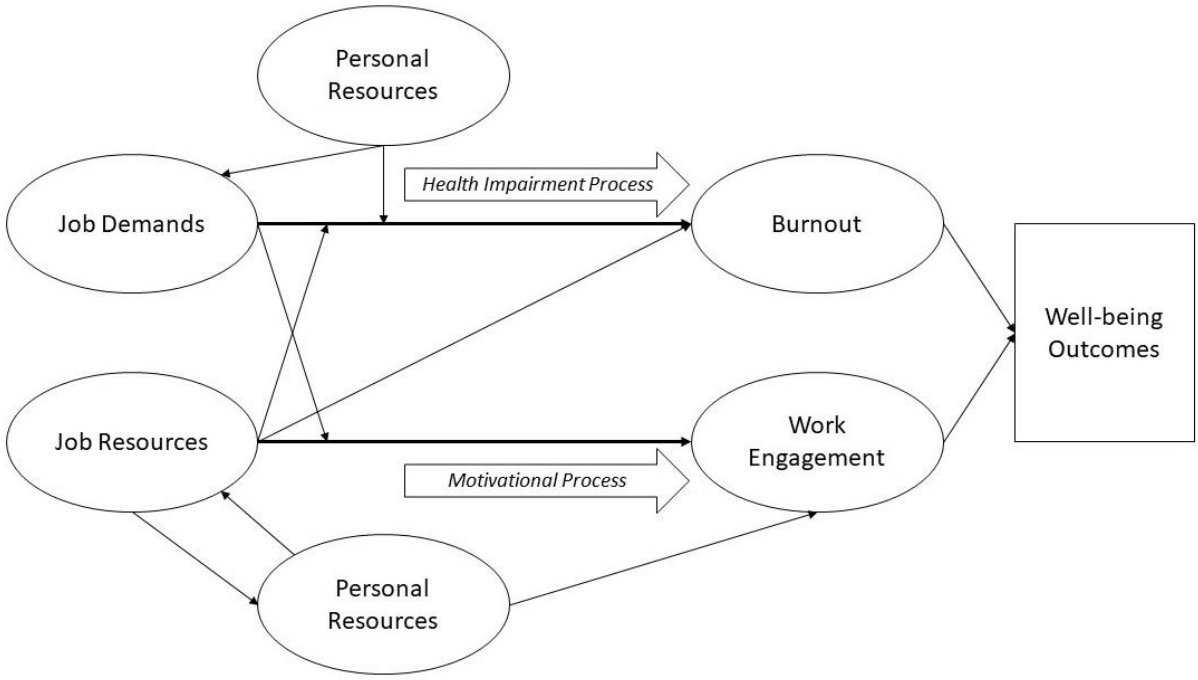


Figure 2. The Job Demands-Resources model of occupational well-being. Based on Van den Broek, Ruysseveldt, Vanbelle, and De Witte (2014), p. 84.

Expanded further, interactions between job demands, job resources, and personal resources that sufficiently buffer the effects of strains and stressors while promoting energy and motivation can contribute to a *coping hypothesis*. In JD-R, that is where job and personal resources become much more salient when job demands are high, and an individual appraises those high job demands as challenges to be met that will provide desired rewards – whether monetary, emotional, etc. (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et al., 2013). In such cases, job and personal resources particularly influence motivation, translate into increased task enjoyment, and contribute more to work engagement. Stated another way, job and personal resources gain more motivational potential when an individual is confronted with high job demands that are perceived as positive challenges. In a study establishing some empirical support to the JD-R coping hypothesis, Bakker, van Veldhoven, and Xanthopoulou (2010) observed that resources alone do not seem to guarantee work engagement, but that individuals require challenges to set their available resources in motion. In theory, personal resources would likely play an even more important role in the JD-R coping hypothesis. Individuals higher in personal resources would likely experience more person-environment fit; that is, be more apt to self-select into work environments with more available job resources that fit their idiosyncratic intrinsic and extrinsic motivational needs. Such individuals would also be more proactive in, and capable of, shaping their work environments to be more resource rich. They would also have dispositional attributional styles more likely to perceive stressors as challenges rather than hindrances and therefore experience even more positive outcomes relative to the coping hypothesis energetic motivational process pathway.

In JD-R, burnout and work engagement are placed as important outcomes themselves as well mediators between job demands/resources and important individual and organizational outcomes predicted by interactions between demands and resources (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et al., 2013). The JD-R literature has codified empirically

supported antecedents and outcomes of both burnout and work engagement. In general, job demands are more important predictors of burnout than lack of job resources; whereas job resources have had a consistent negative relationship with burnout – particularly the cynicism dimension – but less strongly related than job demands (Maslach et al., 2001; Saks & Gruman, 2014). The most tested and codified predictors of burnout have been the job demands of role ambiguity, role conflict, role stress, stressful events, workload, and work pressure (Maslach et al., 2001; Saks & Gruman, 2014). Personality has also been demonstrated to play an important role associated with burnout. A review by Bakker et al. (2014) indicated that hardiness (defined and explicated below as an important variable in this study), locus of control, and self-esteem were strongly associated with burnout. Alarcon et al. (2009), in a meta-analysis examining personality and burnout, discussed personality buffering against burnout through a combination of dispositional traits manifesting as a style of acting in the world optimistically, with a sense of control over events in one's life, and resilience in the face of stress. This style influences burnout in three ways, according to Alarcon et al. (2009). First, it predisposes people to perceive work positively regardless of the objective nature of work. Second, personality style can influence the objective nature of work, such as through higher adaptability and/or self-selecting to better work environments. Third, certain personality types may be better able to cope with job demands.

The identified consequences of burnout are health-related, through chronic stressors leading to physiological and psychological health problems. Burnout increases the prevalence of anxiety, depression, and alcohol use disorders (Bakker et al., 2014; Maslach et al, 2001). Physiological health problems that result from burnout include sleep disturbances, memory impairment, neck pain, headaches, respiratory and gastrointestinal infections, cardiovascular disease, and musculoskeletal problems (Bakker et al., 2014; Maslach et al, 2001). Relative to outcomes from burnout at work, the main impact is seen in performance. That is, workers suffering from burnout experience significant

reduction in task completion, poorer quality of work produced, higher absenteeism, and increased turnover (Bakker et al., 2014; Maslach et al, 2001).

Much like job demands being the primary predictors of burnout, job resources are the primary predictors of work engagement (Bakker et al., 2014; Christian, Garza, & Slaughter, 2011; Schaufeli & Bakker, 2004). In JD-R, work engagement is typically supported by having a sustainable workload, having a sense of autonomy about how to conduct one's work, feeling appropriately rewarded and recognized for one's efforts, having supportive co-workers and supervisors, perceiving treatment as fair and just, and feeling that one's work in meaningful and valued (Maslach et al., 2001; Saks & Gruman, 2014). A meta-analysis by Christian et al. (2011) listed the specific job resources as primary predictors of work engagement to be task variety, task significance, autonomy, feedback, social support from co-workers, a good relationship with supervisor, and transformational leadership. In a review of research on personality constructs related to work engagement through the JD-R model, Mäkikangas, Feldt, Kinnunen, and Mauno (2013) reported that the Big 5 factors of emotional stability, extraversion, and conscientiousness, and an active, problem-focused coping strategy to stressors had consistent positive associations with work engagement. Dispositional personality traits classified as personal resources in the JD-R model that have demonstrated predictive power with work engagement are self-efficacy, optimism, self-esteem, core self-evaluations, positive affect, and sense of coherence (Xanthopoulou et al. 2007, 2009). Much like Alarcon et al. (2009) discussed about types of personality styles contributing to being better buffers against burnout, Bakker et al. (2014) proffered from their review that people with a certain personality profile seem better able to mobilize and use job resources and therefore are more likely to experience work engagement. Bakker et al. (2014) observed that social support and a manner of perceiving job demands as challenges rather than hindrances (the JD-R coping hypothesis described above) made one more predisposed to experiencing work engagement. According to Bakker et al. (2014), people with a personality style of consistent positive emotionality were more likely to

receive necessary social support when experiencing significant stressors, and that it was a dispositional stress appraisal style that led people to perceive stressors as challenges rather than hindrances.

Like burnout, work engagement outcomes include physical and psychological health, and impact job performance. Individuals who are more engaged experience more positive emotions, such as feeling more inspired, energetic, optimistic, and enthusiastic (Bakker et al., 2014). They also tend to be more open to new experiences, exhibit more active learning, and express more personal initiative. As a consequence, such individuals are better performers on the job – completing tasks at and above standards, producing higher quality work, are more apt to complete tasks outside of their job description, and tend to have better relationships with those they work with as well as clients and customers (Bakker et al., 2014).

Identity and Personal Resources. While personality characteristics have been investigated as resources within the JD-R model, and continue to gain increasing attention in the literature, higher-order conceptualizations of identity have yet to receive examination as potential predictors of burnout and work engagement in JD-R. Identity provides the foundation on which people have a sense of self and navigate their social worlds, including the world of work, and has been highly important in organizational (Ashforth, Harrison, & Corley, 2008; Pratt & Ashforth, 2003) and vocational psychology (Skorikov & Vondracek, 2007; 2011). Identity is important because it helps discern core aspects of people and groups and assists people in making causal inferences regarding behavior as a result (Ashforth et al., 2008; Skorikov & Vondracek, 2007, 2011). Also, identity is important because human beings are meaning-seekers and meaning-makers; stronger identities lead to a greater sense of meaning, provide more agency in constructing meaning, and a greater sense of coherence and order in a person's day-to-day life (Ashforth et al., 2008; Pratt & Ashforth, 2003). Simply stated, *identity* is a person's definition of who they are or a group's collective definition of who they are together and is broadly categorized into *personal*, *role*, and *social* identities (Ashforth et al., 2008; Stets & Burke, 2000).

Personal identity is a person's self-concept that is differentiated from others and idiosyncratically expressed compared to other individuals, role identity is the expression of self through particular roles (e.g., parent, employee, etc.) that incorporate the meanings and expectations of that role, while social identity is part of a person's self-concept that is derived from the groups they belong to and identify with that are differentiated from other groups (Ashforth et al., 2008; Stets & Burke, 2000). Personal, role, and social identities interrelate; people tend to seek and feel more comfortable in groups that reinforce their personal and role identities, while group characteristics influence how members define themselves (Ashforth et al., 2008; Stets & Burke, 2000). The content of identity includes abilities, beliefs, goals, traits, and values and that content is expressed through behavior shaped by that content in ways that are context-related; that is, one's identity shows some variation through what aspects are most salient in a given context (Ashforth et al., 2008; Stets & Burke, 2000).

Vocational identity. Defined as "the possession of a clear and stable picture of one's goals, interests, and talents" (Holland, Gottfredson, & Power, 1980, p. 1191) and how they may operate at work and shape a career, *vocational identity* has been a prominent construct in the career development and vocational psychology literatures. It was conceptualized as the predominant component of overall identity that is the determining factor in a person's career choice, development, and attainment, as well as the construction of meaning and structure for a person's life. Vocational identity is the core element of one's identity across cultures because some form of work – whether paid or unpaid – is the prevailing activity throughout life for most people, is the primary means of social integration, and of developing and expressing overall identity (Savickas, 1985; Skorikov & Vondracek, 2007, 2011). It is also the primary means of experiencing meaning due to work being a major part of peoples' lives and therefore a primary realm where meaning is derived and constructed (Albrecht, 2013; Porfeli, Lee, & Vondracek, 2013; Steger & Dik, 2009a, 2009b). While vocational identity is recognized as influenced (and often constrained) by a person's family upbringing, social groups, available education and training

opportunities, and larger socio-economic forces (Savickas, 1985; Skorikov & Vondracek, 2007, 2011), its conceptualization makes it an aspect of *personal identity* (as defined by Ashforth et al. [2008] above) that interrelates with other social identities, such as workplace organizational identity.

Vocational identity was grounded in Eriksonian identity theory (Savickas, 1985). Erikson viewed identity as one's sense of individuality, continuity, integration of goals and values, and experienced as a sense of wholeness (Erikson, 1968). Identity was constructed and differentiated through a series of developmental tasks, with Erikson (1968) asserting that vocational identity clarification was a critical task in adolescence. The establishment of a clear vocational identity serves as the means through which adolescents realize and assert their emerging self-concepts (Porfeli et al., 2013) and is crafted through exploration and increasing differentiation of preferred activities, interests, competencies, and values (Skorikov & Vondracek, 2007, 2011). Holland (1997) argued that an individual with a clear sense of vocational identity would exhibit more realistic attitudes, behaviors, and choices in the career development process and would experience better workplace adjustment and person-environment fit when making career choices. Therefore, vocational identity development is important to career development and is critical in the transition from adolescence to adulthood (Savickas, 1985; Skorikov & Vondracek, 2007, 2011).

Porfeli et al. (2013) articulated a process model for the development and establishment of vocational identity. Their model included three primary processes of exploring potential career possibilities, making commitments to a career trajectory, and reconsidering alternatives when presented with other career options salient to one's interests, values, abilities, etc. Those processes of career exploration, commitment, and reconsideration are ongoing throughout a person's work life over the lifespan, being influenced by factors such as changing interests, new opportunities presented, external economic factors, fluctuations in the work environment (e.g., new management/owners, etc.), job losses, and more (Porfeli et al., 2013; Skorikov & Vondracek, 2007, 2011). Vocational identity can be

situated on a spectrum among various statuses that range from a vague undifferentiation to a strong sense of identity achievement (Porfeli et al., 2013; Skorikov & Vondracek, 2007, 2011). Vocational identity achievement is characterized by a person feeling they are most able to express their preferred selves at work (Porfeli et al., 2013). Successful implementation happens when a person's capabilities facilitate effective functioning in work contexts through achievement and competence (Skorikov & Vondracek, 2007). There is variation in the salience of vocational identity within a person's overall sense of identity, with that salience being influenced by how important career commitments are to an individual as well as their view of work being predominantly extrinsically or intrinsically motivated (Skorikov & Vondracek, 2007, 2011). So, despite the establishment of a clear vocational identity being critical, some people may not view committing to a particular career as important as other aspects of the self, or their choices may be constrained and opportunities limited enough by socio-economic and other factors that the agency to develop a clear vocational identity may be circumvented. As it is successful employment that fits a person's vocational identity that makes it more salient and strengthens it within overall identity (Skorikov & Vondracek, 2007, 2011), vocational identity can likely be quite dependent on socio-economic factors outside of individual control. The primary functions of vocational identity include providing a sense of direction, meaningfulness, and a framework for work/career goal setting; serving as a means of self-assessment related to goal-attainment; experiencing an enhanced ability to make effective career choices – especially when faced with changing workplace circumstances and occupational ambiguities; and shaping career progress, which relates to self-esteem and life satisfaction (Skorikov & Vondracek, 2007, 2011).

There is surprisingly little research regarding vocational identity in working adults. Most of the research on vocational identity has focused on high school and college student populations, likely due to the importance of vocational identity development in adolescence and achievement in the school-to-work transition. Given that observation, there is much empirical support in the literature for vocational

identity and psychosocial functioning. Two reviews by Skorikov and Vondracek (2007, 2011) noted consistent support for vocational identity having positive associations with adaptive personality characteristics and negative association with self-defeating traits. More specifically, vocational identity is positively associated with self-esteem, proactivity, goal directedness, self-regulation, internal locus of control, orientation toward personal growth, and rational decision-making. In turn, vocational identity is negatively correlated with indecisiveness, goal instability, anxiety, and depression (Skorikov & Vondracek, 2007, 2011). Hirschi (2012) found strong positive relations between those reporting a stable achieved vocational identity and conscientiousness and well-being in terms of life satisfaction. There is also evidence of vocational identity being negatively correlated with emotional distress and trauma symptoms (Strauser, Lustig, Cogdal, & Uruk, 2006). Examined as an outcome variable, vocational identity achievement has been shown to be positively influenced by psychological well-being, purpose in life (Strauser, Lustig, & Çiftçi, 2008), dispositional optimism (Shin & Kelly, 2013), and orientations to meaning in life and engagement (Hirschi, 2011).

***Vocational identity as personal resource*.** Considering the evidence reviewed above associated with vocational identity's relationships with psychosocial well-being factors, investigation of vocational identity as a potential predictor of burnout and work engagement through the JD-R model would be useful. Given the definition of personal resources provided above, which are aspects of the self that relate to self-confidence, resiliency, and ability to positively influence one's work environment (Xanthopoulou et al., 2007), vocational identity may be situated as a personal resource in the JD-R model. As vocational identity is viewed as the core element of identity and is a predominant influencer of an individual's career decision-making and attainment, while also being a fundamental factor in constructing meaning in life and work (Holland et al., 1980; Skorikov & Vondracek, 2007, 2011), the construct would likely have strong predictive power as a personal resource.

Some interesting work has been done examining the role of identity achievement in the JD-R model. While not investigating vocational identity specifically, Luyckx, Duriez, Klimstra, and De Witte (2010) conducted a longitudinal study in a sample of 300 working adults ages 21 to 40 regarding overall ego identity statuses in relation to both work engagement and burnout. Luyckx et al. (2010) classified ego identity as a personal resource that would interact with job resources and job demands to affect work-related outcomes. They included the job demands of pace of work, emotional workload, and role conflict, and the job resources of task autonomy, job variety, and social support. Results indicated that strong identity commitments correlated with positive well-being. Stronger sense of ego identity related to substantially higher work engagement and substantially lower burnout (Luyckx et al., 2010). This work provides some promise for vocational identity as a more specific component of identity to further expand the JD-R model and the personal resources component within that model.

Personality and Personal Resources. Since the introduction of personal resources into the JD-R model by Xanthopoulou et al. (2007), personality constructs conceptualized as personal resources have been an increasing focus of research relative to burnout and work engagement as outcomes. The role of personality research within JD-R would benefit from first explaining how personality is categorized and generally conceptualized. McAdams (1995) categorized personality into three levels: Level I: dispositional traits, Level II: characteristic adaptations, and Level III: narrative identity. Dispositional traits are characteristics of a person that are relatively stable across contexts and are basic tendencies of how people act in the world and respond to life circumstances. Examples include Big Five Personality Factors, optimism, and approach/avoidance postures to particular kinds of stimuli. Characteristic adaptations are more context-, situation-, and role-specific ways people enact their life tasks, motivations, and ways of coping. Narrative identity encompasses a person's construction of the self through stories they compose retrospectively about past life events that are then used to apply in efforts to create a preferred future; a process that constructs and provides life meaning. Narrative

identity is strongly influenced by one's relationships, culture, and significant life events and is an ongoing process that occurs over the lifespan. Narrative identity is a combination of dispositional traits and application of characteristic adaptations into a holistic and coherent story for one's life. The reviews and meta-analyses described below show that Level I: dispositional traits and Level II: characteristic adaptations as personal resources have been interesting lines of investigation in JD-R.

Personality has been found to play an important role in burnout and work engagement through the JD-R model (Alarcon, Eschleman, & Bowling, 2009; Bakker et al., 2014; Mäkikangas, Feldt, Kinnunen, & Mauno, 2013). That role, in general, is how personality affects well-being in terms of stress. As explained by Mäkikangas et al. (2013), stressors are characteristics of work and situations faced at work experienced by people through *exposure* and r*eactivity*. Exposure is how particular characteristics of work or situations are subjectively appraised either positively or negatively. Reactivity is how someone responds to the appraised characteristics/situations. Essentially a person's way of appraising a stressful situation determines how they deal with it and then positive or negative well-being outcomes follow from there (Alarcon et al., 2009; Bakker et al., 2014; Kobasa, 1982; Mäkikangas et al., 2013). Personality characteristics, such as the Big 5 traits, may influence people to perceive work environments more favorably regardless of the objective nature of work in terms of viewing stressors as threatening or as challenges to be met that will promote personal growth (Alarcon et al., 2009; Bakker et al., 2014; Mäkikangas et al., 2013). Personality can also influence the objective nature of work through some self-selecting into more enriched work environments as well as being more proactive in shaping their work environments (i.e., job crafting) to be more beneficial and rewarding (Alarcon et al., 2009; Bakker et al., 2014; Mäkikangas et al., 2013). Another possibility is some personalities being better able than others to cope with their job demands as well as better mobilize job resources than others (Mäkikangas et al., 2013).

In general, the personality/stress/well-being relationship is summarized in terms of *coping* and is directly connected to the JD-R coping hypothesis described above. Coping is conceptualized as how people respond to stress in two manners. One is a person's dispositional personality traits that manifest as relatively stable ways of responding to stressors across contexts. The second is a person's characteristic adaptations that are more context-specific ways of stress responses (Mäkikangas et al., 2013). Ways of coping, in simple terms, are differentiated between interpreting stressors as potentially favorable challenges or as negative strains; people with high self-efficacy, optimism, and high emotional stability tend to appraise stressors as challenges rather than strains (Alarcon et l., 2009; Mäkikangas et al., 2013). However, regardless of one's appraisal style, Mäkikangas et al. (2013) made the point that everyone has a limit to how much stress can be endured. Chronic stress can outstrip one's resources and ability to cope, resulting in impairments to performance and physical and psychological health.

