

# Linking Job Demands and Resources to Employee Engagement and Burnout: A Theoretical Extension and Meta-Analytic Test

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We refine and extend the job demands–resources model with theory regarding appraisal of stressors to account for inconsistencies in relationships between demands and engagement, and we test the revised theory using meta-analytic structural modeling. Results indicate support for the refined and updated theory. First, demands and burnout were positively associated, whereas resources and burnout were negatively associated. Second, whereas relationships among resources and engagement were consistently positive, relationships among demands and engagement were highly dependent on the nature of the demand. Demands that employees tend to appraise as hindrances were negatively associated with engagement, and demands that employees tend to appraise as challenges were positively associated with engagement. Implications for future research are discussed.

*Keywords:* employee engagement, burnout, job demands and resources, challenge and hindrance stress, meta-analysis

Among organizational managers and executives, there is widespread interest in employee *engagement*, originally defined by Kahn (1990, p. 694) as the harnessing of organization members' selves to their work roles by which they employ and express themselves physically, cognitively, and emotionally during role performances, and later defined by Schaufeli, Salanova, González-Romá, and Bakker (2002, p. 74) as a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption. Engagement has also been viewed as feeling responsible for and committed to superior job performance (Britt, 1999, 2003), and on the basis of their narrative review of the literature, Macey and Schneider (2008) described engagement as a broad construct consisting of state, trait, and behavioral forms that connote a blend of affective energy and discretionary effort directed to one's work and organization. Managerial interest in engagement is understandable given claims from consultancies that having engaged employees results in higher shareholder return, profitability, productivity, quality, and customer satisfaction as well as lower absenteeism and turnover (e.g., Wellins, Bernthal, & Phelps, n.d.). Published scientific research on engagement has been surging over the past 5 years, and results indicate that engagement is associated with positive job attitudes (e.g., Harter, Schmidt, & Hayes, 2002; Schaufeli, Taris, & van Rhenen, 2008), lower turnover (e.g., Bakker, Demerouti, & Schaufeli, 2005; Harter et al., 2002; Saks, 2006; Schaufeli & Bakker, 2004), and higher levels of performance at the individual and unit levels (e.g., Harter et al., 2002; Rich, LePine, & Crawford, in press; Salanova, Agut, & Peiró, 2005; Schneider,

Macey, Barbera, & Martin, 2009; Xanthopoulou, Bakker, Heuven, Demerouti, & Schaufeli, 2008).

Given the apparent desirability of having engaged employees, researchers have focused a great deal of their attention on identifying antecedent conditions of engagement that could, in turn, inform managerial efforts to foster increased levels of engagement among employees. Kahn (1990), for example, argued that the psychological conditions of meaningfulness, safety, and availability determine levels of employee engagement, and that these psychological conditions are influenced in turn by multiple characteristics of both the work environment and the individual employee. Britt's (1999) triangle model of responsibility positions job clarity, job control, and job relevance as keys to engagement. Harter et al. (2002) suggested 12 diverse work characteristics and management practices that function as key causes of engagement, some examples of which include clarity of work expectations, supportiveness of supervisors and coworkers, and opportunities for growth and development. Maslach and Leiter (1997) proposed that the main predictors of engagement are factors such as job demands, job control, rewards and recognition, a community of support, fairness, and compatibility of values between job requirements and personal principles. Finally, Macey and Schneider (2008) proposed that work attributes such as variety, challenge, and autonomy, in addition to personal characteristics and leadership, should all influence employee engagement.

Common across these perspectives is the focus on perceived working conditions as predictors of engagement. The job demands–resources model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) parsimoniously organizes this research by representing the majority of job attributes and other related working conditions with two overarching categories—demands and resources. In fact, over half of all the published empirical research on engagement