Hardiness. Introduced in the literature by Kobasa in 1979, hardiness was conceptualized as a dispositional personality style that differentiated people who experienced high levels of stress and were able to maintain health from those who became ill under the same conditions. Hardiness is as a combination of three dimensions, or "attitudes," that are *commitment*, *control*, and *challenge*. The attitude of commitment is about believing in the importance and value of one's own life and therefore persisting in working toward goals and growth even in the face of high stress, along with maintaining involvement in important events and with others, rather than isolating and withdrawing (Kobasa, 1979, 1982; Maddi, 2006). Being strong in control is about maintaining a sense of personal agency and seeking to continue to influence events and circumstances even under high stress, rather than feeling powerless; it is an attitude of confidence and personal responsibility that one can influence events for the positive rather than feeling as if one is at the whim of stressors (Kobasa, 1979, 1982; Maddi, 2006). Challenge is characterized by viewing stressors and tragedy as normal parts of existence rather than wishing for the absence of tragedy and stress; when stressors occur, being high in challenge results in a

more likely view of stressors being opportunities with the potential for growth if one marshals their resources to adequately meet them (Kobasa, 1979, 1982; Maddi, 2006). Maddi (2006) emphasized that the three "hardy attitudes" do not operate in isolation but in combination that together constitute a way of thinking and feeling manifested as a personality style that is learned, oriented toward growth, and acts as a buffer against high stress. The attitudes help structure how a person appraises stressful situations and facilitates the motivation to do difficult things (Maddi, 2002, 2006). Hardiness was based in existential personality theory (Kobasa, 1979; Maddi, 2002, 2004, 2006), and further conceptualized as an operationalization of "existential courage." Existential courage is manifested by way of hardiness as high self-confidence and acceptance of the tragic circumstances of life that leads to more effectively constructing meaning in life through more agentic decision-making despite life's stressors and tragedies (Maddi, 2002, 2004, 2006). While hardiness is a dispositional personality trait, theory and evidence support the proposition that it is learned and can be developed (Maddi, 2002, 2006). Hardiness develops through self- and other-encouragement to believe that one can turn adversity into opportunity and then observe that they actually have the ability to do so (Maddi, 2002, 2006). Similar to the assertion made by Mäkikangas et al. (2013) regarding personality and stress in general, Maddi (2002) noted that, despite how high in hardiness one may be, too much stress experienced over too much time relative to one's ability to effectively cope will lead to health impairment (i.e., illness, mental disorders, behavioral failures).

Hardiness has extensive research support going back to 1984 (Maddi, 2002) and has demonstrated positive influence on performance and health across a wide variety of working adult samples in multiple countries, including those serving in the military (Britt, Adler, & Bartone, 2001; Eschleman, Bowling, & Alarcon, 2010; Lo Bue, Taverniers, Mylle, & Euwemea, 2013; Maddi, 2002). A meta-analysis by Eschleman et al. (2010) reported that, in general, hardiness was positively related to other personality traits that protect people from stress, negatively related to personality traits that

exacerbate effects of stress, negatively related to stressors and poor coping, and positively related to active coping and performance. More specifically, hardiness was positively associated with the personality constructs of self-esteem, optimism, extraversion, sense of coherence, and self-efficacy (Eschleman et al., 2010). Psychological well-being constructs that hardiness demonstrated positive associations with included job satisfaction, life satisfaction, positive state affect, personal growth, engagement, happiness, and quality of life (Eschleman et al., 2010). Negative relationships were found with hardiness that included depression, burnout, state anxiety, PTSD, frustration, and psychological maladjustment (Eschleman et al., 2010). Meta-analytic evidence from Eschleman et al., (2010) showed a large effect for the moderating role of hardiness in the stressor-strain relationship. That is, between the experience of stressors and those main effects on strains (or the potential negative impact to psychophysiological health) hardiness has a predominant impact on the extent to which stressors may result in strains. Relative to personality variables and burnout, a meta-analysis by Alarcon, Eschleman, and Bowling (2009) found that hardiness had strong negative relationships with all three dimensions of burnout (i.e., emotional exhaustion, depersonalization, and professional efficacy/personal accomplishment). Furthermore, hardiness was compared to the other personality variables under study that included self-esteem, self-efficacy, locus of control, emotional stability, Big Five Factors, positive/negative affectivity, optimism, proactive personality, and Type A personality. Hardiness demonstrated a stronger relationship with the emotional exhaustion dimension of burnout than all the other personality variables, save negative affectivity and emotional stability. For depersonalization, only negative affectivity had a stronger relationship but only by a very small margin. Finally, hardiness was third behind self-efficacy and positive affectivity in the strength of the relationship to personal accomplishment/professional efficacy. Alarcon et al. (2009) commented that it was unclear why hardiness yielded stronger relationships across all three of the burnout dimensions than most of the other personality traits examined and recommended future research examining the hardiness-burnout

relationship. While there appears to be substantive research in the literature regarding the relationship between hardiness and burnout, much less has been conducted related to work engagement.

***Hardiness as personal resource*.** Bakker, Schaufeli, Leiter, and Taris (2008) asserted that stress resiliency would be a key personal resource relative to burnout and work engagement. As a dispositional personality style that fosters positive beliefs about oneself, an optimistic attitude about the world, has a direct function on stress, and contributes to the ability to control and influence events in one's life, hardiness directly fits the JD-R definition of a personal resource. Furthermore, hardiness would directly fit within the JD-R coping hypothesis, as hardiness becomes more salient in the face of high stress and includes the component of control, where those high in control view high demands and stressors as challenges to be met. Hardiness both buffers against stress (the JD-R health-impairment pathway to burnout) while fostering motivation to engage in and complete the tasks necessary to successfully resolve demands and stressors (the JD-R motivational pathway to work engagement).

Hardiness has attracted growing attention in research specifically defined as a personal resource in the JD-R model. As stated above, while hardiness has a substantive history of research relative to burnout (see Alarcon et al., 2009), there is much less evidence related to work engagement. However, there is increasing interest in examining the role of hardiness in both burnout and work engagement in the same samples. For example, 171 Belgian military personnel deployed to Afghanistan were surveyed by Lo Bue, Taverniers, Mylle, and Euwema (2013) to investigate hardiness as a predictor of burnout and work engagement, as well as moderating the relationship between the two outcomes. More specifically, Lo Bue et al. (2013) studied the direct relationship between hardiness total score, the cynicism and emotional exhaustion dimensions of burnout, and the dedication and vigor dimensions of work engagement. The moderating influence of hardiness total score was examined on the energy continuum between exhaustion and vigor and on the identification continuum between cynicism and dedication. Regression analyses were used to test the direct and moderating effects. Hardiness was found to have

significant direct effects on each of the two dimensions studied for both burnout and work engagement. Specifically, 20.30% of the variance was explained for dedication (B = .57; p < .001), 30.50% for vigor (B = .65; p < .001), 28.70% for cynicism (B = –.56; p < .001), and 19.20% for emotional exhaustion (B = –.48; p < .001). Hardiness did not have a significant moderating effect between dedication and cynicism but did significantly moderate the relationship between vigor and exhaustion (B = .66; p < .001) and explained an additional 5.4% of the variance. Lo Bue et al. (2013) interpreted their results as supporting the notions that in high stress work (in this study's case, a deployment to Afghanistan) hardiness fosters work engagement through increased vigor and dedication, and prevents burnout by buffering against exhaustion and cynicism. The non-significant hypothesized moderation effect between vigor and emotional exhaustion but significant moderated effect between dedication and cynicism was discussed by Lo Bue et al. (2013) as being a confusing finding. Hardiness may not be a useful moderator between the burnout and work engagement dimensions.

Corso-de-Zúñiga, Moreno-Jiménez, Garrosa, Blanco-Donoso, and Carmona-Cobo (2017) surveyed 430 teachers at private schools in Peru examining both burnout and work engagement as outcomes. Hardiness was situated as a personal resource and investigated as a mediator. The job resources of adequate supervision and material resources and the job demands of work overload and administrative rigidity were the predictors. Through structural equation modeling, Corso-de-Zúñiga et al. (2017) discovered that the direct effect paths from hardiness to work engagement (γ = .31, p < .001) and burnout (γ = –.27, p < .001) were both significant. The model tested by Corso-de-Zúñiga et al. (2017) with hardiness as a mediator resulted in a significant but small effect (b = .08, β = .176, SE = .066, p < .001). Hardiness appeared to both foster work engagement and prevent burnout while explaining a portion of the relationships between the job resources and demands under study and work engagement/burnout as outcomes. Within the JD-R personal resources paradigm, hardiness appeared to have an important effect on the dual motivational and health impairment processes. Corso-de-Zúñiga et

al. (2017) interpreted their overall results as indicating that those who had greater personal resources (i.e., hardiness) demonstrated more of other resources (i.e., work engagement) that would then lead to more positive outcomes in the JD-R motivational process. Inversely, in the health impairment process hardiness as a personal resource performed as a buffer against strain thereby preventing burnout which in turn would prevent negative physical and psychological health consequences. Both studies by Lo Bue et al. (2013) and Corso-de-Zúñiga (2017) confirmed that hardiness – as studied through the JD-R personal resource paradigm – is significantly positively correlated with work engagement while significantly negatively correlated with burnout where both constructs are included in the same samples. Hardiness also had significant direct effects on both criterion variables in the expected directions.

Meaningful work

To find something meaningful is to appraise it as being significant, having purpose, and contributing to self-realization (Martela & Pessi, 2018; Peterson, 1999, 2013; Pratt & Ashforth, 2003). Human beings are meaning-making creatures (Peterson, 1999, 2013). At one level that is because we are goal-seeking organisms that pursue ends that range from basic survival needs (e.g., food and shelter) to more complex ends, such as attaining careers. The world is too complex for our senses and brains to observe and comprehend everything that occurs, so we appear to filter what we are able to perceive as phenomena that either assist with goal attainment or are obstacles to goals (Peterson, 2013). Those phenomena that interact with our goal pursuits are viewed as meaningful (Peterson, 2013). Additionally, means through which we can realize our potential and more authentically express ourselves are appraised as more meaningful (Martela & Pessi, 2018). Another level of meaning-making is existential. Human beings appear to be the only organisms that are aware of our own mortality and that can put our own existence into question. In that context, meaning-making is about constructing a sense of significance and purpose for our lives that provides the structure that allows us to better manage the

chaotic and nebulous phenomena of existence while facilitating increased flourishing (Peterson, 1999, 2013). Since some form of work – whether paid or unpaid – is a major part of human life, work can be a primary source of overall meaning in life (Albrecht, 2013; Martela & Pessi, 2018; Pratt & Ashforth, 2003; Steger & Dik, 2009a). Therefore, meaningful work is an important phenomenon to study.

To better understand the experience of meaningful work it is useful to understand what meaning-making is and entails. Barnes, Banks, Albanese, and Steger (2011) defined meaning-making as involving a subjective:

> Interpretive framework through which individuals assign purpose and significance to their goals, actions, experiences, and contributions to society, selves, and existence. One's meaning framework is derived from and linked to one's worldview, which entails one's core values and beliefs, assumptions on how the world operates, and what truth is (p. 141).

As meaning-making – the significance and purpose a person assigns to phenomena in their life – is derived from one's worldview, the process and character of meaning-making is a product of their identity and the social worlds they inhabit (Ashforth et al., 2008; Barnes et al., 2011; Park, 2010; Peterson, 2013; Savickas, 2005; Steger & Dik, 2009b). Again, as work makes up the substantive majority of most adults' activities, meaning-making as a function of identity is particularly relevant in the context of meaningful work. That is, the character of a person's subjective sense that their particular work may be more or less meaningful is directly connected to their identity and the social context they perform their work in (Pratt & Ashforth, 2003; Steger & Dik, 2009b).

Meaning-making is not static, but an ongoing process in human life that becomes one's "life project," a continual effort to be involved in things that one wants to accomplish that are part of a felt and expressed identity (Barnes et al., 2011; Savickas, 2005). Disruptions occur to a person's meaning structures as a matter of course over time. Those disruptions can take the form of new information or experiences that cause one to re-evaluate their goal pursuits in terms of better ways to pursue their

goals or adjusting their goals to better reflect a more desired outcome, and through stressors and tragedies that either hinder goal pursuit or more severely disrupt one's worldview (Peterson, 2013). Disruptions provoke an orienting and adjusting response and a sense of felt distress (Park, 2010; Peterson, 2013). Those who can resolve disruptions to their meaning structures reduce or alleviate felt distress, while those who cannot have that distress persist (Park, 2010; Peterson, 2013). Where and when disruptions occur related to work, a person's sense of their work being meaningful would likely be conditional on how much those disruptions are characterized by stressful experiences, the ability to cope with stressors, and how well one may adjust their meaning structures connected to work to continue to find purpose and significance in what they do.

Common themes were found among reviews of the meaningful work literature. A primary theme was the role of identity. Work and identity are closely linked; one's sense of self (i.e., identity) is a key source of finding or constructing meaning in work (Chalofsky, 2003; Dik, Steger, Fitch-Martin, & Onder, 2013; Pratt & Ashforth, 2003; Rosso, Dekas, and Wrzesniewski, 2010; Steger & Dik, 2009b). The process involves one discovering what values, beliefs, and purposes they have about life (that is, strengthening their identity), working in a context that fits those components so as to enact their identity through work (i.e., identity-affirming activities), and having confidence that contributions through work helps to fulfill one's sense of purpose (Chalofsky, 2003; Dik et al., 2013; Pratt & Ashforth, 2003; Rosso et al., 2010; Steger & Dik, 2009b). For those seeking a sense of purpose for their lives, that seeking can motivate certain occupational choices, and working in occupations based on those choices can help fulfill that purpose. When work is identity-affirming, one's occupation becomes more of one's identity over time (Steger & Dik, 2009b). The contribution to meaningful work of the one's social context at work is another theme. Meaningfulness is socially constructed among those one works with in primary groups, and the greater a sense of belongingness to others, having a shared mission, and accomplishing things viewed as significant contributes to meaningful work (Albrecht, 2013; Dik et al.,

2013; Pratt & Ashforth, 2003; Rosso et al., 2010; Steger & Dik, 2009b). Individual differences influence how salient a person's individual role is compared to belongingness to the group in terms of meaningful work (Pratt & Ashforth, 2003). One may experience more meaning through their individual work roles than a sense of group belongingness, vice versa, or equal amounts of both. A third theme involves one's work itself contributing to the experience of meaning when growth occurs through being continually challenged by work and successfully meeting those challenges (Albrecht, 2015; Chalofsky, 2003; Dik et al., 2013; Rosso et al., 2010). Meaning may be derived when challenges are effectively met through promotion of personal agency and autonomy, which manifests as increased self-efficacy (Dik et al., 2013). The last primary theme from reviews of the meaningful work literature is that of serving a greater purpose beyond the self. For many, experiencing a sense of transcendence through one's work contributing to the advancement of a cause beyond personal goals that helps others is a significant factor in work being meaningful (Albrecht, 2013, 2015; Dik et al., 2013; Rosso et al., 2010; Steger & Dik, 2009b). Self-efficacy can be further enhanced when a person can see their individual efforts having a positive effect to advance a greater cause (Dik et al., 2013; Steger & Dik, 2009b).

Research has consistently shown that meaningful work is positively associated with individual psychological benefits, work performance, and benefits to organizations. Those benefits include overall well-being, better psychological adjustment, job satisfaction, intrinsic work motivation, personal fulfillment, and greater sense that life as a whole is meaningful (Albrecht, 2013, 2015; Dik et al., 2013; Rosso et al., 2010). Meaningful work is also positively related to career decision-making self-efficacy, career development (Dik et al., 2013; Rosso et al., 2010), task performance (Albrecht, 2015; Rosso et al., 2010), organizational identification and commitment (Albrecht, 2015; Pratt & Ashforth, 2003; Rosso et al., 2010), work unit cohesion, better work team functioning, and confidence in management (Dik et al., 2013), while also being related to decreases in work-related stress (Allan, Douglass, Duffy, & McCarty, 2016; Rosso et al., 2010) and less absenteeism (Dik et al., 2013). Meaningful work has also

demonstrated a positive relationship with work engagement (Albrecht, 2013, 2015; Demirtas, Hannah, Gok, Arslan, & Capar, 2017; Fairlie, 2011), but that research is still limited and more needs to be conducted.

Meaningful work as job resource. The degree to which work is meaningful for an individual, while influenced by their personal makeup, is context-specific to their work environment (i.e., company and team culture, co-worker relationships, nature of daily tasks, etc.). Therefore, meaningful work is best categorized as a job resource in the JD-R framework. Albrecht (2013) expanded the JD-R path model by proposing that psychological needs – such as autonomy, belongingness, competence, etc. – that are satisfied through work are mediators of the relationships between job and personal resources on one hand and work engagement on the other. Albrecht (2013) included meaningful work in the "satisfaction of need" category as an important mediator. That author's review of the meaningful work literature through the JD-R lens focused on the positive relationship with work engagement as an outcome and did not include burnout. In theory, meaningful work as the satisfaction of a psychological need would be negatively related to burnout performing the same mediating role as Albrecht (2013) proposed regarding work engagement.

Four studies reported promising results regarding meaningful work as a mediating or moderating influence related to work engagement through the JD-R model framework. May, Gilson, and Harter (2004) conducted a field survey study with 213 employees at a U.S. insurance company. They investigated the three constructs of meaningful work, psychological safety, and psychological availability as both predictors of work engagement and mediators between other resources (such as job enrichment and work role fit) and work engagement. May and colleagues' (2004) reported path analyses demonstrated meaningful work having the strongest positive direct effect with work engagement (β = .74) over safety (β = .23) and availability (β = .28). Meaningful work also fully mediated the effects of job enrichment and work role fit on work engagement. A study by Steger, Littman-Ovadia, Miller, Menger,

and Rothman (2012) was a cross-sectional examination of meaningful work as a moderator of the relationship between affective disposition (the tendency to persistently view experiences in a more positive or native manner) as a personal resource and work engagement in a sample of "white-collar" workers in Israel (n = 252). Steger et al. (2012) reported meaningful work and work engagement to be positively correlated (r = .62). Through hierarchical regression analysis, meaningful work was shown to add accounted-for variance of R^2 = .33 over affective disposition (R^2 = .60) and the full moderation model accounting for 41% of the variance related to work engagement. The mediating effect of meaningful work between Big 5 personality traits and work engagement was investigated by Woods and Sofat (2013) in a sample of 238 working adults in the UK. Meaningful work was found to correlate positively with work engagement (r = .71). Regression analyses demonstrated significant direct effects on work engagement by assertiveness (β = .28), industriousness (β = .15), and meaningful work (β = .59). The indirect effects of assertiveness and industriousness mediated by meaningful work were both significant, with standardized coefficients of .13 and .14, respectively. Wood's and Sofat's (2013) reported full model of the relationship between the Big 5 personality traits under study and work engagement mediated by meaningful work predicted 58% of the variance. The fourth study by Hirschi (2012) used a moderated meditation model to test the relationship between callings and work engagement with a sample of 529 highly educated working adults in Germany. Having a calling was defined as being passionate about a career role that meaning is derived from and perceived as a primary purpose for one's life. Meaningful work, vocational identity, and occupational self-efficacy were mediators while perceived person-job fit performed as a moderator in the tested model. Hirschi (2012) reported positive correlations between work engagement and meaningful work (r = .69), and work engagement and vocational identity (r = .63). Through bootstrapping analyses, Hirschi (2012) found that meaningful work and vocational identity fully mediated the effect of presence of calling on work

engagement. The potential moderating effect of person-job fit on the mediation model was not found to be significant.

The four studies above indicate that meaningful work is an important construct to include through further study and expansion of the JD-R model. The growing evidence suggests that meaningful work can have significant explanatory power regarding relationships between job and personal resources and work engagement. However, there is very little research related to meaningful work's potential relationship with burnout. In theory, having a strong sense that one's work is meaningful would contribute to increased resiliency in the face of stress and likely contribute to a preventative or buffering effect against burnout. A study conducted by Fairlie (2011) included burnout as an outcome along with work engagement relative to meaningful work. Other job demands and resources variables included in the study were intrinsic and extrinsic rewards, leadership and organizational features, coworker and supervisor relationships, work demands and balance, and work adjustment. A total of 574 working adults in the U.S. and Canada were surveyed. Fairlie (2011) found that meaningful work had the strongest correlation with work engagement (r = .77) and the disengagement subscale (r = –.77) of the Oldenburg Burnout Inventory compared to other variables in the study. Regression analyses were only conducted for main effects of meaningful work and the other predictor variables on work engagement and not burnout. Fairlie (2011) included meaningful work in the second of two regression steps and found that meaningful work accounted for ΔR^2 = .16 of additional variance for work engagement above the other variables. While the strong negative correlation between meaningful work and burnout reported in Fairlie's (2011) study supports the meaningful work-as-buffering hypothesis, no main effect was tested.

A study by Fyhn, Fjell, and Johnsen (2016) also situated burnout as a criterion variable relative to meaningful work as a predictor, along with subjective health complaints, and self-reported sick leave. Other predictors included hardiness, work engagement, and social support. Fyhn et al. (2016) proposed

a main hypothesis that hardiness would predict the variance in burnout beyond that of the other predictors. Norwegian police investigators (N = 156) were surveyed. Work engagement correlated positively with meaningful work (r = .51) and hardiness (r = .55), while burnout correlated negatively with those variables at r = –.47 and r = –.53, respectively. Hierarchical regression analysis indicated that work engagement, meaningful work, and hardiness all had significant direct effects on burnout. Those three predictors along with social support collectively accounted for 54.4% of the variance on burnout. Meaningful work and work engagement together added 20.8% of explained variance over 27.6% for social support, and hardiness added 4.2% in the next regression step. The final model resulted in meaningful work not having a significant main effect on burnout relative to the other predictors. This study and the one reviewed above by Fairlie (2011) offered interesting results for meaningful work and hardiness included together as predictors for burnout and work engagement through the JD-R model.

Purpose of the Present Study

Demerouti and Bakker (2011) and Van den Broek et al. (2013) observed that personal resources has been a valuable addition to the JD-R model since introduced by Xanthopoulou et al. (2007) in increasing the understanding of the role that individual differences play in workplace well-being. This growing line of research has investigated main effects of various personal resources predominantly on work engagement but also some on burnout. Further research was recommended by Demerouti and Bakker (2011) and Van den Broek et al. (2013) to combine job resources, personal resources, and job demands in models that test interactions between them in predicting both burnout and work engagement. Including both burnout and work engagement together as outcomes would also shed more light on the JD-R coping hypothesis. That is, where the effects of predictors are tested through the dual processes of health impairment to burnout and motivation to work engagement, results can be compared in the same sample. The purpose of this study was to extend the personal resources construct within the JD-R model through examining the role of vocational identity in predicting burnout and work

engagement. Rather than study vocational identity in isolation, two additional predictive variables – meaningful work as a mediating job resource and hardiness as a moderating personal resource – were included in a moderated mediation model to explore their interactions with vocational identity.

Given that very little research regarding vocational identity has been conducted with working adult samples (Skorikov & Vondracek, 2007, 2011), this study sought to address that gap in the literature by including that construct as a main predictor in a sample of adults employed full-time (see description of the study sample below). In addition to the evidence of vocational identity's relationships with many career development outcomes there is also much empirical support for vocational identity having significant effects on a range of factors related to psychosocial functioning (Skorikov & Vondracek, 2007, 2011). Some specific examples include vocational identity being positively related to life satisfaction (Hirschi, 2012) and meaning in life (Hirschi, 2011), while being negatively related with emotional distress and trauma symptoms (Strauser et al., 2006). While Luyckx et al. (2010) tested the direct effect of overall identity statuses on both burnout and work engagement, vocational identity has yet to be investigated relative to those outcomes through the JD-R model. Classified as a personal resource in this study, it was hypothesized that vocational identity would have a positive direct effect on work engagement while also having a negative direct effect on burnout (see hypotheses H1a and H1b below).

Meaningful work has enjoyed some limited but increasing examination in the JD-R model. That research has been predominantly focused on work engagement, but some studies have been done that also included burnout as an outcome. Viewed as a job resource, meaningful work has taken different roles in interaction models. May et al. (2004) found it to have a strong positive direct effect on work engagement while also fully mediating the effects of job enrichment and work role fit on work engagement. Meaningful work demonstrated a significant moderating influence on the relationship between the personal resource of affective disposition and work engagement in a study by Steger et al. (2012). Further evidence for meaningful work's intermediary role included mediation between Big 5

personality traits and work engagement (Woods & Sofat, 2013), and between having a calling and work engagement (Hirschi, 2012). Regarding the outcome of burnout, meaningful work has been shown to be negatively related (Fairlie, 2011; Fyhn et al., 2016). Following the theorized guidelines by Albrecht (2013), this study placed meaningful work as a mediator and purported that the main effects of vocational identity on burnout and work engagement would occur by way of meaningful work as a job resource (see hypotheses H2a and H2b below). As meaningful work is viewed as a product of identity (Chalofsky, 2003; Dik et al., 2013; Pratt & Ashforth, 2003; Rosso et al., 2010; Steger & Dik, 2009b), vocational identity is viewed as the core element of identity (Savickas, 1985; Skorikov & Vondracek, 2007, 2011), and work as providing the primary source of structure and meaning for most adults (Albrecht, 2013; Porfeli et al., 2013; Steger & Dik, 2009a, 2009b), it seems plausible to situate meaningful work as the likely mechanism through which vocational identity is linked to burnout and work engagement.

As stress to varying degrees and severity is a fundamental part of life and work, there is a great deal of value in studying variables that may provide stress-buffering effects and promote well-being. Both the JD-R model and hardiness construct grew out of the work stress and occupational health research traditions. Hardiness has extensive empirical support for a strong negative relationship with burnout (Alarcon et al., 2009; Maslach et al., 2001) and increasing consistent evidence for hardiness' positive relationship with work engagement (Mäkikangas et al., 2013). As a personal resource, hardiness has been studied as a predictor of both burnout and work engagement (for example, see Lo Bue et al., 2013; reviewed above) and as a mediator between job resources and those outcomes (see Corso-de-Zúñiga et al., 2017; also reviewed above) in the same samples. Mäkikangas et al. (2013) proposed that hardiness as a personal resource be studied in JD-R as a mediator or moderator that would play a coping style role between other personal resources and the burnout/work engagement outcomes. For the purposes of this study, hypotheses H3a and H3b placed hardiness as a moderator predicted to influence

the degree to which vocational identity is linked to criterion variables. This was in keeping with the notion that hardiness as a coping style affects how much one is able to exhibit resiliency and persist in pursuing desired goals for other factors to play a role (such as one's vocational identity) in the face of stress (Kobasa, 1979, 1982; Maddi, 2006).

Furthermore, in this study where vocational identity as a main predictor had hypothesized direct effects by way of meaningful work, hardiness would likely moderate the degree to which that mediated effect occurred in a moderated mediation model following Model 8 from Hayes (2017). In sum, this study's fourth hypothesis stated below proposed that vocational identity predicted meaningful work, which in turn predicted work engagement and burnout. The indirect relationship of meaningful work would be stronger where hardiness is higher.

Figure 3 below depicts a conceptual diagram for the full moderated mediation model related to hypothesis four.

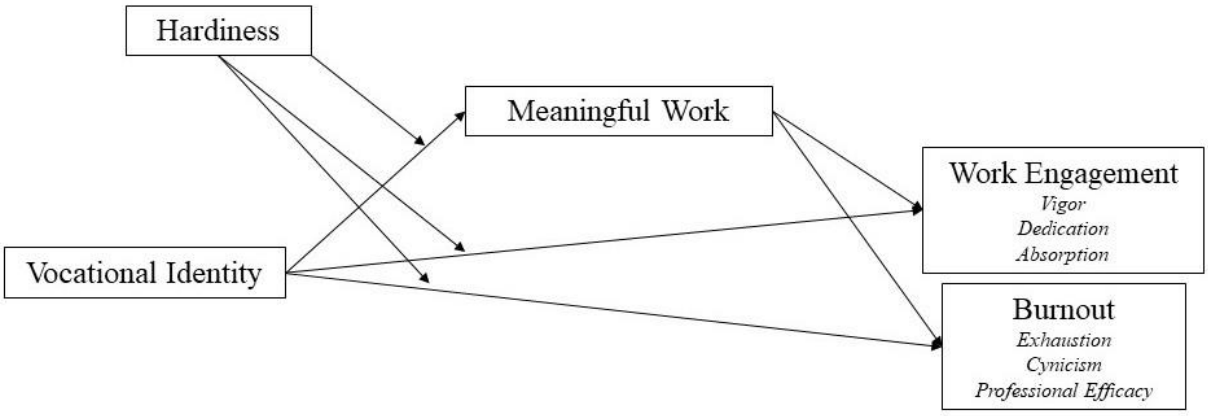


Figure 3. Hypothesized moderated mediation model of link between vocational identity, work engagement, and burnout. The conceptual diagram uses Model 8 from Hayes (2017).

Hypotheses

H1a: Vocational identity will have a positive direct relationship with work engagement.

H1b: Vocational identity will have a negative direct relationship with burnout.

H2a: Meaningful work will mediate the positive relationship between vocational identity and work engagement.

H2b: Meaningful work will mediate the negative relationship between vocational identity and burnout.

H3a: Hardiness moderates the relation between vocational identity and work engagement, such that the relation between vocational identity and work engagement is stronger for those higher in hardiness that for those lower in hardiness.

H3b: Hardiness moderates the relation between vocational identity and burnout, such that the relation between vocational identity and work engagement is stronger for those higher in hardiness than for those lower in hardiness.

H4a: The indirect relation between vocational identity work engagement via meaningful work is moderated by hardiness, such that the indirect association is stronger for those higher in hardiness that for those lower in hardiness.

H4b: The indirect relation between vocational identity and burnout via meaningful work is moderated by hardiness, such that the indirect association is stronger for those higher in hardiness that for those lower in hardiness.

METHOD

Participants

The sample for this study consisted of adults residing in the United States and employed full-time (i.e., work an average of 30 hours per week or 130 hours per month). The current study drew from an online data collection service (Amazon Mechanical Turk, see below). 302 participants completed the study on May 15, 2020, and all of them provided complete responses. Twelve cases were excluded for not meeting inclusion criteria: 5 for reporting being currently unemployed and 7 for reporting working less than an average of 30 hours per week. Data was then screened for quality. There were no missing data values. The average time participants took to complete the study ranged from 3.03 to 42.02 minutes (*M* = 11.41 minutes, *SD* = 6.99 minutes). Hunt and Scheetz (2019) offered guidelines for data validation related to time taken for participants to complete surveys through MTurk. Those guidelines included piloting testing the survey to determine an average time of completion and expecting that participants do not take less than half that average time for the actual survey. Hunt and Scheetz (2019) explained participants taking less than half the average pilot tested time to complete the survey are unlikely to have directed their full attention to the questions. In the case of this study, 5.6 minutes was the cutoff point. A total of 31 participants completed the study in less than 5.6 minutes and were removed. The final sample size used for analysis was 259.

The mean age for the sample in this study was 40.60 (*SD* = 11.45), with 144 men, 114 women, and 1 non-binary individual. Regarding race/ethnicity, 75.3% self-identified as White/Caucasian, 3.9% as Hispanic/Latino, 8.5% as Asian-American or Pacific Islander, 9.7% as Black/African American, 2.3% as biracial/multiracial, and .4% as American Indian or Alaska Native. Mean annual income reported for the past year was $64,742 (*SD* = $45,139); when separated by gender, the average for men was $74,085 (*SD* = $52,630) and the average for women was $53,377 (*SD* = $29,722). The range in income was $0 to

$356,000. When separated by gender, the range was $0 to $356,000 for men, and $3,700 to $165,000 for women. Participants worked an average of 41.07 hours per week (*SD* = 5.92), ranging from 30 to 80 hours. Men worked between 30 to 80 hours per week (*m* = 42; *SD* = 6) and women's work hours per week ranged from 30 to 70 (*m* = 40; *SD* = 6). Participants' educational attainment included 47.5% completed college, 23.6% completed graduate or professional school, 15.4% some college, 8.5% completed high school or high school equivalent, 4.6% some graduate or professional school, and .4% some high school. A diversity of occupations was represented in the sample. Participants' reported occupations were coded using the U.S. Department of Labor's (2018) Standard Occupational Classification (SOC) system. See Table 1 for a complete list of participants' occupations grouped by Major Group Occupation.

Table 1

Study Sample Occupations Grouped by Major Group Occupation

Major Group Occupation	% (n)
Management Occupations	14.7 (38)
Business and Financial Operations Occupations	14.3 (37)
Office and Administrative Support Occupations	14.3 (37)
Computer and Mathematical Occupations	10.8 (28)
Educational Instruction and Library Occupations	10.4 (27)
Sales and Related Occupations	7.3 (19)
Life, Physical, and Social Science Occupations	4.6 (12)
Architecture and Engineering Occupations	3.9 (10)
Arts, Design, Entertainment, Sports, and Media Occupations	3.5 (9)
Healthcare Practitioners and Technical Occupations	2.3 (6)
Food Preparation and Serving Related Occupations	2.3 (6)
Construction and Extraction Occupations	2.3 (6)
Production Occupations	1.5 (4)
Legal Occupations	1.5 (4)
Community and Social Service Occupations	1.2 (3)
Healthcare Support Occupations	1.2 (3)
Farming, Fishing, and Forestry Occupations	1.2 (3)
Transportation and Material Moving Occupations	1.2 (3)
Building and Grounds Cleaning and Maintenance Occupations	0.8 (2)
Protective Service Occupations	0.4 (1)
Installation, Maintenance, and Repair Occupations	0.4 (1)

Procedure

Participant recruitment and data collection proceeded after approval from Colorado State University's Institutional Review Board. Participants were provided informed consent information prior to taking the survey [see Appendix A for the informed consent] and a debriefing form was provided at the conclusion of the survey [Appendix B for the debriefing forms]. As noted above, participants for this study were recruited through Amazon Mechanical Turk (MTurk), which is an online data collection service. Through this service, adults (called "workers") interested in taking surveys can log in, complete a variety of "Human Intelligence Tasks" (HITs) that include surveys and experiments, and are compensated for participation. MTurk also allows researchers to set qualifications to better reach a sample of interest and improve data collection. Examples of qualifications include things such as workers' percentage of HIT approval rates, number of past completed HITs, location (i.e., country and region), employment status, and gender. HIT approval rates refer to how often a particular worker has been approved to complete a HIT, and in tandem with the number of past completed HITs is a metric of how reliably a worker has demonstrated completion of requested tasks.

MTurk has become increasingly popular in organizational and psychological research because of its relative ease and lower cost of data collection compared to other methods (Keith, Tay, & Harms, 2017). Because of the recent popularity of this service, researchers have examined concerns about validity, generalizability, and quality of data gathered through this method. Empirical studies comparing MTurk samples to other participant sources show that MTurk is more representative of the general population than college samples and is at least as reliable and diverse as samples from community and traditional Internet sources (Buhrmester, Kwang, & Gosling, 2011; Goodman, Cryder, & Cheema, 2013; Paolacci, Chandler, & Ipeirotis, 2010; Keith, Tay, & Harms, 2017). However, Keith et al. (2017) compared typical MTurk samples restricted to the United States with nationally representative samples and found MTurk samples to be younger, have more education, and be lower in income on average. Those authors

argue that that finding should not negatively impact generalizability any more than college samples, for example, as those are not representative of national samples either. In their review, Keith et al. (2017) also reported that MTurk samples have demonstrated a trend of being less emotionally stable, have higher negative affect, report lower levels of well-being, and perceive stressful events as more difficult than comparison samples, such as college students and the more general population. Because of the observed differences in clinical phenomena between MTurk and other samples, Arditte, Çek, Shaw, and Timpano (2016) assert that there needs to be more caution about MTurk sample generalizability. Regarding data quality and accuracy, there appeared to be no significant differences between MTurk and other methods overall (Buhrmester et al., 2011; Keith et al., 2017). Psychological scales responses for English speakers have consistently shown good internal consistency, test-retest reliability, and interrater reliability (Buhrmester et al., 2011; Keith et al., 2017).

Chandler, Mueller, and Paolacci (2013), Keith et al. (2017), Mason and Suri (2012), and Peer, Vosgerau, and Acquisti (2014) provided recommendations regarding best practices for enhancing researchers' ability to reach a sample of interest and gain quality data. Those recommendations include specifying at least a 95% HIT approval rating, limiting location to the U.S. if the task(s) are presented in English, and using prescreens and branching options. Keith et al. (2017) pointed out that due to workers' gaining compensation for completing HITs there may be motivation for dishonesty to gain the ability to complete more HITs (e.g., stating that one is employed if a HIT specifically states being employed is required to participate). Therefore, prescreens and branching options are recommended to reduce the chances of workers' falsely identifying information. When using a prescreen, the fact that it is a prescreen should not be disclosed and researchers should not broadcast what the desirable sample characteristics are (Keith et al., 2017). Another common recommendation is to include attention checks within the HIT to screen for random or careless responding (Keith et al., 2017; Mason & Suri, 2012). Attention check questions (ACQs) are items placed within the task that ask such things as, "I did not pay

much attention to this survey," and marking true or false to "All my friends are mermaids." However, Peer and colleagues (2014) found that high-reputation MTurk workers (i.e., workers with a 95% or above HIT approval rating) rarely fail ACQs. Compared to low-reputation workers (i.e., those below a 95% HIT approval rating), high-reputation workers appear to consistently produce higher quality data as evidenced by higher reliability scores for established measures, lower rates of socially desirable responding, and less likely to exhibit central tendency bias (Peer et al., 2014). Therefore, Peer and colleagues argue against using ACQs and assert that sampling high-reputation MTurk workers is enough regarding data quality. Given that MTurk samples have consistently shown more presence of psychiatric symptoms compared to other samples (see Arditte et al., 2016; Keith et al., 2017; Shapiro, Chandler, & Mueller, 2013), Arditte and colleagues (2016) recommended controlling for psychiatric symptom presence and severity even if a study's main focus is not clinical.

For the present study, CloudResearch (cloudresearch.com) was used to manage data collection. CloudResearch (formerly known as TurkPrime) is a data acquisition platform designed for behavioral sciences research that integrates with MTurk. The platform provides tools to researchers that include demographics and qualifications filtering, fraud prevention (e.g., confirming workers' country and region location), and participant anonymity protection (Litman, Robinson, & Abberbock, 2017). Per the latter, CloudResearch generates unique anonymous IDs for respondents that are connected to their MTurk worker IDs. Therefore, researchers never have direct access to MTurk worker IDs. CloudResearch also manages payment of respondents from researchers through the research study anonymous ID to MTurk worker ID system. The survey instrument for this study was delivered through CloudResearch to MTurk using the demographics and qualifications filtering, fraud prevention, and participant anonymity protection tools. The instrument contained all the measures described below and an informed consent form, which participants completed to take part in the study. To participate, respondents needed to (a) reside within the United States, and (b) be employed full-time. Sheehan and Pittman (2016)

recommended paying MTurk workers minimum wage – either a state's or the U.S. minimum wage. This study used the U.S. minimum wage of $7.25 per hour (U.S. Department of Labor, n.d.). Participants were told approximate completion time of the survey would be 18 minutes they would be paid $2.16. Following the guidelines from Keith et al. (2017), Mason and Suri (2012), and Peer et al. (2014), sampling was limited to high-reputation MTurk workers (i.e., 95% or above HIT approval rating). Although Keith et al. (2017) recommended using prescreens to help ensure participants with the desired demographic and qualification criteria only are included, CloudResearch manages the demographic and qualification inclusion criteria a prescreen instrument would typically be used to filter for. Therefore, a prescreen instrument was not used.

Items contained in the electronic survey instrument are included in Appendix C. Each measure used within the survey instrument is described here.

Measures

Predictor variables. The predictor variables for this study included vocational identity, hardiness, and meaningful work. Descriptions of each measure are included below.

Vocational identity. My Vocational Situation (MVS; Holland, Daiger, & Power, 1980) is a 26-item self-report measure that was created as a diagnostic and career planning tool. For this study, the 18-item subscale of Vocational Identity (MVS-VI) was used. This subscale measures the extent to which an individual possesses a clear and stable understanding of one's own career goals, interests, personality, and talents. Respondents are asked to indicate whether items such as "I don't know what my major strengths and weaknesses are" and "I'm not sure that my present occupational choice or job is right" apply to their vocational experiences through *True* or *False* responses. The number of *False* responses increases scores on this subscale and indicates a stronger vocational identity. The MVS-VI scores have demonstrated adequate internal consistency with Alpha coefficients reported to range from .86 to .89 (Holland, Daiger, & Power, 1980; Strauser et al., 2006). Construct validity has been established by Leong

(1989) in comparison to other mental health and career-related variables, such as social avoidance (r = –.21), intolerance of ambiguity (r = –.26), career maturity (r = .69), and exercising leadership (r = .31). Strong positive correlations have been established between the MVS-VI and career self-efficacy and career decision-making self-efficacy (Strauser et al., 2006). Cronbach's alpha for the MVS-VI in the current study was .89.

Hardiness. The Hardiness Resilience Gauge (HRG; Bartone, 2018) was used to measure the construct of hardiness. The HRG is comprised of 28 items, each of which are based on a 4-point Likert-type scale ranging from "Not true at all" to "Completely true". Participants respond to each item by indicating their level of agreement with statements such as "I spend most of my life doing things that are meaningful," "How things go in my life depends on my own actions," and "Changes in routine are interesting to me." The instrument has three subscales: Control, Commitment, and Challenge. The Commitment scale of the HRG measures active engagement or involvement in life (as opposed to alienation). Control measures the belief that one can influence events in his or her experience (as opposed to a sense of powerlessness). Challenge measures openness and receptivity to variety and changes in life, which are seen as opportunities (as opposed to a threat perspective, or the tendency to see change as threatening and frightful). Each subscale yields an independent score, though the instrument also yields a full-scale score for hardiness drawn from the sum of the scores from all three subscales. Cronbach's alpha reliability coefficient for HRG scores have been reported at .93 for total hardiness, and the Commitment = .89; Control = .84; Challenge = .85 subscales (Bartone, 2018). Assessed at two to four weeks apart (mean interval = 22.1 days, SD = 1.6 days; n = 168), a high test-retest reliability was demonstrated for HRG scores with values of r = .81 for Total Hardiness, .80 for Challenge, .74 for Control, and .79 for Commitment (Bartone, 2018). Cronbach's alpha for HRG Total Hardiness in the current study was .95.

Meaningful work. The Work as Meaning Inventory (WAMI; Steger, Dik, & Duffy, 2012) is a 10-item face-valid self-report measure assessing a person's beliefs that their particular work is meaningful to them. Steger et al. (2012) developed three subscales through factor analysis: Positive Meaning (WAMI-PM; e.g., "I have a good sense of what makes my job meaningful"), Meaning Making Through Work (WAMI-MM; e.g., "I view my work as contributing to my personal growth"), and Greater Good Motivations (WAMI-GG; e.g., "The work I do serves a greater purpose"). The WAMI items use a 5-point response scale (1 = Absolutely Untrue; 5 = Absolutely True). The WAMI can produce scores for each of three subscales as well as a total score. In the instrument development study using a sample of employed adults, Steger et al. (2012) found scores on the total scale to have a strong internal consistency reliability ($\alpha = .93$). The WAMI subscale scores had high internal consistencies of $\alpha = .89$ (positive meaning), $\alpha = .82$ (meaning making), and $\alpha = .83$ (greater good motivations). Scores on each subscale positively correlated with job satisfaction (.56), career commitment (.68), and presence of life meaning (.57). Incremental validity was demonstrated through WAMI scores contributing unique variance in the prediction of job satisfaction, absenteeism, and life satisfaction (Steger et al., 2012). For the current sample, Cronbach's alpha for WAMI Positive Meaning, Meaning Making Through Work, and Greater Good subscales were .93, .89, and .89, respectively. WAMI total was $\alpha = .96$.

Criterion variables. Two criterion variables were investigated in this study: work engagement and burnout. Measures for each are described below.

Burnout. The potential level of participants' burnout was measured using the Maslach Burnout Inventory – General Survey (MBI-GS) (Maslach, Jackson, & Leiter, 2016). The MBI-GS was developed to assess burnout in samples across general ranges of occupations rather than more specific populations, such as medical personnel and educators. The instrument measures three dimensions of burnout: exhaustion, cynicism, and reduced professional efficacy. Exhaustion describes feelings of work having overtaxed and depleted one's energy. Cynicism assesses an indifferent or distant attitude toward one's

work and a dysfunctional style of coping with job demands. Professional efficacy measures the feelings of competence and successful achievement in one's work. The inventory contains 16 items which are framed as statements of job-related feelings (e.g., "I feel emotionally drained from my work;" "In my opinion, I am good at my job;" "I doubt the significance of my work") and are rated on a 7-point scale. Burnout is reflected in higher scores on exhaustion and cynicism, and lower scores on professional efficacy, whereas the opposite pattern represents greater work engagement. Maslach et al. (2016) instructed that the scores for the three scales should be calculated and interpreted separately. Those authors shared results from a review of four studies regarding reliability of the MBI-GS. Average Cronbach's alpha vales across the four studies were .87 for the Exhaustion scale, .76 for Cynicism, and .77 for Professional Efficacy. The MBI manual reported three ways in which validity has been demonstrated for the MBI-GS. First, scores for the subscales correlated with conditions expected to contribute to burnout. Examples for each subscale included e*xhaustion* correlating with the job resources of control (r = –.35) and adequate training (r = –.20) and the job demand of work overload (r = .50). *Cynicism* correlated with the job resource of positive leadership (r = –.47). *Professional efficacy* correlated with lack of growth opportunities (r = .43). Second, evidence of discriminate validity for the MBI-GS has been demonstrated through the exhaustion subscale having moderate correlations with various measures of occupational stress, cynicism having moderate and low correlations with stress indicators, and professional efficacy had low correlations with stress indicators. Third, convergent validity with other measures of burnout has demonstrated through comparisons to the Shirom-Melamed Burnout Measure (r = .79) and the Oldenburg Burnout Inventory (r = .60). Reliabilities in this study were α = .94 for Exhaustion, α = .90 for Cynicism, and α = .86 for Professional Efficacy.

Work engagement. Work engagement was measured with a 9-item version of the Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, & Salanova, 2006). The scale consists of 3-item subscales measuring vigor, dedication, and absorption that may also be combined into a 9-item single composite

measure. Three sample items are: “At my work, I feel bursting with energy” (vigor), “I am enthusiastic about my job” (dedication), and “I get carried away when I am working” (absorption). Respondents rate their responses on a scale from 0 (*never*) to 6 (*always*). Schaufeli et al. (2006) demonstrated good factorial validity of the UWES-9 with a median of .95 from 27 studies in 10 different countries. Satisfactory internal consistency was achieved (α values ranged from .85 to .92 across 10 countries). Stability coefficients of the UWES-9 total score were .64 for studies conducted in Australia (*n* 293) and .73 for those in Norway (*n* = 2,111). Cronbach’s alphas in this study for Vigor, Dedication, Absorption, and Total Work Engagement were .90, .92, .86, and .95, respectively.

Control and descriptive variables. In addition to the predictor and criterion variables described above, three more variables were included in the current study to serve as control variables and to help describe the sample. Those three additional variables were: negative affect, perceived stress, and work centrality. Three instruments were used to measure each of those variables. They are described as follows:

Negative affect. The International Positive and Negative Affect Schedule Short Form (I-PANAS-SF) (Thompson, 2007) is a 10-item instrument that comprises two subscales measuring positive and negative affect, which may be described as general dimensions of mood. The 5-item negative affect subscale was used. Participants are provided affect-related adjectives and asked to rate how they have felt regarding each adjective in a given time frame on a 5-point Likert-type scale ranging from “very slightly or not at all” to “very much.” Higher scores indicate higher levels of positive and negative affect. Different time instructions can be given; for this study participants were asked to respond based on how they have felt over the “past few weeks.” The items for the I-PANAS-SF negative affect subscale are: *upset*, *hostile*, *ashamed*, *nervous*, and *afraid*. Reliability for the 5-item I-PANAS-SF negative affect subscale scores (I-PANAS-SF-NA) ranged from .72 to .76 across four studies conducted by Thompson (2007). Barnett and Ruiz (2018) reported a Cronbach’s alpha of .73. The I-PANAS-SF-NA also received

test-retest reliability of α = .84 at 8 weeks after the initial test (Thompson, 2007). Convergent validity information for the I-PANAS-SF-NA included expected negative correlations with measures of subjective well-being (*r* = –.33) and happiness (–.51) (Thompson, 2007); and self-esteem (–.42); (Barnett & Ruiz, 2018). The I-PANAS-SF-A positively correlated with psychological distress (.50) and compassion fatigue (.52); (Barnett & Ruiz, 2018). The I-PANAS-SF Negative Affect subscale reliability was α = .87 in this study.

Work centrality. Bal and Kooij's (2011) shortened 3-item version (WC-3) of the Work Centrality Scale (Hirschfeld & Field, 2000; Paullay, Alliger, & Stone-Romero, 1994) was used to assess the degree of importance that work plays in respondents' lives. People who consider work as a central life interest have a strong identification with work in the sense that they believe the work role to be an important and central part of their lives (Hirschfeld & Field, 2000). The WC-3 items refer to work in general, not to one's current job. The three items are: ''The major satisfaction in my life comes from my job'', ''The most important things that happen to me involve my work'', and ''I have other activities more important than my work." The latter item is reverse coded. The measure uses a 5-point Likert-type scale (1=''strongly disagree''; 2=''disagree''; 3=''neither agree nor disagree''; 4=''agree''; and 5=''strongly agree''). Higher scores indicate a strong belief that work is central to one's life. Bal and Kooil (2011) reported an internal consistency reliability of .75 for WC-3 scores. In terms of validity, statistically significant correlations were found between work centrality and job satisfaction (r = .13), and work engagement (r = .20); (Bal & Kooil, 2011). Also, a significant negative correlation was found between work centrality and turnover intention (r = –.16); (Bal & Kooil, 2011). For the current study, Cronbach's alpha for the WC-3 was .81.

Perceived stress. The 4-Item version of the *Perceived Stress Scale* (PSS-4; Herrero & Meneses, 2006) will be used to measure the amount of general stress respondents feel. The PSS-4 was adapted by Herrero and Meneses (2006) from the original 10-item version (PSS-10; Cohen, Kamarck, &

Mermelstein, 1983; Cohen & Williamson, 1988). Through self-report, the *Perceived Stress Scale* measures respondents' subjective perceptions of the degree to which situations in their lives are appraised to be stressful. This instrument produces a global stress score based on questions about stress experienced in general and not focusing on specific contexts, such as work- or home-life. Respondents are asked to evaluate their perceived stress for the past month. The items for the PSS-4 include, in the last month: (1) "how often have you felt that you were unable to control the important things in your life?" (2) "how often have you felt confident about your ability to handle your personal problems?" (3) "how often have you felt that things were going your way?" (4) "how often have you felt difficulties were piling up so high that you could not overcome them?" The items are rated on a 5-point scale ranging from 0 = Never to 4 = Very Often, with two of the above items being reverse-scored (i.e., Q2 and Q3). Higher values on the PSS-4 indicate more stress. Cronbach's alpha for the PSS-4 have been reported at .82 (Mitchell, Crane, & Kim, 2008), .77 (Warttig, Forshaw, South, & White, 2013), and .67 (Leung, Lam, & Chan, 2010). Validity evidence for PSS-4 scores has included reported correlations with similar measures, such as the Impact of Event Scale (r = .58; Mitchell et al., 2008). Further concurrent validity evidence from Leung et al. (2010) included correlations with measures of anxiety (r = .19) and depression (r = .24) in a sample of Chinese adult smoking cessation patients. The PSS-4 reliability in this study was α = .81.

Demographics. Items to obtain demographic information were included. The demographic items included gender, ethnicity, age, annual income, education, type of work performed, length of service field, and length of service at current place of employment.

Common Method Bias. To mitigate the potential effects of common method biases, procedural approaches based on recommendations by Podsakoff, MacKenzie, Lee, and Podsakoff (2003) were utilized in design and delivery of the survey instrument. Measures were separated from each other by different pages and had individual instructions. The same Likert-type scale format was not applied

throughout the survey. The order of the measurement of predictor and criterion variables was counterbalanced. An additional layer of participant anonymity was guaranteed by not directly collecting MTurk Worker IDs and using CloudResearch generated participant IDs instead. The survey was planned to be delivered in two waves, with participants asked to complete the full survey instrument at Wave 1 and then asked to complete a follow-up version of the survey two weeks later for Wave 2. The Wave 2 version of the survey was to only include the criterion variables (i.e., burnout and work engagement). However, a clerical error when distributing the survey instrument prevented the ability to match Wave 1 and Wave 2 responses. Therefore, only data from Wave 1 is presented in this study.

Statistical Analyses

Data analyses to examine the relationships between work engagement, burnout, meaningful work, hardiness, and vocational identity were performed with IBM SPSS Statistics 26, including PROCESS version 3.5 macros developed by Hayes (2018; 2020). PROCESS uses ordinary least squares regression-based path analysis models to test moderation and mediation as well as their combination as a "conditional process model". PROCESS generates direct and indirect effects in mediation and moderation, and conditional indirect effects (CIs) in moderated mediation models. Scores on all measures were treated as continuous variables. Maslach et al. (2016) instructed that the three subscales of burnout assessed with the MBI-GS – exhaustion, cynicism, and professional efficacy – should not be combined to form a total burnout score. Rather, they should be analyzed as separate variables. While a total score for work engagement may be calculated and used for analysis with the UWES (Schaufeli & Bakker, 2004; 2010), the three subscales of vigor, dedication, and absorption were also correspondingly analyzed as separate variables for the purposes of this study. Total scores were used for the three predictor variables of vocational identity, hardiness, and work engagement. The same was done for the three control variables of work centrality, negative affect, and perceived stress. The control variables

were included in all analyses. Descriptive statistics were computed for all the study variables and bivariate relations were tested with Pearson correlations.

The study hypotheses were tested using hierarchical regression and conditional process analyses following guidelines proposed by Frazier, Tix, and Barron (2004); Hayes (2015; 2018); and Preacher, Rucker, and Hayes (2007). Hypothesis testing proceeded in four steps. First, hierarchical linear regression was used to test the hypothesized main effect of vocational identity on the work engagement (hypothesis 1A) and burnout (hypothesis 1B) subscales while controlling for work centrality, negative affect, and perceived stress. Second, a simple mediation model was used to assess the potential mediating role meaningful work may have in the relationship between vocational identity and work engagement (hypothesis 2A), and vocational identity and burnout (hypothesis 2B). PROCESS model 4 was used, which provides bootstrap confidence intervals to test of the significance of indirect effects in simple mediation models (Hayes, 2018; 2020). Hypothesis 3A predicted that hardiness would moderate the positive relationship between vocational identity and work engagement, while hypothesis 3B predicted a moderating effect of hardiness in the negative relationship between vocational identity and burnout. The third step in the analytic plan used PROCESS model 1 to test hypotheses 3A and 3B. PROCESS creates an interaction term for the *X* and *M* variables in moderation models and did so for vocational identity (*X*) and hardiness (*M*). Additional hierarchical regression analyses were conducted to further examine the moderation model results. Finally, the hypothesized moderated mediation models related to the work engagement (H4A) and burnout (H4B) criterion variables were tested. If mediation hypotheses are supported (see hypotheses 2A and 2B above), it may be that the strength of the indirect effect (i.e., mediation) is conditional on the value of the moderator. This is called a conditional indirect effect, or moderated mediation. PROCESS model 8 was used to test for potential moderated mediation in the relationships between vocational identity, hardiness, meaningful work, and the three subscales each for work engagement and burnout. In addition to the recommended bootstrap tests to be

performed, PROCESS also provides tools for probing the significance of conditional interaction effects at different levels of the moderator variable. Continuous measures involved in the proposed moderation interaction term (vocational identity and hardiness) were mean-centered prior to all analyses in this study to prevent issues of collinearity (Aiken & West, 1991; Frazier, Tix, & Barron, 2004; Hayes, 2018).

RESULTS

Missing Data Analysis

To help ensure minimal missing data, the survey was designed to require responses to all items on each page and would not allow participants to proceed to the next page until they had done so. Every participant, therefore, provided complete responses. There was no missing data; both visual scans in a spreadsheet and use of the SPSS Descriptive Statistics Frequencies function confirmed that to be the case.

Data Preparation

Prior to completing primary data analyses, guidelines from Tabachnick and Fidell (2013) were used to evaluate all variables regarding assumptions of normality. Histograms and normal Q-Q plots were evaluated visually to detect severe departures from normality. Statistics of skewness and kurtosis were also evaluated for values of greater than 1.00 or less than –1.00. Vocational identity, hardiness, meaningful work, all three of the work engagement subscales (i.e., vigor, dedication, and absorption), the burnout subscales of exhaustion and cynicism, work centrality, and perceived stress were all found to be within acceptable limits (i.e., between –1 and +1). Negative affect had a skewness of 1.28 and kurtosis of 1.28. A square root transformation was applied to negative affect with resulting skewness and kurtosis values of .89 and .16, respectively. Professional efficacy had a skewness of -1.28 and kurtosis of 2.04. Both a square root and natural log transformation were applied to professional efficacy. However, there were greater deviations from normality with both transformations. The square root transformation produced a skewness value of –2.87 and kurtosis value of 13.87. The natural log transformation produced a skewness value of –2.96 and kurtosis value of 13.83. Guidelines proposed by Aguinis, Gottfredson, and Joo (2013) were then followed to define and identify regression model fit outliers for professional efficacy. The three predictor variables in this study – vocational identity,

hardiness, and meaningful work – were each individually regressed onto professional efficacy with all outliers included (n = 259) and then again with four cases removed (n = 255) representing the most extreme values at the low end of the distribution. Comparisons were made between R^2 values of the three models including outliers and the three with outliers removed to evaluate if removal of the outliers had a noticeable influence on model fit. Table 2 presents the regression results below. There were noticeable changes to each of the three R^2 values when the outliers were removed. Therefore, the four cases that included those outliers were removed from further analysis, resulting in a sample size of 255. Professional efficacy then had a skewness of –.91 and kurtosis of .47.

Table 2

Regression Analyses Predicting Professional Efficacy by Vocational Identity, Hardiness, and Meaningful work.

	Professional Efficacy subscale of Burnout							
	B	SE B	β	t	95% CI		F	Adj. R^2
Variable					Lower	Upper		
Models with outliers included (n = 259)								
Vocational Identity	.11***	.013	.47	8.50	.08	.13	72.20	.219
Hardiness	.02***	.001	.62	12.56	.01	.02	157.86	.378
Meaningful Work	.07***	.005	.63	13.03	.06	.08	169.84	.396
Models with outliers removed (n = 255)								
Vocational Identity	.09***	.012	.43	7.49	.07	.11	56.09	.178
Hardiness	.02***	.001	.61	12.30	.01	.02	151.40	.372
Meaningful Work	.06***	.005	.64	13.40	.06	.07	179.58	.413

Note. n = 255. *p < .05, **p < .01, ***p < .001.

Descriptive Statistics

Scale ranges, non-standardized means, standard deviations, and scale reliabilities (Cronbach's alphas) for each variable are presented in Table 3 below.

Table 3

Scale Score Ranges, Non-Transformed Means and Standard Deviations, and Scale Reliabilities for All Variables

Variable	Measure	Scale Range	*M*	*SD*	α
Vocational Identity	MVS-SI	0 – 18	12.44	4.78	.89
Hardiness	HRG	0 – 84	54.33	13.84	.95
Meaningful Work	WAMI	10 – 50	37.15	10.17	.96
Burnout					
Exhaustion	MBI-GS-EX	0 – 15	2.64	1.67	.94
Cynicism	MBI-GS-CY	0 – 15	2.46	1.75	.90
Professional Efficacy	MBI-GS-PE	0 – 18	4.74	1.01	.86
Work Engagement					
Vigor	UWES-9-VI	0 – 9	3.66	1.52	.90
Dedication	UWES-9-DE	0 – 9	3.95	1.57	.92
Absorption	UWES-9-AB	0 – 9	4.00	1.35	.86
Negative Affect	I-PANAS-SF-NA	5 – 25	9.15	4.13	.87
Work Centrality	WC-3	0 – 15	7.09	2.89	.81
Perceived Stress	PSS-4	0 – 16	5.19	3.35	.81

Note. *n* = 255. MVS-SI = My Vocational Situation, Vocational Identity subscale (total score). HRG = Hardiness Resilience Gauge (total score). WAMI = Work as Meaning Inventory (total score); MBI-GS = Maslach Burnout Inventory – General Survey; EX = Exhaustion subscale (total average score); CY = Cynicism subscale (total average score); PE = Professional Efficacy subscale (total average score). UWES-9 = Utrecht Work Engagement Scale, 9-item version; VI = Vigor subscale (total average score); DE = Dedication subscale (total average score); AB = Absorption subscale (total average score). I-PANAS-SF-NA = International Positive and Negative Affect Schedule Short Form – Negative Affect subscale (total score). WC-3 = Work Centrality Scale, 3-item version (total score). Perceived Stress Scale, 4-item version (total score).

Multivariate Analyses

Between-subjects multivariate analyses of variance were conducted to test for statistically significant mean differences on the three predictor variables in this study (i.e., vocational identity, hardiness, and meaningful work) across gender, race/ethnicity, age, and income. Due to the small numbers of participants identifying as non-White, two groups were constructed to assess differences by race/ethnicity: individuals identifying as White/Caucasian (*n* = 191) and non-White/Caucasian (*n* = 64). Participants were categorized by age into young adults (ages 18-35 years, *n* = 99), middle-aged adults (ages 36-55 years, *n* = 119), and older adults (aged older than 55 years, *n* = 37). Income was organized into five groups based on quartiles defined by the Congressional Research Service when reporting annual income from U.S. Census data (Donovan, 2015). Those groups were Lowest Quintile ($0 – $11,651, *n* = 4), Second Quintile ($30,510 – $52,322, *n* = 36), Third Quintile ($52,323 – $83,519, *n* = 80), Fourth Quintile ($83,520 – $185,206, *n* = 76), and Top Quintile ($185,207 and above, *n* = 59). Results from multivariate analyses demonstrated no significant mean differences across gender ($p = .86$), race/ethnicity ($p = .06$), age ($p = .14$), and income ($p = .13$).

Bivariate Correlations

Pearson's product-moment correlations were analyzed to explore the relationships among the main study variables and are presented in Table 4 below. The inter-scale correlations showed the expected direction of association between the predictor and criterion variables, all significant at the $p < .01$ level. The main predictor variable of vocational identity was moderately negatively correlated with the burnout subscale of exhaustion ($r = –.43$), strongly negatively correlated with cynicism ($r = –.55$), and moderately positively correlated with professional efficacy ($r = .43$). Vocational identity showed a moderate positive correlation with all three of the work engagement subscales of vigor ($r = .48$), dedication ($r = .48$), and absorption ($r = .37$).

Table 4

Intercorrelations for All Variables (Non-transformed)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Vocational Identity	---											
2. Hardiness	.46**	---										
3. Meaningful Work	.54**	.70**	---									
4. Exhaustion	–.43**	–.50**	–.52**	---								
5. Cynicism	–.55**	–.58**	–.73**	.75**	---							
6. Professional Efficacy	.43**	.62**	.64**	–.45**	–.60**	---						
7. Vigor	.48**	.68**	.72**	–.64**	–.70**	.69**	---					
8. Dedication	.48**	.73**	.87**	–.57**	–.73**	.70**	.85**	---				
9. Absorption	.37**	.61**	.69**	–.50**	–.61**	.66**	.78**	.80**	---			
10. Negative Affect	–.39**	–.41**	–.33**	.46**	.47**	–.37**	–.30**	–.29**	–.23**	---		
11. Work Centrality	.14*	.23**	.44**	–.37**	–.38**	.21**	.42**	.46**	.42**	.05	---	
12. Perceived Stress	–.50**	–.58**	–.48**	.55**	.52**	–.51**	–.55**	–.49**	–.42**	.67**	–.12	---

Note. n = 255. ** = Correlation is significant at the .01 level (two-tailed); * = Correlation is significant at the .05 level (two-tailed)

A preliminary examination of bivariate correlations and collinearity diagnostics through the regression framework identified no potential problems of collinearity among the three predictor variables (i.e., vocational identity, hardiness, and meaningful work) and the three planned control variables (i.e., negative affect, work centrality, and perceived stress).

Common Method Variance

As noted above in the Method section, several procedural approaches were undertaken to control for the influence of common method bias in this study. However, as this was a cross-sectional study that collected data at one time point with the same questionnaire, there may have been the potential for common method variance to influence the results. A pair of diagnostic analyses described by Podsakoff and colleagues (2003) to statistically detect and control for common method variance were conducted. First, a Harman single-factor test was performed. All eight of the study variables – including the three control variables – were loaded into an exploratory factor analysis and the unrotated factor solution examined. That revealed the presence of 17 distinct factors with eigenvalue greater than 1.0, rather than a single factor. The 17 factors together accounted for 63.8% of the total variance, while the first (largest) factor did not account for a majority of the variance (33.7%). Therefore, no general factor was apparent and there was not any detectable influence of common method variance. However, Harman's single-factor test is also criticized by Podsakoff and colleagues (2003) as essentially being a diagnostic technique that only determines if all the variables together in a given study load together onto a single factor to account for a majority of the variance – typically defined as 50% or above – which is not necessarily evidence of common method variance having undue influence or not. Those authors recommend additional statistical control techniques where possible.

The second analysis performed was a partial correlation procedure designed to control for method bias. One possible significant source of method bias is the common rater effect of *context-induced mood*. Participants' potential negative affectivity may influence their attitudes such that they

view themselves and the world in particularly negative light, which in turn influences their responses. If negative affect is not a variable directly under study, context-induced mood effects can introduce method bias (Podsakoff et al., 2003). To statistically control for context-induced mood, researchers can take a measure of negative affect and partial out the effects from the predictor and criterion variables. The technique involves comparing the differences in the partial correlations with their zero-order counterparts with a significance test developed by Olkin and Finn (1995). Comparisons that are statistically significant are summed and counted against the total comparisons made. Negative affect can be said to have little possible effect as a background factor if there are a minimal amount significant differences between the partial and zero-order correlations. Table 5 below lists the results of the partial correlation procedure. There were no significant differences detected between any of the partial and zero-order correlation comparisons. Therefore, there is no support for the possibility that negative affect was a background factor responsible for the relationships between the predictor and criterion variables.

Table 5

Zero-Order and Partial Correlations of the Predictor and Criterion Variables Controlling for Negative Affect.

	Criterion Variables					
	Work Engagement			Burnout		
Predictor Variables	Vigor	Dedication	Absorption	Exhaustion	Cynicism	Professional Efficacy
Vocational Identity	.48(.40**)	.48(.41**)	.37(.30**)	–.43(–.30**)	–.55(–.45**)	.43(.33**)
Hardiness	.68(.64**)	.73(.70**)	.61(.58**)	–.50(–.39**)	–.58(–48**)	.62(.55**)
Meaningful Work	.72(.69**)	.87(.86**)	.69(.67**)	–52(–.43**)	–73(–.69**)	.64(.59**)

Note. N = 255. Partial correlations are in parentheses. ** = Partial correlation is significant at the .01 level (two-tailed); * = Partial correlation is significant at the .05 level (two-tailed); [a] Partial correlation is significantly different from corresponding zero-order correlation at .05 level. All zero-order correlations were significant at .01 level (see Table 4 above).

Main Effect Analysis

Hierarchical regression analyses were conducted using IBM SPSS Statistics 26 to examine the study hypotheses. The first analysis tested whether vocational identity would predict work engagement (Hypothesis 1A), subdivided into the three subscales of vigor, dedication, and absorption. Work centrality, negative affect, and perceived stress were included as control variables and entered in step one. Vocational identity was mean centered and entered at stage two. The full model of work centrality, negative affect, perceived stress, and vocational identity to predict vigor was statistically significant, $F(4, 250) = 68.34$, $p < .001$, adjusted $R^2 = .457$. Vocational identity accounted for an additional 4.3% of the variance beyond the control variables, a small effect size based on Cohen's evaluative criteria for linear regression effect sizes (i.e., .02 = small, .15 = moderate, .35 = large) (Cohen, 1988). The full model for dedication was also statistically significant, $F(4, 250) = 53.12$, $p < .001$, adjusted $R^2 = .451$, with vocational identity accounting for 5.3% of the variance. There were similar results for the full model related to absorption ($F(4, 250) = 31.04$, $p < .001$, adjusted $R^2 = .321$). The addition of vocational identity demonstrated an R^2 increase of .022. See Table 6, Table 7, and Table 8 for full details on each regression model. These results supported Hypothesis 1A that vocational identity would predict work engagement.

Table 6

Hierarchical Regression Analysis Predicting Vigor by Vocational Identity.

	Vigor subscale of Work Engagement							
	B	SE B	β	95% CI		*F*	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	.19***	.03	.35	.14	.24			
Negative Affect	.04	.16	.02	–.28	.35			
Perceived Stress	–.23***	.03	–.52	–.29	–.17			
Overall Model						61.25	.416	.423***
Step 2								
Work Centrality	.17***	.03	.33	.13	.22			
Negative Affect	.11	.12	.05	–.19	.42			
Perceived Stress	–.19***	.03	–.42	–.25	–.13			
Vocational Identity	.08***	.02	.24	.04	.11			
Overall Model						20.15	.457	.043***

Note. n = 255. *p < .05, **p < .01, ***p < .001. Vocational identity was mean centered.

Table 7

Hierarchical Regression Analysis Predicting Dedication by Vocational Identity.

	Dedication subscale of Work Engagement							
	B	SE B	β	95% CI		*F*	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	.22***	.03	.41	.17	.28			
Negative Affect	–.07	.17	–.03	–.40	.26			
Perceived Stress	–.20***	.03	–.43	–.26	–.14			
Overall Model						57.21	.399	.406***
Step 2								
Work Centrality	.21***	.03	.38	.16	.26			
Negative Affect	.01	.16	.01	–.30	.33			
Perceived Stress	–.15***	.03	–.32	–.21	–.09			
Vocational Identity	.09***	.02	.27	.05	.12			
Overall Model						24.67	.451	.053***

Note. n = 255. *p < .05, **p < .01, ***p < .001. Vocational identity was mean centered.

Table 8

Hierarchical Regression Analysis Predicting Absorption by Vocational Identity.

	Absorption subscale of Work Engagement							
	B	SE B	β	95% CI		*F*	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	.18***	.03	.37	.13	.23			
Negative Affect	–.01	.16	–.01	–.32	.29			
Perceived Stress	–.15***	.03	–.37	–.21	–.09			
Overall Model						37.51	.301	.310***
Step 2								
Work Centrality	.17***	.03	.36	.12	.22			
Negative Affect	.03	.16	.02	–.27	.34			
Perceived Stress	–.12***	.03	–.30	–.18	–.06			
Vocational Identity	.05**	.02	.17	.02	.08			
Overall Model						8.34	.321	.022**

Note. n = 255. *p < .05, **p < .01, ***p < .001. Vocational identity was mean centered.

The next analysis tested whether vocational identity would predict burnout (Hypothesis 1B), subdivided into the three subscales of exhaustion, cynicism, and professional efficacy. The control variables of work centrality, negative affect, and perceived stress were also included in step one, with vocational identity mean centered and added at step two of the hierarchical regression models. All three of the burnout subscale models were statistically significant with vocational identity accounting for small effect size increases in variance. Results for the full model of vocational identity predicting exhaustion were, $F(4, 250) = 50.57$, $P < .001$, adjusted $R^2 = .438$; R^2 increase for vocational identity was .017. For cynicism, $F(4, 250) = 63.14$, $P < .001$, adjusted $R^2 = .495$; R^2 increase = .017. Vocational identity accounted for 3.2% of the variance predicting professional efficacy beyond the control variables ($F(4, 250) = 29.71$, $P < .001$, adjusted $R^2 = .311$. Table 9, Table 10, and Table 11 present the full results for exhaustion, cynicism, and professional efficacy regression models. These results supported Hypothesis 1B that vocational identity would predict burnout.

Table 9

Hierarchical Regression Analysis Predicting Exhaustion by Vocational Identity.

	Exhaustion subscale of Burnout							
	B	SE B	β	95% CI		*F*	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	–.20***	.03	–.34	–.25	–.14			
Negative Affect	.68***	.18	.26	.33	1.02			
Perceived Stress	.17***	.03	.34	.10	.23			
Overall Model						63.08	.423	.43***
Step 2								
Work Centrality	–.19***	.03	–.32	–.24	–.13			
Negative Affect	.63***	.17	.24	.28	.97			
Perceived Stress	.14***	.04	.28	.07	.21			
Vocational Identity	–.05**	.02	–.15	–.09	–.02			
Overall Model						7.86	.438	.017**

Note. n = 255. *p < .05, **p < .01, ***p < .001. Vocational identity was mean centered.

Table 10

Hierarchical Regression Analysis Predicting Cynicism by Vocational Identity.

	Cynicism subscale of Burnout							
	B	SE B	β	95% CI		*F*	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	–.22***	.03	–.36	–.28	–.16			
Negative Affect	.85***	.18	.31	.49	1.21			
Perceived Stress	.14***	.04	.27	.07	.21			
Overall Model						61.44	.417	.423***
Step 2								
Work Centrality	–.20***	.03	–.33	–.25	–.14			
Negative Affect	.74***	.17	.27	.40	1.08			
Perceived Stress	.07*	.03	.14	.31	.14			
Vocational Identity	–.12***	.02	–.33	–.16	–.08			
Overall Model						39.76	.495	.079***

Note. n = 255. *p < .05, **p < .01, ***p < .001. Vocational identity was mean centered.

Table 11

Hierarchical Regression Analysis Predicting Professional Efficacy by Vocational Identity.

	Professional Efficacy subscale of Burnout							
	B	SE B	β	95% CI		*F*	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	.06**	.02	.16	.02	.10			
Negative Affect	–.15	.12	–.10	–.39	.08			
Perceived Stress	–.13***	.02	–.43	–.17	–.09			
Overall Model						34.26	.282	.291***
Step 2								
Work Centrality	.05**	.02	.14	.01	.09			
Negative Affect	–.11	.12	–.07	–.34	.12			
Perceived Stress	–.11***	.02	–.35	–.15	–.06			
Vocational Identity	.04**	.01	.21	.02	.07			
Overall Model						11.69	.311	.032**

Note. n = 255. *p < .05, **p < .01, ***p < .001. Vocational identity was mean centered.

Mediation Analysis

Hypotheses 2A and 2B proposed an indirect effects model, where the relationship between vocational identity and work engagement and, separately, between vocational identity and burnout is mediated by meaningful work. The PROCESS model 4 for simple mediation was used to test each of the three subscales for the two criterion variables. The work centrality, negative affect, and perceived stress control variables were included in all six mediation analyses. The completely standardized indirect effects (CSIE) are reported as an effect size measure along with the unstandardized indirect effects. The CSIE represents the amount of change in standard deviations for the criterion variable in relation to one standard deviation in change for predictor (*X*) through the mechanism of a mediator (*M*) (Hayes, 2018). Table 12, Table 13, and Table 14 present the regression results testing for mediation in the relationship between vocational identity and the three work engagement subscales. Overall, the total effects model

for vigor predicted 36.8% of the variance in that outcome (R^2 = .606, adjusted R^2 = .368, F(4, 250) = 36.33, p < .001), 32.1% of the variance for dedication (R^2 = .566, adjusted R^2 = .321, F(4, 250) = 29.49, p < .001), and 21.2% of the variance for absorption (R^2 = .460, adjusted R^2 = .212, F(4, 250) = 16.79, p < .001)

The total effects model (*X – Y, c* path) for the vigor subscale of work engagement demonstrated a positive association with vocational identity, with a significant unstandardized regression coefficient (*B* = .089, *SE* = .019, *p* < .001). Supporting the mediation hypothesis, the effect of meaningful work regressed on vocational identity (*a* pathway) was significant (*B* = .866, *SE* = .125, *p* < .001), as was (*b* pathway) vigor on meaningful work (*B* = .086, *SE* = .008, *p* <.001). The bootstrap results with 5,000 re-samples showed a significant unstandardized indirect effect (*B* = .075, *SE* = .014) and 95% confidence intervals around this value not containing zero (.048, .103) representing a small effect size (CSIE = .235, 95% CI: .151, .320). The total effects mediation model for vocational identity predicting dedication was also significant (*B* = .104, *SE* = .020, *p* < .001). The indirect effect for the dedication criterion model was .112 with confidence intervals (.071, .150) not containing zero, representing a small effect size (CSIE = .338, 95% CI: .217, .450). There was a significant total effect of vocational identity on absorption through meaningful work, *B* = .062, *SE* = .019, *p* <.001, with an indirect effect of .076 (95% CI: .049, .106) for a small effect size (CSIE = .269, 95% CI: .169, .362). These results supported Hypothesis 2A that meaningful work would mediate the relationship between vocational identity and work engagement.

Table 12

Testing the Indirect Effect of Vocational Identity on Vigor Through Meaningful Work Using PROCESS: model 4

	Vigor subscale of Work Engagement						
						BC 95% CI	
Variable	*B*	*SE*	*β*	*t*	*p*	Lower	Upper
Direct and Total Effects							
a path, VI → MW	.866	.125	.407	6.92	<.001	.620	1.11
b path, MW → Vigor	.086	.008	.576	11.32	<.001	.071	.101
c' path, VI → Vigor controlling for MW (direct effect)	.015	.016	.046	0.90	=.371	–.018	.047
c path, VI → Vigor (total effect)	.089	.019	.281	4.83	<.001	.053	.126

Bootstrap results for Indirect Effect of VI (X) on Vigor(Y)			BC 95% CI	
Effect	*Effect*	*SE*	Lower	Upper
Unstandardized	.075	.014	.048	.103
Standardized	.235	.044	.151	.320

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized and standardized regression coefficients are reported. Bootstrap sample size = 5000. BC = bias-corrected; VI = Vocational Identity, MW = Meaningful Work

Table 13

Testing the Indirect Effect of Vocational Identity on Dedication Through Meaningful Work Using PROCESS: model 4

	Dedication subscale of Work Engagement						
						BC 95% CI	
Variable	*B*	*SE*	*β*	*t*	*p*	Lower	Upper
Direct and Total Effects							
a path, VI → MW	.866	.125	.407	6.92	<.001	.620	1.11
b path, MW → Dedication	.128	.006	.830	21.83	<.001	.117	.120
c' path, VI → Dedication controlling for MW (direct effect)	–.007	.013	–.022	–0.57	=.572	–.032	.018
c path, VI → Dedication (total effect)	.104	.020	.316	5.24	<.001	.065	.143

Bootstrap results for Indirect Effect of VI (X) on Dedication(Y)			BC 95% CI	
Effect	*Effect*	*SE*	Lower	Upper
Unstandardized	.111	.020	.071	.150
Standardized	.338	.060	.217	.450

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized and standardized regression coefficients are reported. Bootstrap sample size = 5000. BC = bias-corrected; VI = Vocational Identity, MW = Meaningful Work

Table 14

Testing the Indirect Effect of Vocational Identity on Absorption Through Meaningful Work Using PROCESS: model 4

	Absorption subscale of Work Engagement						
						BC 95% CI	
Variable	*B*	*SE*	*β*	*t*	*p*	Lower	Upper
Direct and Total Effects							
a path, VI → MW	.866	.125	.407	6.92	<.001	.620	1.11
b path, MW → Absorption	.088	.008	.660	11.78	<.001	.074	.103
c' path, VI → Absorption controlling for MW (direct effect)	–.015	.016	–.051	–0.90	=.370	–.046	.017
c path, VI → Absorption (total effect)	.062	.019	.218	3.35	<.001	.026	.098

Bootstrap results for Indirect Effect of VI (X) on Absorption(Y)			BC 95% CI	
Effect	*Effect*	*SE*	Lower	Upper
Unstandardized	.076	.015	.049	.106
Standardized	.269	.049	.169	.362

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized and standardized regression coefficients are reported. Bootstrap sample size = 5000. BC = bias-corrected; VI = Vocational Identity, MW = Meaningful Work

All three mediation regression tests for the burnout subscales of exhaustion, cynicism, and professional efficacy were statistically significant for the *a*, *b*, and *c* (total effect) pathways and the unstandardized indirect effects all significant with bias-corrected bootstrap confidence intervals not containing zero. Effect sizes for all three simple mediation models were small. Results for the mediation model related to exhaustion as criterion were $B = -.067$, $SE = .021$, $p < .01$ for the total effect. The unstandardized indirect effect was –.042 (95% CI: –.065, –.022) and completely standardized indirect effect was –.121 (95% CI: –.183, –.064). For cynicism, the total effect results were $B = -.135$, $SE = .018$, $p < .001$. with an unstandardized indirect effect of –.085 (95% CI: –.119, –.054) and CSIE of –.232 (95% CI: –.318, –.148). Lastly, the total effect of vocational identity on professional efficacy through meaningful work resulted with $B = .048$, $SE = .013$, $p < .001$, an indirect effect of .044 (95% CI: .027, .063), and CSIE of .208 (95% CI: .127, .293). Full results for the exhaustion, cynicism, and professional efficacy mediation models are presented in Table 15, Table 16, and Table 17 below. Hypothesis 2B, proposing that the relationship between vocational identity and burnout would be transmitted through meaningful work, was supported.

Table 15

Testing the Indirect Effect of Vocational Identity on Exhaustion Through Meaningful Work Using PROCESS: model 4

	Exhaustion subscale of Burnout						
						BC 95% CI	
Variable	*B*	*SE*	*β*	*t*	*p*	Lower	Upper
Direct and Total Effects							
a path, VI → MW	.866	.125	.407	6.92	<.001	.620	1.11
b path, MW → Exhaustion	–.049	.010	–.297	–4.91	<.001	–.069	–.029
c' path, VI → Exhaustion controlling for MW (direct effect)	–.025	.022	–.071	–1.16	=.248	–.067	.018
c path, VI → Exhaustion (total effect)	–.067	.021	–.192	–3.26	<.01	–.108	–.027

Bootstrap results for Indirect Effect of VI (X) on Exhaustion(Y)			BC 95% CI	
Effect	*Effect*	*SE*	Lower	Upper
Unstandardized	–.042	.011	–.065	–.022
Standardized	–.121	.031	–.183	–.064

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized and standardized regression coefficients are reported. Bootstrap sample size = 5000. BC = bias-corrected; VI = Vocational Identity, MW = Meaningful Work

Table 16

Testing the Indirect Effect of Vocational Identity on Cynicism Through Meaningful Work Using PROCESS: model 4

	Cynicism subscale of Burnout						
						BC 95% CI	
Variable	*B*	*SE*	*β*	*t*	*p*	Lower	Upper
Direct and Total Effects							
a path, VI → MW	.866	.125	.407	6.92	<.001	.620	1.11
b path, MW → Cynicism	–.098	.009	–.570	–11.59	<.001	–.115	–.081
c' path, VI → Cynicism controlling for MW (direct effect)	–.050	.018	–.136	–2.72	<.01	–.086	–.014
c path, VI → Cynicism (total effect)	–.135	.021	–.368	–6.49	<.001	–.176	–.094

Bootstrap results for Indirect Effect of VI (X) on Cynicism(Y)			BC 95% CI	
Effect	*Effect*	*SE*	Lower	Upper
Unstandardized	–.085	.016	–.119	–.054
Standardized	–.232	.043	–.318	–.148

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized and standardized regression coefficients are reported. Bootstrap sample size = 5000. BC = bias-corrected; VI = Vocational Identity, MW = Meaningful Work

Table 17

Testing the Indirect Effect of Vocational Identity on Professional Efficacy Through Meaningful Work Using PROCESS: model 4

	Professional Efficacy subscale of Burnout						
						BC 95% CI	
Variable	*B*	*SE*	*β*	*t*	*p*	Lower	Upper
Direct and Total Effects							
a path, VI → MW	.866	.125	.407	6.92	<.001	.620	1.11
b path, MW → Professional Efficacy	.051	.006	.511	8.95	<.001	.040	.062
c' path, VI → Professional Efficacy controlling for MW (direct effect)	.003	.012	.016	0.27	=.787	–.021	.028
c path, VI → Cynicism (total effect)	.048	.013	.224	3.67	<.001	.022	.073

Bootstrap results for Indirect Effect of VI (X) on Professional Efficacy(Y)			BC 95% CI	
Effect	*Effect*	*SE*	Lower	Upper
Unstandardized	.044	.009	.027	.063
Standardized	.208	.042	.127	.293

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized and standardized regression coefficients are reported. Bootstrap sample size = 5000. BC = bias-corrected; VI = Vocational Identity, MW = Meaningful Work

Moderation Analysis

The next step in this study was testing hardiness as a potential moderator in the relationship between vocational identity and work engagement, corresponding to Hypothesis 3A, and between vocational identity and burnout, corresponding to Hypothesis 3B. The PROCESS model 1 for simple moderation was used to test each of the three subscales for work engagement and burnout. Work centrality, negative affect, and perceived stress were included as control variables. Following the recommendations of Frazier, Tix, and Barron (2004), vocational identity and hardiness were mean centered. PROCESS creates an interaction term for the *X* and *M* variables in moderation models and did so for vocational identity (*X*) and hardiness (*M*). The overall models for vigor ($F(6, 248) = 58.96$, $p < .001$, $R^2 = .588$), dedication ($F(6, 248) = 74.23$, $p < .001$, $R^2 = .642$), and absorption ($F(6, 248) = 36.18$, $p < .001$, $R^2 = .467$) were all statistically significant with medium effect sizes. However, the interaction between vocational identity and hardiness in each of the three work engagement moderation models was not significant. Therefore, hardiness did not moderate the relationship between vocational identity and work engagement. Hypothesis 3A was not supported. This study was unable to show that the relation between vocational identity and work engagement differed across levels of hardiness. Full results for the three work engagement subscale moderation models are presented in Table 18, Table 19, and Table 20 below.

Table 18

Examining the Potential Moderating Impact of Hardiness on the Relationship Between Vocational Identity and Vigor Using PROCESS: model 1

	Vigor subscale of Work Engagement							
					95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Main Effects								
Vocational Identity	.050	.016	3.11	<.01	.018	.081		
Hardiness	.050	.006	8.53	<.001	.039	.062		
Interaction								
Vocational Identity X Hardiness	.001	.001	0.77	=.438	–.001	.003		
Model Summary				<.001			58.96	.588

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Vocational Identity and Hardiness were mean centered.

Table 19

Examining the Potential Moderating Impact of Hardiness on the Relationship Between Vocational Identity and Dedication Using PROCESS: model 1

	Dedication subscale of Work Engagement							
					95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Main Effects								
Vocational Identity	.049	.015	3.22	<.01	.019	.080		
Hardiness	.062	.006	11.03	<.001	.051	.074		
Interaction								
Vocational Identity X Hardiness	–.000	.000	–0.16	=.870	–.002	.002		
Model Summary				<.001			74.23	.642

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Vocational Identity and Hardiness were mean centered.

Table 20

Examining the Potential Moderating Impact of Hardiness on the Relationship Between Vocational Identity and Absorption Using PROCESS: model 1

	Absorption subscale of Work Engagement							
					95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Main Effects								
Vocational Identity	.020	.016	1.26	=.210	–.012	.052		
Hardiness	.046	.006	7.75	<.001	.035	.058		
Interaction								
Vocational Identity X Hardiness	–.000	.001	–0.15	=.882	–.002	.002		
Model Summary				<.001			36.18	.467

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Vocational Identity and Hardiness were mean centered.

A moderation regression model testing for Hypothesis 3B was then conducted to examine the potential moderating effect of hardiness on the relationship between vocational identity and the exhaustion, cynicism, and professional efficacy subscales of burnout. The overall model for exhaustion as the criterion was statistically significant, $F(6, 248) = 37.71$, $p < .001$, $R^2 = .477$. The interaction between vocational identity and hardiness was also significant ($B = –.003$, $t = –2.42$, $p < .05$) with an R^2 increase of .012, representing a very small effect. The simple slope for hardiness at one standard deviation below the mean was not significant ($B = –.014$, $t = –.608$, $p = .544$), indicating that low hardiness does not have an effect on the relationship between vocational identity and exhaustion. However, the simple slope at one standard deviation above the mean for hardiness was significant ($B = –.091$, $t = –3.22$, $p < .01$). See Table 21. High hardiness appears have a small effect on vocational identity predicting exhaustion. Figure 4 provides a visual representation of the simple slopes for hardiness moderating the relationship between vocational identity and exhaustion.

Table 21

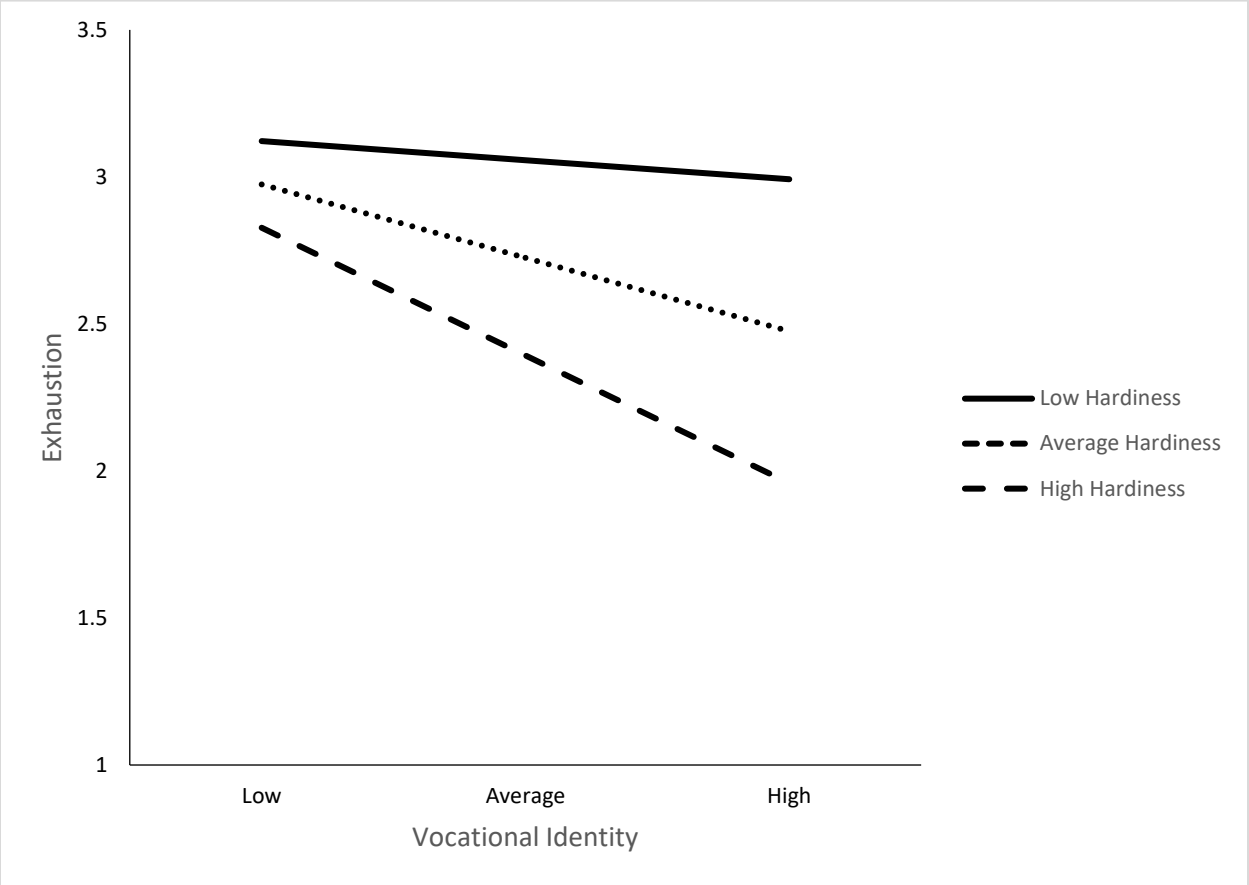
Examining the Potential Moderating Impact of Hardiness on the Relationship Between Vocational Identity and Exhaustion Using PROCESS: model 1

	Exhaustion subscale of Burnout							
					95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Main Effects								
Vocational Identity	–.052	.020	–2.64	<.01	–.091	–.013		
Hardiness	–.024	.007	–3.29	<.01	–.038	–.010		
Interaction								
Vocational Identity X Hardiness	–.003	.001	–2.42	<.05	–.005	–.001		
Conditional Effects								
Hardiness at –1 SD	–.014	.022	–0.61	=.544	–.058	.030		
Hardiness at Mean	–.052	.020	–2.64	<.01	–.091	–.013		
Hardiness at +1 SD	–.091	.028	–3.22	<.01	–.147	–.035		
Model Summary				<.001			37.71	.477

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Vocational Identity and Hardiness were mean centered.

Figure 4

Plot of the Simple Slopes for Hardiness Moderating the Relationship Between Vocational Identity and Exhaustion.



Note. Predicted values are plotted at the mean plus one standard deviation above and below the mean for hardiness and vocational identity.

While the full moderation model relative to cynicism was significant ($F(6, 248) = 51.22$, $p < .001$, $R^2 = .553$), the interaction term was not ($B = –.002$, $t = –1.66$, $p = .099$); see Table 22. Similarly, there was a significant result identified for the full professional efficacy moderation model ($F(6, 248) = 32.06$, $p < .001$, $R^2 = .437$) but not for the interaction between vocational identity and hardiness ($B = .000$, $t = .006$, $p = .995$); see Table 23. Thus, hardiness did not moderate the relationship between vocational identity and cynicism or between vocational identity and professional efficacy. As there was a significant moderation effect for one of the three burnout subscales, Hypothesis 3B was partially supported.

Table 22

Examining the Potential Moderating Impact of Hardiness on the Relationship Between Vocational Identity and Cynicism Using PROCESS: model 1

	Cynicism subscale of Burnout							
					95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Main Effects								
Vocational Identity	–.106	.019	–5.54	<.001	–.144	–.068		
Hardiness	–.037	.007	–5.27	<.001	–.051	–.023		
Interaction								
Vocational Identity X Hardiness	–.002	.001	–1.66	=.099	–.004	.000		
Model Summary				<.001			51.22	.553

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Vocational Identity and Hardiness were mean centered.

Table 23

Examining the Potential Moderating Impact of Hardiness on the Relationship Between Vocational Identity and Professional Efficacy Using PROCESS: model 1

	Professional Efficacy subscale of Burnout							
					95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Main Effects								
Vocational Identity	.024	.012	1.96	=.051	–.000	.049		
Hardiness	.032	.005	6.98	<.001	.023	.041		
Interaction								
Vocational Identity X Hardiness	.000	.001	0.01	=.995	–.001	.001		
Model Summary				<.001			32.06	.437

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Vocational Identity and Hardiness were mean centered.

***Exploratory hierarchical regression analyses*.** Given there were significant results for only one of the six moderation models tested, a series of hierarchical regression analyses were conducted to explore the amount of variance that vocational identity and hardiness may account individually account for related to each criterion. The control variables of work centrality, negative affect, and perceived stress were included in step one of each model, hardiness added at step two, and vocational identity added at step three. Results for the three work engagement subscales are presented below in Table 24, Table 25, and Table 26 below. For Vigor, hardiness accounted for 14.9% of beyond the control variables at step two and vocational identity accounted for an additional 1.5% of the variance. For dedication, hardiness accounted for 22% of the variance and vocational identity an additional 1.6%. Lastly, hardiness accounted for 15.3% of the variance while the full model including vocational identity was not statistically significant related to absorption. These results demonstrated that hardiness was a much better predictor of work engagement than vocational identity in terms of the variance accounted for.

Table 24

Hierarchical Regression Analysis Predicting Vigor by Hardiness and Vocational Identity.

	Vigor subscale of Work Engagement							
	B	SE B	β	95% CI		*F*	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	.19***	.03	.35	.14	.24			
Negative Affect	.04	.16	.02	–.28	.35			
Perceived Stress	–.23***	.03	–.52	–.29	–.17			
Overall Model						61.25	.416	.423***
Step 2								
Work Centrality	.14***	.02	.27	.10	.19			
Negative Affect	.10	.14	.04	–.17	.37			
Perceived Stress	–.12***	.03	–.26	–.18	–.06			
Hardiness	.05***	.01	.49	.04	.07			
Overall Model						87.11	.565	.149***
Step 3								
Work Centrality	.14***	.02	.26	.09	.18			
Negative Affect	.14	.14	.06	–.13	.41			
Perceived Stress	–.10**	.03	–.22	–.16	–.04			
Hardiness	.05***	.01	.45	.04	.06			
Vocational Identity	.05**	.02	.15	.02	.08			
Overall Model						9.08	.579	.015**

Note. N = 255. *p < .05, **p < .01, ***p < .001. Vocational Identity and Hardiness were mean centered.

Table 25

Hierarchical Regression Analysis Predicting Dedication by Hardiness and Vocational Identity.

	Dedication subscale of Work Engagement							
	B	SE B	β	95% CI		F	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	.22***	.03	.41	.17	.28			
Negative Affect	–.07	.17	–.03	–.40	.26			
Perceived Stress	–.20***	.03	–.43	–.26	–.14			
Overall Model						57.21	.399	.406***
Step 2								
Work Centrality	.17***	.02	.31	.12	.21			
Negative Affect	.01	.13	.003	–.25	.27			
Perceived Stress	–.05	.03	–.12	–.11	.001			
Hardiness	.07***	.01	.59	.06	.08			
Overall Model						147.08	.620	.220***
Step 3								
Work Centrality	.16***	.02	.30	.12	.21			
Negative Affect	.05	.13	.02	–.21	.31			
Perceived Stress	–.04	.03	–.08	–.09	.02			
Hardiness	.06***	.01	.45	.05	.07			
Vocational Identity	.05**	.02	.15	.02	.08			
Overall Model						11.30	.635	.016**

Note. N = 255. *p < .05, **p < .01, ***p < .001. Vocational Identity and Hardiness were mean centered.

Table 26

Hierarchical Regression Analysis Predicting Absorption by Hardiness and Vocational Identity.

	Absorption subscale of Work Engagement							
	B	SE B	β	95% CI		F	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	.18***	.03	.37	.13	.23			
Negative Affect	–.01	.16	–.01	–.32	.29			
Perceived Stress	–.15***	.03	–.37	–.21	–.09			
Overall Model						37.51	.301	.310***
Step 2								
Work Centrality	.14***	.02	.29	.09	.18			
Negative Affect	.04	.14	.02	–.23	.31			
Perceived Stress	–.04	.03	–.11	–.10	.01			
Hardiness	.05***	.01	.49	.04	.06			
Overall Model						71.41	.454	.153***
Step 3								
Work Centrality	.13***	.02	.29	.09	.18			
Negative Affect	.06	.14	.03	–.21	.33			
Perceived Stress	–.04	.03	–.09	–.09	.02			
Hardiness	.05***	.01	.47	.04	.06			
Vocational Identity	.02	.02	.07	–.01	.05			
Overall Model						1.78	.456	.004

Note. N = 255. *p < .05, **p < .01, ***p < .001. Vocational Identity and Hardiness were mean centered.

Table 27, Table 28, and Table 29 below present the full results of the hierarchical regression models related to the three subscales of burnout. Hardiness accounted for 2.5% of the variance related to exhaustion beyond the control variables, while vocational identity accounted for 1%. Additional variance accounted for beyond the control variables was 7.4% for hardiness and 5.1% for vocational identity related to the cynicism criterion. Results related to the professional efficacy subscale of burnout included hardiness accounting for 13.7% of the variance and 0.9% for vocational identity. Hardiness was also a better predictor for burnout compared to vocational identity, but with much smaller differences in the variance accounted for than the work engagement criterion models.

Table 27

Hierarchical Regression Analysis Predicting Exhaustion by Hardiness and Vocational Identity.

	Exhaustion subscale of Burnout							
	B	SE B	β	95% CI		F	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	–.20***	.03	–.34	–.25	–.14			
Negative Affect	.68***	.18	.26	.33	1.02			
Perceived Stress	.17***	.03	.34	.10	.23			
Overall Model						63.08	.423	.430***
Step 2								
Work Centrality	–.18***	.03	–.30	–.23	–.12			
Negative Affect	.65***	.17	.25	.31	.99			
Perceived Stress	.12**	.04	.23	.05	.19			
Hardiness	–.02**	.01	–.20	–.04	–.01			
Overall Model						11.60	.446	.025**
Step 3								
Work Centrality	–.17***	.03	–.30	–.23	–.12			
Negative Affect	.61***	.17	.23	.28	.95			
Perceived Stress	.10**	.04	.20	.03	.17			
Hardiness	–.02**	.01	–.17	–.04	–.01			
Vocational Identity	–.04*	.02	–.12	–.08	–.003			
Overall Model						4.48	.454	.010*

Note. N = 255. *p < .05, **p < .01, ***p < .001. Vocational Identity and Hardiness were mean centered.

Table 28

Hierarchical Regression Analysis Predicting Cynicism by Hardiness and Vocational Identity.

	Cynicism subscale of Burnout							
	B	SE B	β	95% CI		F	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	–.22***	.03	–.36	–.28	–.16			
Negative Affect	.85***	.18	.31	.49	1.21			
Perceived Stress	.14***	.04	.27	.07	.21			
Overall Model						61.44	.417	.423***
Step 2								
Work Centrality	–.18***	.03	–.30	–.24	–.13			
Negative Affect	.80***	.17	.29	.46	1.14			
Perceived Stress	.05	.04	.09	–.03	.12			
Hardiness	–.04***	.01	–.34	–.06	–.03			
Overall Model						37.06	.490	.074***
Step 3								
Work Centrality	–.17***	.03	–.29	–.23	–.12			
Negative Affect	.72***	.16	.26	.40	1.04			
Perceived Stress	.01	.04	.02	–.06	.08			
Hardiness	–.04***	.01	–.28	–.05	–.02			
Vocational Identity	–.10***	.02	–.27	–.14	–.06			
Overall Model						27.92	.539	.051***

Note. N = 255. *p < .05, **p < .01, ***p < .001. Vocational Identity and Hardiness were mean centered.

Table 29

Hierarchical Regression Analysis Predicting Professional Efficacy by Hardiness and Vocational Identity.

	Professional Efficacy subscale of Burnout							
	B	SE B	β	95% CI		F	Adj. R^2	ΔR^2
Variable				Lower	Upper			
Step 1								
Work Centrality	.06**	.02	.16	.02	.10			
Negative Affect	–.15	.12	–.10	–.39	.08			
Perceived Stress	–.13***	.02	–.43	–.17	–.09			
Overall Model						34.26	.282	.291***
Step 2								
Work Centrality	.03	.02	.08	–.01	.06			
Negative Affect	–.11	.12	–.07	–.32	.10			
Perceived Stress	–.06*	.02	–.18	–.10	–.01			
Hardiness	.03***	.004	.47	.03	.04			
Overall Model						59.88	.418	.137***
Step 3								
Work Centrality	.03	.02	.08	–.01	.06			
Negative Affect	–.09	.11	–.06	–.30	.12			
Perceived Stress	–.05*	.02	–.15	–.09	–.002			
Hardiness	.03***	.01	.44	.02	.04			
Vocational Identity	.02*	.01	.12	.001	.05			
Overall Model						4.09	.426	.009*

Note. N = 255. *p < .05, **p < .01, ***p < .001. Vocational Identity and Hardiness were mean centered.

Moderated Mediation Analysis

To test moderated mediation effects where hardiness moderates the indirect effect of vocational identity on work engagement via meaningful work (Hypothesis 4A) and where hardiness moderates the indirect effect of vocational identity on burnout via meaningful work (Hypothesis 4B), PROCESS Model 8 was used. Vocational identity and hardiness were mean centered. Separate models were analyzed for the vigor, dedication, and absorption subscales of work engagement. That approach was also conducted for the exhaustion, cynicism, and professional efficacy subscales of burnout. Work centrality, negative affect, and perceived stress were included as covariates. A conditional indirect effect (i.e., moderated mediation) is significant if the bootstrapped confidence interval for the index does not contain zero. Moderated mediation analyses for the three work engagement subscales confirmed no significant results for a conditional indirect effect were not significant, as the bootstrapped confidence intervals for each index contained zero. Hypothesis 4A was not supported. Similar results occurred for all three of the burnout subscales. Therefore, Hypothesis 4B was not supported either. Full results for all six moderated mediation models are presented below in Tables 30 through 35 below.

Table 30

Examining the Potential Moderated Mediation Effect of the Relationship Between Vocational Identity, Hardiness, Meaningful Work, and Vigor Using PROCESS: model 8

	Vigor subscale of Work Engagement							
					BC 95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Model 1: mediator variable model				<.001			73.44	.640
Outcome: Meaningful Work								
Vocational Identity	.515	.100	5.16	<.001	.318	.711		
Hardiness	.370	.037	10.05	<.001	.298	.443		
Vocational Identity X Hardiness	–.006	.006	–1.01	=.312	–.017	.006		
Model 2: outcome variable model				<.001			59.55	.628
Outcome: Vigor								
Vocational Identity	.024	.016	1.50	=.136	–.008	–.055		
Meaningful Work	.050	.010	5.16	<.001	.031	.069		
Hardiness	.032	.709	4.78	<.001	.019	.045		
Vocational Identity X Hardiness	.001	.001	1.15	=.253	–.001	.003		
Conditional indirect effect (via Meaningful Work)	*Effect*	*SE*			*LLCI*	*ULCI*		
Hardiness (–1 SD)	.030	.009			.014	.050		
Hardiness (+1 SD)	.022	.009			.006	.042		
	Index	*SE*			*LLCI*	*ULCI*		
Index of moderated mediation	–.0003	.0003			–.001	.0003		

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized regression coefficients are reported. Bootstrap sample size = 5000. Vocational Identity and Hardiness were mean centered. BC = bias-corrected bootstrap; LLCI = bias-corrected bootstrap lower-limit; ULCI = bias-corrected bootstrap upper-limit.

Table 31

Examining the Potential Moderated Mediation Effect of the Relationship Between Vocational Identity, Hardiness, Meaningful Work, and Dedication Using PROCESS: model 8

	Dedication subscale of Work Engagement							
					BC 95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Model 1: mediator variable model				<.001			73.44	.640
Outcome: Meaningful Work								
Vocational Identity	.515	.100	5.16	<.001	.318	.711		
Hardiness	.370	.037	10.05	<.001	.298	.443		
Vocational Identity X Hardiness	–.006	.006	–1.01	=.312	–.017	.006		
Model 2: outcome variable model				<.001			136.20	.794
Outcome: Vigor								
Vocational Identity	–.002	.012	–0.18	=.860	–.026	.022		
Meaningful Work	.100	.007	13.50	<.001	.086	.115		
Hardiness	.025	.005	4.97	<.001	.015	.035		
Vocational Identity X Hardiness	.0004	.0007	0.65	=.515	–.0009	.002		
Conditional indirect effect (via Meaningful Work)	*Effect*	*SE*			*LLCI*	*ULCI*		
Hardiness (–1 SD)	.060	.015			.032	.090		
Hardiness (+1 SD)	.043	.015			.013	.073		
	Index	*SE*			*LLCI*	*ULCI*		
Index of moderated mediation	–.0006	.0007			–.002	.0006		

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized regression coefficients are reported. Bootstrap sample size = 5000. Vocational Identity and Hardiness were mean centered. BC = bias-corrected bootstrap; LLCI = bias-corrected bootstrap lower-limit; ULCI = bias-corrected bootstrap upper-limit.

Table 32

Examining the Potential Moderated Mediation Effect of the Relationship Between Vocational Identity, Hardiness, Meaningful Work, and Absorption Using PROCESS: model 8

	Absorption subscale of Work Engagement							
					BC 95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Model 1: mediator variable model				<.001			73.44	.640
Outcome: Meaningful Work								
Vocational Identity	.515	.100	5.16	<.001	.318	.711		
Hardiness	.370	.037	10.05	<.001	.298	.443		
Vocational Identity X Hardiness	–.006	.006	–1.01	=.312	–.017	.006		
Model 2: outcome variable model				<.001			40.60	.535
Outcome: Vigor								
Vocational Identity	–.010	.016	–0.60	=.550	–.041	.022		
Meaningful Work	.058	.010	6.02	<.001	.039	.077		
Hardiness	.025	.007	3.74	<.001	.012	.038		
Vocational Identity X Hardiness	.0002	.0009	0.23	=.820	–.002	.002		
Conditional indirect effect (via Meaningful Work)	*Effect*	*SE*			*LLCI*	*ULCI*		
Hardiness (–1 SD)	.035	.010			.017	.056		
Hardiness (+1 SD)	.025	.010			.007	.046		
	Index	*SE*			*LLCI*	*ULCI*		
Index of moderated mediation	–.0003	.0004			–.0012	.0004		

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized regression coefficients are reported. Bootstrap sample size = 5000. Vocational Identity and Hardiness were mean centered. BC = bias-corrected bootstrap; LLCI = bias-corrected bootstrap lower-limit; ULCI = bias-corrected bootstrap upper-limit.

Table 33

Examining the Potential Moderated Mediation Effect of the Relationship Between Vocational Identity, Hardiness, Meaningful Work, and Exhaustion Using PROCESS: model 8

	Exhaustion subscale of Burnout							
					BC 95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Model 1: mediator variable model				<.001			73.44	.640
Outcome: Meaningful Work								
Vocational Identity	.515	.116	4.43	<.001	.286	.743		
Hardiness	.370	.037	10.05	<.001	.298	.443		
Vocational Identity X Hardiness	–.006	.006	–1.01	=.312	–.017	.006		
Model 2: outcome variable model				<.001			32.54	.480
Outcome: Exhaustion								
Vocational Identity	–.045	.021	–2.16	=.032	–.086	–.004		
Meaningful Work	–.014	.013	–1.14	=.256	–.040	.011		
Hardiness	–.019	.009	–2.16	=.032	–.036	–.002		
Vocational Identity X Hardiness	–.003	.001	–2.48	=.014	–.005	–.001		
Conditional indirect effect (via Meaningful Work)	*Effect*	*SE*			*LLCI*	*ULCI*		
Hardiness (–1 SD)	–.009	.008			–.025	.007		
Hardiness (+1 SD)	–.006	.006			–.019	.005		
	Index	*SE*			*LLCI*	*ULCI*		
Index of moderated mediation	.0001	.0001			–.0001	.0004		

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized regression coefficients are reported. Bootstrap sample size = 5000. Vocational Identity and Hardiness were mean centered. BC = bias-corrected bootstrap; LLCI = bias-corrected bootstrap lower-limit; ULCI = bias-corrected bootstrap upper-limit.

Table 34

Examining the Potential Moderated Mediation Effect of the Relationship Between Vocational Identity, Hardiness, Meaningful Work, and Cynicism Using PROCESS: model 8

	Cynicism subscale of Burnout							
					BC 95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Model 1: mediator variable model				<.001			73.44	.640
Outcome: Meaningful Work								
Vocational Identity	.515	.010	5.16	<.001	.318	.711		
Hardiness	.370	.037	10.05	<.001	.298	.443		
Vocational Identity X Hardiness	–.006	.006	–1.01	=.312	–.017	.006		
Model 2: outcome variable model				<.001			61.51	.636
Outcome: Cynicism								
Vocational Identity	–.064	.018	–3.50	<.001	–.100	–.028		
Meaningful Work	–.082	.011	–7.46	<.001	–.104	–.061		
Hardiness	–.007	.008	–0.10	=.370	–.022	.008		
Vocational Identity X Hardiness	–.002	.001	–2.31	=.022	–.0043	–.0003		
Conditional indirect effect (via Meaningful Work)	*Effect*	*SE*			*LLCI*	*ULCI*		
Hardiness (–1 SD)	–.049	.013			–.077	–.025		
Hardiness (+1 SD)	–.036	.014			–.065	–.010		
	Index	*SE*			*LLCI*	*ULCI*		
Index of moderated mediation	.0005	.0005			–.0005	.0016		

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized regression coefficients are reported. Bootstrap sample size = 5000. Vocational Identity and Hardiness were mean centered. BC = bias-corrected bootstrap; LLCI = bias-corrected bootstrap lower-limit; ULCI = bias-corrected bootstrap upper-limit.

Table 35

Examining the Potential Moderated Mediation Effect of the Relationship Between Vocational Identity, Hardiness, Meaningful Work, and Professional Efficacy Using PROCESS: model 8

	Professional Efficacy subscale of Burnout							
					BC 95% CI			
Variable	*B*	*SE*	*t*	*p*	Lower	Upper	*F*	ΔR^2
Model 1: mediator variable model				<.001			73.44	.640
Outcome: Meaningful Work								
Vocational Identity	.515	.100	5.16	<.001	.318	.711		
Hardiness	.370	.037	10.05	<.001	.298	.443		
Vocational Identity X Hardiness	–.006	.006	–1.01	=.312	–.017	.006		
Model 2: outcome variable model				<.001			34.70	.496
Outcome: Professional Efficacy								
Vocational Identity	.004	.012	0.29	=.769	–.021	.028		
Meaningful Work	.040	.008	5.37	<.001	.026	.055		
Hardiness	.017	.005	3.32	<.01	.007	.027		
Vocational Identity X Hardiness	.0002	.0007	0.35	=.725	–.001	.002		
Conditional indirect effect (via Meaningful Work)	*Effect*	*SE*			*LLCI*	*ULCI*		
Hardiness (–1 SD)	.024	.007			.011	.040		
Hardiness (+1 SD)	.018	.007			.005	.032		
	Index	*SE*			*LLCI*	*ULCI*		
Index of moderated mediation	–.0002	.0003			–.0008	.0003		

Note. N = 255. Control variables included work centrality, negative affect, and perceived stress. Unstandardized regression coefficients are reported. Bootstrap sample size = 5000. Vocational Identity and Hardiness were mean centered. BC = bias-corrected bootstrap; LLCI = bias-corrected bootstrap lower-limit; ULCI = bias-corrected bootstrap upper-limit.

DISCUSSION

This study sought to expand the personal resources concept within the Job Demands – Resources theoretical model. The influence of vocational identity on work engagement and burnout was examined through the mechanism of meaningful work. The moderating influence of hardiness on the direct relationship between vocational identity and the criterion variables of work engagement and burnout was also tested. In addition, the moderating influence of hardiness on the indirect mechanism of meaningful work through which vocational identity influences work engagement and burnout was explored. The cross-sectional study was conducted with 255 working adults residing in the United States. Results indicated that vocational identity had positive direct effects on all three work engagement subscales of vigor, dedication, and absorption. Vocational identity also had a positive direct effect on the burnout subscale of professional efficacy and negative direct effects of exhaustion and cynicism. Results also indicated that meaningful work significantly mediated the direct effects of vocational identity on work engagement and burnout. Results revealed that hardiness only had a moderating effect on the relationship between vocational identity and the exhaustion subscale of burnout; no significant moderating effect was detected for any of the three work engagement subscales, or for the cynicism and professional efficacy subscales of burnout. Results also showed no detectable moderating effect of hardiness on the indirect relationship of vocational identity on work engagement and burnout through meaningful work. These findings offer various implications for theory, practice, and future research.

Vocational Identity as Predictor

This first aim of this study was to examine the potential predictive influence of vocational identity on burnout and work engagement through the Job Demands-Resources theoretical model. This was done in the context of identity constructs receiving little study as predictors of burnout and work

engagement and little research on vocational identity with working adult samples. Results of this study supported limited previous findings relative to the positive relationship between vocational identity and work engagement. The correlations in this study for the three work engagement subscales – vigor, *r* = .48; dedication, *r* = .48; absorption, *r* = .37 – were moderate but not as strong as the correlation of .63 for work engagement total reported by Hirschi (2012) using the same measures (i.e., MVS-VI and UWES-9). This study is the first to examine vocational identity related to burnout. Strauser et al. (2006) found a correlation of –.47 between vocational identity and trauma symptomology distress with a sample of U.S. college students (*n* = 131). Traumatic distress and burnout are conceptually distinct, yet both reflect problematic outcomes, and thus this correlation may provide some context for the moderate to large correlations found in this study between vocational identity and the three burnout subscales (exhaustion, *r* = –.43; cynicism, *r* = –.55; professional efficacy, *r* = .43).

Results of this study supported vocational identity as a hypothesized predictor of both burnout and work engagement. Those with a stronger vocational identity tended to be more engaged in their work and experience less burnout. This helped support viewing vocational identity as a personal resource in the JD-R model, where it promotes energy and motivation while buffering against stressors as part of the coping hypothesis described by Taris and Schaufeli (2016) and Van den Broeck and colleagues (2013).

In this study, vocational identity included with the three control variables of work centrality, negative affect, and perceived stress accounted for an average of 40.9% of variance across the work engagement subscales and an average of 41.5% for the three burnout subscales. The effect sizes for the variance accounted for by vocational identity beyond the controls were small for both work engagement and burnout. Comparing the standardized regression coefficients for all four variables in each main effect regression model showed vocational identity having less influence on work engagement than work centrality and perceived stress but more than negative affect, on average. Those results were

more varied for burnout. Vocational identity had the smallest β in the model predicting exhaustion, shared the highest β with work centrality compared with the other two predictors in the model for cynicism, and the second largest after perceived stress in the model for professional efficacy. The construct definitions for work engagement and burnout are context specific. That is, they relate to a person's current work environment and how they are functioning within it (Bakker & Demerouti, 2007; Bakker et al., 2014; Taris & Schaufeli, 2016; Van den Broeck et al., 2013). Two of the three control variables are also context specific. Negative affect relates to how much one may be currently experiencing a cluster of negative emotions (i.e., upset, hostile, ashamed, nervous, and/or afraid) and a general poor self-concept as a result (Thompson, 2007). Perceived stress is the greater or lesser degree one may be currently feeling overall stress in life (Cohen & Williamson, 1988). Vocational identity is seen as the core element and expression of one's identity (Savickas, 1985; Skorikov & Vondracek, 2007, 2011). The study of one's vocational identity may change over the lifespan and can be influenced by significant economic and social changes (Ashforth et al., 2008; Porfeli et al., 2013), but it is not as context specific as the other variables in this study. Therefore, the context specific nature of the other variables may be a factor in the comparative predictive influence vocational identity had on work engagement and burnout in this study.

Something else worth considering is the exploratory nature of this study both in terms of the quite limited research on vocational identity with working adults in general while also testing the predictive influence of vocational identity with occupational health constructs (i.e., work engagement and burnout). Both of those points relate to the fact that much of the prior research on vocational identity has targeted career development outcomes with adolescent and young adult college student samples. Vocational identity may be a more developmentally salient in adolescence and young adulthood, and therefore have more direct predictive influence for participants representing the developmental needs typical of those age cohorts. This interpretation is based in Erikson's theory that

an establishment of a vocational identity is the key developmental task in adolescence through which a person further crafts their emerging self-concept and is critical to the transition to adulthood (Erikson, 1968; Porfeli et al., 2013; Savickas, 1985; Skorikov & Vondracek, 2007, 2011). Tasks and abilities conceptualized to be more directly linked to the establishment of a clear vocational identity – such as career decision-making self-efficacy and accurately predicting job satisfaction (Savikas, 1985; Skorikov & Vondracek, 2007, 2011) would then be more salient during adolescence and early adulthood. Vocational identity would therefore have more detectable predictive influence for such constructs, rather than constructs that less to do with the developmental task of vocational identity, such as burnout and work engagement. In their discussion of how identity relates to meaningful work, Pratt and Ashforth (2003) indicated one's particular work role combined with the social world at one's workplace are more salient to the influence of identity on meaningful work, through which influences other workplace well-being outcomes. While still a theoretically important core expression of identity in adulthood (Porfeli et al., 2013; Skorikov & Vondracek, 2007, 2011), other more affective-related constructs of personality and more contextually-based factors – such as hardiness and meaningful work – may become much more salient as an adult, and therefore have more noticeable influence related to burnout and work engagement (see de Mello & Wildermuth, 2010; Inceoglu & Warr, 2011).

Another consideration relative to vocational identity, identity in general, and salience is how vocational identity is conceptualized as a *personal* identity. Stets and Burke (2000) discuss how personal identity is theorized to be a lower level of categorization than *role* or *social* identity. One's personal identity is their stable self-concept that is then enacted through the roles they take on and the groups they belong to. One's role and social identities are more salient; that is, the expectations and meanings of one's roles and the social world they are enacted in are more immediate and therefore more relevant than one's personal identity (Stets & Burke, 2000). "[Personal] identities may influence role and [social] identities when they are first taken on. Once a role or group identity becomes established, however,

person[al] identities may have little impact" (Stets & Burke, 2000, p. 229). With vocational identity being a personal sense of one's interests, abilities, and goals as they may play out in a career, it is a lower level of identity categorization. Once a person engages in the world of work through a particular role and that role's corresponding social world, their role and social identities become more active and relevant. For example, a person may have a good sense that their strengths, abilities, and other vocational-related aspects of their self-concept would be a good fit for work that includes psychotherapy and program development and pursue a career as a psychologist. Once that person begins working in the role of psychologist in a particular organization, the expectations, meanings, and goals of that role and social identity are more immediate, relevant, and salient than their underlying vocational identity. Therefore, that may help conceptualize and explain why vocational identity did not have more than a small effect in relation to work engagement and burnout, particularly in comparison to the other predictor and control variables.

Meaningful Work as Mediator

Albrecht (2013) reasoned that meaningful work, classified as a psychological need in the JD-R framework, would best be situated as the mechanism through which job and personal resources would predict work engagement. This study expanded that reasoning to propose that meaningful work would serve the same function relative to burnout as an outcome. There has been little research regarding possible relationships between meaningful work and burnout. Therefore, the second aim of this study examined if meaningful work mediated the personal resource of vocational identity's links with both work engagement and burnout. Previous research through the JD-R model has demonstrated positive relationships with meaningful work and work engagement, with results from this study affirming that relationship. Correlations with the three work engagement subscales in this study were: vigor, r = .72; dedication, r = .87; absorption, r = 69. Those were similar to correlations reported for meaningful work and work engagement total by Demirtas et al. (2017) of r = .68, Fairlie (2011) of r = .77, Hirschi (2012) of

r = .69, May et al. (2004) of *r* = .63, and Steger et al., (2012) of *r* = .62. The average main effect from the mediation analyses of the meaningful work *b* path across the three work engagement subscales was β = .69. This supported findings from studies reporting main effects for meaningful work and work engagement total, such as β = .64 (Fairlie, 2011), β = .74 (May et al., 2004), and β = .55 (Steger et al., 2012). The study by Fairlie (2011) was the only one found that examined the relationship between meaningful work and burnout included as an outcome with work engagement, reporting the correlation of –.52 for the exhaustion dimension of burnout, which was the same found in this study. They did not report main effects related to burnout.

Vocational identity had emerged as a predictor of engagement and burnout, highlighting the importance of having clarity about one's work-related aptitudes, interests, ambitions, and self-concept. Furthermore, vocational identity was shown to be positively related to meaningful work, which supported assertions by Holland and colleagues (1980) and Skorikov and Vondracek (2011) that vocational identity is a fundamental factor in constructing meaning in work. There were significant mediating effects found in this study for all three subscales of each outcome, demonstrating that meaningful work is a mechanism through which vocational identity may predict work engagement and burnout. The significant mediating role meaningful work played in this study supported previous research finding meaningful work partially mediated the relationship between ethical leadership and work engagement (Demirtas et al., 2017) and fully mediated the effects of job enrichment and work role fit on work engagement (May et al., 2004). Woods and Sofat (2013) reported standardized indirect effects of .13 for assertiveness and .14 for industriousness predicting work engagement through meaningful work. Results from this study showed stronger standardized indirect effects of vocational identity predicting vigor (.24), dedication (.34), and absorption (.27) through meaningful work.

Following the model proposed by Steger and Dik (2009b) and in terms of the JD-R theoretical framework described by Albrecht (2015), the relationship between vocational identity and engagement

may be mediated by meaningful work because the extent to which someone has a clear vocational self-concept influences their ability to make sense of their experiences and better shape their work-related decision-making. That, in turn, may be associated with a sense of purpose and that one's efforts are worthwhile, important, or valuable, and thus feel more engaged in their work. That reasoning would also apply to burnout, as vocational identity buffering against becoming exhausted, cynical, and feeling that one's efforts are not worthwhile, important, or valuable (i.e., feeling reduced professional efficacy).

The Moderating Role of Hardiness

This study had tested the direct effects of vocational identity on work engagement and burnout, then explored the potential mediating role of meaningful work in those relationships. In addition, this study examined hardiness as a possible moderator of the relationship between vocational identity and the work engagement and burnout outcomes, both in the direct effect relationships and the effects mediated by meaningful work. There were no significant moderating impacts in any of the three work engagement subscales. There was one significant moderating impact for one of the three burnout subscales of exhaustion, but only for high hardiness (i.e., one standard deviation above the mean). Subsequently, there were no detectable significant indirect effects for any of the moderated mediation models. Further hierarchical regression analyses were conducted to examine how much variance vocational identity and hardiness individually accounted for relative to each of the outcomes. Those results indicated hardiness accounted for a great deal more variance than vocational identity relative to both work engagement and burnout. That supported other findings by Alarcon and colleagues (2009), who found that hardiness had stronger relationships across all three burnout dimensions than the personality variables of self-esteem, locus of control, Big Five Factors, optimism, proactive personality, and Type A personality.

Given the small main effects of vocational identity predicting work engagement and burnout in this study to begin with, it may be that vocational identity must have greater predictive power for there

to be a significant interaction to occur with hardiness relative to the much greater predictive power of hardiness. It may also be the case that there was simply too little power in this study to detect interaction effects between vocational identity and hardiness. Some methodologists have indicated that power will be low in moderation analyses when the study is not an experimental design, both the predictor and moderator variables are continuous, and moderator variables are measured with relatively short scales (McClelland & Judd, 1993; Shieh, 2009). The latter issue was not relevant to this study, as hardiness was measured with a 28-item scale. It may require a larger sample size and greater study control, such as an experimental design, to detect more of an interaction effect between vocational identity and hardiness. Alternatively, the relationship between vocational identity and hardiness may be better explained by roles other than a moderating interaction. Hardiness may be more of a mediating mechanism through which vocational identity predicts work engagement and burnout.

Implications for Practice

Results of this study supported vocational identity predicting the two primary work-related well-being outcomes studied in the JD-R theoretical framework literature. Furthermore, this study also supported the hypothesis that meaningful work is a mechanism through which vocational identity influences burnout and work engagement. The significant mediated effects supported both the notion that vocational identity is a means through which people experience meaning (Albrecht, 2013; Porfeli, et al., 2013) and that meaningful work is a pathway through which personal resources like vocational identity satisfy a psychological need which then influences burnout and work engagement (Albrecht, 2013). While a significant interaction effect between vocational identity and hardiness was not found, results from this study supported previous research that hardiness as a personal resource is significantly positively associated with work engagement and negatively associated with burnout (Corso-de-Zúñiga et al., 2017; Lo Bue et al., 2013). In terms of implications for counseling practice, these results indicate the value of *not* maintaining an arbitrary differentiation between career counseling and clinical counseling

interventions. Rather, as this study provides support for vocational identity – a construct typically studied in relation to career development outcomes – having direct association with work-related well-being outcomes, there is value in incorporating a blended viewpoint. That is, those with strong core aspects of identity and self-concept, such as vocational identity, have better work-related well-being outcomes, while work-related stressors and strains will have an impact on one's physical and mental health. This fits assertions by Dorn (1992) of an interdependent relationship between career (i.e., vocational) and personal identity and both should be incorporated in conceptualizations of clients' presenting issues, regardless of the milieu – whether that is a college career counseling program or a Department of Veterans Affairs PTSD treatment program.

It would be useful for counseling practitioners to integrate career and personal counseling intervention principles (Maree, 2013; Zunker, 2008, 2012). More specifically as it relates to findings from this study, practitioners may provide interventions meant to help clients strengthen their sense of self or identity and craft further meaning for their lives while simultaneously working to ameliorate distress in work- and non-work-related domains (Maree, 2013; Savickas, 2005, 2011; Zunker, 2008, 2012). As support was found for the prominent role meaningful work plays as a mechanism through which vocational identity is associated with work-related well-being outcomes, there would be further value for practitioners to assist clients with specific ways they may experience their work as more meaningful through increasing the intrinsic motivation and sense of purpose of work tasks (Dik et al., 2013; Dik, Duffy, Allan, O'Donnell, Shim, & Steger, 2015; Pratt & Ashforth, 2003). Specific interventions to do so may include increasing one's awareness of their strengths and focusing on utilizing their strengths more through their work, clarifying and focusing more on how one's work may be directly linked to meaningful outcomes, and how one may serve a valued greater good through their work (Dik et al., 2013; Dik et al., 2015; Pratt & Ashforth, 2003). Pratt and Ashforth (2003) emphasized the social world of

work being a significant source of meaning and suggest interventions that involve identifying others at work who share similar values and strengthening work relationships with them.

Given the additional support demonstrated in this study for the strong positive association hardiness has with work engagement and negative association with burnout, that construct specifically – or stress resiliency more broadly – remains an important consideration for practitioners to include in their assessment of and intervention with clients' concerns. Maddi (2002) and Stein and Bartone (2020) recommend interventions to foster increased hardiness do so with the three dimensions of that construct in mind – commitment, control, and challenge. According to those authors, interventions related to commitment involve increasing clarity of one's values and making strong commitments to persisting in value-driven behavior despite high stress. Interventions related to control involve better identifying one's capabilities and focusing on work that falls within those capabilities, time and energy management, and good task and project planning. Finally, interventions related to challenge involve increasing awareness of strengths and how to apply them, fostering a continual growth mindset that seeks out challenges to increase capabilities, and learning more flexible problem-solving strategies (Maddi, 2002; Stein & Bartone, 2020).

Implications for practice at the workplace organizational level are also important to consider with the context of this study. Restating Pratt and Ashforth's (2003) highlight of the value of the social world of work, organizations would benefit from implementing means that support and increase workers' vocational identities, meaning derived from work, and hardiness. Related to the role of identity in constructing meaning, organizations would benefit from practices that build a culture of psychological safety, service-oriented leadership, and fostering work-related well-being (Pratt & Ashforth, 2003). Selection and training practices that help employees better understand and align with organizational culture would be implemented in tandem (Pratt & Ashforth, 2003). While individuals can self-select workplaces that help them experience meaningful outcomes from their work and serve a valued greater

good (see Dik et al., 2013; Dik et al., 2015), organizations can also implement strategies that clearly demonstrate how they may serve a greater good and also how individual work roles within the organization contribute to that service. Organizations would also benefit from formally and informally promoting ways in which employees can develop increased hardiness using examples listed above.

Limitations

There are several limitations to consider when interpreting the results of the present study. First was the convenience sampling approach used to recruit working adults through MTurk. MTurk samples have been found to be more representative of the general population than college samples and is at least as reliable and diverse as samples from community and traditional Internet sources (Buhrmester, Kwang, & Gosling, 2011; Goodman, Cryder, & Cheema, 2013; Paolacci, Chandler, & Ipeirotis, 2010; Keith, Tay, & Harms, 2017). In contrast to previous findings that MTurk samples tended to be younger and lower in income on average (Keith et al., 2017), the majority of participants in this study were over the age of 36 (*n* = 156; 61%) and reported an annual individual income greater $83,520 (*n* = 135; 53%). Keith and colleagues (2017) cautioned that MTurk samples can be higher in negative affect than other samples. Per that point, this study measured and controlled for negative affect, finding that negative affect did not appear to have an undue influence on results. Still, with the assertion by Arditte and colleagues (2016) that more caution needs to be maintained about MTurk sample generalizability, people who volunteered to complete the survey may not be fully representative of the general population. However, the use of a convenience sample did mean that participants were obtained from a variety of occupations and across differing sectors, limiting context-specific factors (e.g., type of occupation, sector, or work culture of a particular organization) that could have biased the results. On the other hand, the cross-sectional nature of the data makes it unclear how the measured constructs may vary by context or persist over time.

A second limitation is the cross-sectional design of the study. The use of self-report measures for data collection was appropriate given the nature of the variables in the study. Cross-sectional designs have frequently been used in past research to test indirect effects as done so in this study (Hayes, 2018). Results of this study demonstrated some significant relationships observed among the predictor and criterion variables, where those higher in vocational identity, meaningful work, and hardiness appeared to have correspondingly higher work engagement and lower burnout. However, causal relations in the regression models cannot be inferred. A longitudinal or time-series data collection approach would be a useful next step to help better ascertain if vocational identity is a causal influence of work engagement and buffering agent against burnout through meaningful work.

Third, it is important to note that the problem of insufficient power may have impacted the moderation findings of the present study. The number of predictors in moderated multiple regression analyses affects the power needed to detect moderation effects, including inclusion of covariates (McClelland & Judd, 1993; Shieh, 2009). Including all three covariates in the moderation analyses for this study may have required a larger sample size to detect the hypothesized moderation effect in more of the other outcome variables than just the exhaustion domain of burnout.

Implications for Future Research

The current study bears important implications for the literature regarding the role of aspects of identity as personal resources in the JD-R model. One important implication is the need for more exploration of theory related to aspects of identity and expressions of personality in predicting work well-being outcomes. There is a growing body of research of the role of personality affecting well-being through the JD-R theoretical framework (see Alarcon et al., 2009; Bakker et al., 2014; Mäkinkangas et al., 2013) but little examining aspects of identity. Future research would benefit from considering aspects of identity that may provide more affective aspects with how vocational identity is defined. For example, building on work by Crocetti, Avanzi, Hawk, Fraccaroli, and Meeus (2014) who included more

context-specific facets of both personal and social components of what they called *job identity* in relation to burnout. Another identity construct that applies role identity theory (see Stets & Burke, 2000) to work is *work-based identity* (Bothma, Lloyd, & Khapova, 2015). Job identity or work-based identity may provide larger predictive effects than vocational identity, and should be examined further in relation to work well-being outcomes. Such research would also benefit from more study of models examining different positions of the relationships between aspects of identity and personality.

Potential issues of power aside, the role of hardiness in the current study may have better served as an additional mediating mechanism between vocational identity and the burnout/work engagement outcomes or some other indirect role. Hardiness could be tested as either a multiple mediator alongside meaningful work, a serial mediator, or a different moderating role using various regression-based models detailed by Hayes (2018) or through structural equation modeling (Geldholf, Preacher, & Zyphur, 2014). While different models were not planned other than the moderated mediation model examined in this study, those analyses could be conducted with the same data already collected.

There has been various research highlighting vocational identity as positively associated with adaptive traits, such as self-esteem and orientation to personal growth, and negatively associated with states of poor well-being, such as anxiety and depression (Skorikov & Vondracek, 2007, 2011). Other research has examined vocational identity as an outcome variable related to purpose in life (Strauser et al., 2006) and orientations to meaning in life and engagement (Hirschi, 2011). Vocational identity has also been examined in a multiple mediating role between callings and work engagement (Hirschi, 2012). Given those various findings, future research would benefit from examining the causal nature the relationships between aspects of identity (whether vocational identity or other work-related identity constructs), personality characteristics, and work well-being outcomes. For example, longitudinal designs could measure employees' baseline levels of vocational identity, meaningful work, and

hardiness predictors relative to work engagement and burnout outcomes. Follow-up measures of the same variables could be taken at two more time points, such as 6 months and 1 year later. Quasi-experimental designs could be conducted where employees' levels of vocational identity could be assessed then categorized into groups of higher and lower vocational identity. Interventions designed to increase vocational identity could be implemented then participants later assessed to see if work engagement had increased. Such designs could be expanded to include interventions designed to increase meaningful work and/or hardiness.

Summary and Conclusion

The current study provided some novel exploratory information regarding the role of vocational identity in predicting work engagement and burnout with a sample of adults employed full-time. When accounting for the importance of work itself in one's life, amount of perceived stress, and degree of negative mood, vocational identity was significantly positively related to work engagement and negatively related to burnout. These findings relate to the relationship of core expressions of identity with psychological states at work. Further exploration of the relationships among the variables under study revealed meaningful work to be a significant mechanism through which vocational identity may influence work engagement and burnout. The mediation and direct effects observed in these findings demonstrated how enduring and stable aspects of identity are associated with the experience of transitory states at work, such as work engagement and burnout. Additionally, the findings of the mediation models indicated how associations of identity with specific positive psychological states like meaningful work help to explain those associations. Contrary to expectations, hardiness did not have much of a moderating impact on the degree to which vocational identity related to the outcomes. The only significant moderating effect was in the model for the exhaustion subscale of burnout, with the interaction effect only being significant for high hardiness (i.e., +1 SD above the mean). It appeared high levels of hardiness increased the buffering effect against exhaustion for vocational identity. There were

no observed significant moderating impacts of hardiness on the indirect mechanism of meaningful work through which vocational identity predicted work engagement or burnout. However, post hoc direct effect regression models revealed hardiness to account for significantly more variance than vocational identity in predicting work engagement and burnout. Those results added information to how enduring and stable aspects of personality are associated with occupational well-being outcomes. This exploratory examination of the potential relationships among the variables in this study raised interesting implications for practice and future research.

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APPENDIX A: INFORMED CONSENT

Dear Participant,

My name is Greg Loebel, M.S. and I am a researcher from Colorado State University in the Department of Psychology. We are conducting a research study on attitudes about work and work-related well-being outcomes. The Principal Investigator is Bryan Dik, Ph.D. and I am the Co-Principal Investigator.
We would like you to take an online survey that has two parts. Participation will take approximately 18 minutes for part one and 5 minutes for part two. The second part of the survey will be sent to you two weeks after completing part one. Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty. While there are no direct benefits to you, we hope to gain more knowledge about how certain attitudes and beliefs about work may relate to well-being outcomes.

As compensation for your participation, you will be provided $2.16 for completing part one of the survey and an additional $0.60 for completing part two.

We will not collect your name or personal identifiers. When we report and share the data to others, we will combine the data from all participants.

Please be aware that any work performed on Amazon mTurk can potentially be linked to information about you on your Amazon public profile page, depending on the settings you have for your Amazon profile. We will not be accessing any personally identifying information about you that you may have put on your Amazon public profile page. We will not collect your mTurk worker ID. A unique anonymous ID will be created for you. Note that Amazon Mechanical Turk, Qualtrics, and CloudResearch have specific privacy policies of their own. You should be aware that these web services may be able to link your responses to your ID in ways that are not bound by this consent form and the data confidentiality procedures used in this study, and if you have concerns you should consult these services directly.
There are no perceived psychological risks of participation in this study. It is not possible to identify all potential risks in research procedures, but the researchers have taken reasonable safeguards to minimize any known and potential (but unknown) risks.

If you have any questions about the research, please contact Greg Loebel at greg.loebel@colostate.edu or Dr. Bryan Dik at bryan.dik@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553.

To indicate your consent to participate in this research and to continue to the survey, please click here:

- I consent to participate
- I DO NOT consent to participate

APPENDIX B: DEBRIEFING FORMS

Debriefing Form Wave 1

Thank you for completing the first part of this study!

You will be contacted in two weeks to complete the second part of the study. The second part will involve a shorter survey than the one you just completed.

You should understand how your data will be used: Your responses will be kept confidential. No identifying information was collected about you and your name will not be reported with your data. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials.

If you have any questions about the research, please contact Greg Loebel at greg.loebel@colostate.edu or Dr. Bryan Dik at bryan.dik@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553.
We realize that some of the questions asked may have provoked strong emotional reactions. As researchers, we do not provide mental health services and we will not be following up with you after the study. However, we want to provide you with a list of clinical resources that are available, should you decide you need assistance at any time.

If you feel upset after having completed the study or find that some questions or aspects of the study triggered distress, talking with a qualified clinician may help. If you feel you would like assistance, please contact:

- Substance Abuse and Mental Health Services Administration (SAMHSA) National Helpline

  1-800-662-HELP (4357)

  SAMHSA's National Helpline is a confidential, free, 24-hour-a-day, 365-day-a-year, information service for individuals and family members facing mental and/or substance use difficulties. This service provides referrals to local treatment facilities, support groups, and community-based organizations.

- National Suicide Prevention Lifeline

  1-800-273-TALK (8255) or click for Live Online Chat

  If you or someone you know is suicidal or in emotional distress, contact the National Suicide Prevention Lifeline. Trained crisis workers are available to talk 24 hours a day, 7 days a week. Your confidential and toll-free call goes to the nearest crisis center in the Lifeline national network. These centers provide crisis counseling and mental health referrals.

- Emergency Medical Services – 911
  If the situation is potentially life-threatening, get immediate emergency assistance by calling 911, available 24 hours a day.

Debriefing Form Wave 2

Thank you for your participation in this study!

The purpose of this study was to examine how vocational identity, factors involved in feeling stress, and the degree to which work is meaningful may influence whether people experience burnout or feel more engaged in their work. You completed the first survey two weeks ago and this shorter survey just now. For the second survey we wanted to see if your responses about burnout and work engagement were stable over time.

You should understand how your data will be used: Your responses will be kept confidential. No identifying information was collected about you and your name will not be reported with your data. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials.

If you have any questions that remain unanswered, feel free to contact Greg Loebel at greg.loebel@colostate.edu or Dr. Bryan Dik at bryan.dik@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553.

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- National Suicide Prevention Lifeline

  1-800-273-TALK (8255) or click for Live Online Chat

If you or someone you know is suicidal or in emotional distress, contact the National Suicide Prevention Lifeline. Trained crisis workers are available to talk 24 hours a day, 7 days a week. Your confidential and toll-free call goes to the nearest crisis center in the Lifeline national network. These centers provide crisis counseling and mental health referrals.

- Emergency Medical Services – 911

  If the situation is potentially life-threatening, get immediate emergency assistance by calling 911, available 24 hours a day.

APPENDIX C: MEASURES

My Vocational Situation, Vocational Identity Subscale

INSTRUCTIONS: Try to answer each of the following statements as mostly TRUE or mostly FALSE. Click the answer that best represents your present opinion.

1.	I need reassurance that I have made the right choice of occupation.	T F
2.	I am concerned that my present interests may change over the years.	T F
3.	I am uncertain about the occupations I could perform well.	T F
4.	I don't know what my major strengths and weaknesses are.	T F
5.	The jobs I *can do* may not pay enough to live the kind of life I want.	T F
6.	If I had to make an occupational choice right now, I'm afraid I would make a bad choice.	T F
7.	I need to find out what kind of career I should follow.	T F
8.	Making up my mind about a career has been a long and difficult problem for me.	T F
9.	I am confused about the whole problem of deciding on a career.	T F
10.	I am not sure that my present occupational choice or job is right for me.	T F
11.	I don't know enough about what workers do in various occupations.	T F
12.	No single occupation appeals strongly to me.	T F
13.	I am uncertain about which occupation I would enjoy.	T F
14.	I would like to increase the number of occupations I could consider.	T F
15.	My estimates of my abilities and talents vary a lot from year to year.	T F
16.	I am not sure of myself in many areas of life.	T F
17.	I have known what occupation I want to follow for less than one year.	T F
18.	I can't understand how some people can be so set about what they want to do.	T F

Hardiness Resilience Gauge[1]

INSTRUCTIONS: In the next set of items, you will be presented with a series of statements. Read each statement carefully and indicate how true each statement is for you.

There are four response options for each statement:
–Not at all true –A little true –Quite true –Completely true

Indicate your response by selecting the appropriate response option.

Choose the response option that seems to describe you the best.

There are no right or wrong answers. Answer openly and honestly by indicating what you are actually like and not how you would like to be.

Not true at all	A little true	Quite true	Completely true
0	1	2	3

Sample items:

- I spend most of my life doing things that are meaningful.
- I can achieve my goals if I work hard.
- I don't like to make changes in my regular activities.
- How things go in my life depends on my own actions.
- Changes in routine are interesting to me.
- I look forward to my daily activities.

Work as Meaning Inventory

Items:

Positive Meaning	1. I have found a meaningful career.
	4. I understand how my work contributes to my life's meaning.
	5. I have a good sense of what makes my job meaningful.
	8. I have discovered work that has a satisfying purpose.
Meaning Making Through Work	2. I view my work as contributing to my personal growth.
	6. My work helps me better understand myself.
	8. My work helps me make sense of the world around me.
Greater Good Motivations	3. My work really makes no difference to the world. (R)
	5. I know my work makes a positive difference in the world.
	9. The work I do serves a greater purpose.

INSTRUCTIONS: Work can mean a lot of different things to different people. The following items ask about how you see the role of work in your own life. Please honestly indicate how true each statement is for you and your work.

Absolutely Untrue	Somewhat Untrue	Neither Untrue nor True	Somewhat True	Absolutely True
1	2	3	4	5

1. I have found a meaningful career.
2. I view my work as contributing to my personal growth.
3. My work really makes no difference to the world.
4. I understand how my work contributes to my life's meaning.
5. I have a good sense of what makes my job meaningful.
6. I know my work makes a positive difference in the world.
7. My work helps me better understand myself.
8. I have discovered work that has a satisfying purpose.
9. My work helps me make sense of the world around me.
10. The work I do serves a greater purpose.

Maslach Burnout Inventory – General Survey[2]

INSTRUCTIONS: Below are 16 statements of job-related feelings. Please read each statement carefully and decide if you ever feel this way about ***your*** job. If you have ***never*** had this feeling, check the number "0" (zero) for that statement. If you have had this feeling, indicate ***how often*** you feel it by checking the number (from 1 to 6) that best describes how frequently you feel that way.

How often:	0	1	2	3	4	5	6
	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

Sample items:

- I feel emotionally drained from my work.
- In my opinion, I am good at my job.
- I doubt the significance of my work.

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Utrecht Work Engagement Scale – 9

Items:

Vigor	1. At my work, I feel bursting with energy
	4. At my job, I feel strong and vigorous
	8. When I get up in the morning, I feel like going to work
Dedication	5. I am enthusiastic about my job
	7. My job inspires me
	9. I am proud of the work that I do
Absorption	9. I feel happy when I am working intensely
	11. I am immersed in my work
	14. I get carried away when I'm working

INSTRUCTIONS: The following 9 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, check '0' (zero). If you have had this feeling, indicate how often you feel it by choosing the number (from 1 to 6) that best describes how frequently you feel that way.

	Almost never	Rarely	Sometimes	Often	Very often	Always
0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

1. At my work, I feel bursting with energy
2. At my job, I feel strong and vigorous
3. I am enthusiastic about my job
4. My job inspires me
5. When I get up in the morning, I feel like going to work
6. I feel happy when I am working intensely
7. I am proud of the work that I do
8. I am immersed in my work
9. I get carried away when I'm working

International Positive and Negative Affect Schedule Short Form; Negative Affect subscale

INSTRUCTIONS: Thinking about yourself and how you normally feel, to what extent **over the past few weeks** have you generally felt:

very slightly or not at all	a little	moderately	quite a bit	very much
1	2	3	4	5

1. Upset
2. Hostile
3. Ashamed
4. Nervous
5. Afraid

Work Centrality Scale – 3 item version

INSTRUCTIONS: Using a rating scale of 1 – 5, indicate how much you agree or disagree with each of the following statements.

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
1	2	3	4	5

1. The major satisfaction in my life comes from my work.
2. The most important things that happen to me involve my work.
3. I have other activities more important than my work. (R)

Perceived Stress Scale – 4-item version

INSTRUCTIONS: The questions in this scale ask you about your feelings and thoughts ***during the last month***. In each case, you will be asked to indicate by checking *how often* you felt or thought a certain way.

Never	Almost never	Sometimes	Fairly Often	Very Often
0	1	2	3	4

1. How often have you felt that you were unable to control the important things in your life?
2. How often have you felt confident about your ability to handle your personal problems? (R)
3. How often have you felt that things were going your way? (R)
4. How often have you felt difficulties were piling up so high that you could not overcome them?

DEMOGRAPHIC INFORMATION FORM

GENDER

- Male
- Female
- Other (please specify)
- Prefer not to answer

ETHNICITY

- White/Caucasian
- Hispanic/Latino
- Asian American/Pacific Islander
- African American/Black
- Arab American/Middle Eastern
- American Indian/Native American/Alaska Native
- Biracial/Multiracial
- Other (please specify)
- Prefer not to answer

EDUCATION
What is your highest level of education?

- 6 years or less
- Some high school
- Completed high school or high school equivalent
- Some college
- Completed college
- Some graduate or professional school
- Completed graduate or professional school

AGE

_____

INCOME

What do you think your total income was last year for yourself before taxes? _____

ARE YOU CURRENTLY EMPLOYED?

- Yes
- No

HOURS WORKED PER WEEK

How many hours per week do you work in paid employment, on average? _____

TYPE OF WORK

Briefly describe the type of work you do (for example: hospice nurse; accountant; instructional designer; assembly line worker, etc.)

_____

LENGTH OF TIME DOING TYPE OF WORK

How long have you been doing that type of work overall? (Please respond in years and months format. For example: 2 years 8 months) _____

LENGTH OF TIME AT CURRENT EMPLOYER

How long have you been working at your current place of employment? (Please respond in years and months format. For example: 3 years 2 months) _____

JOB TITLE

What is your current job title? _____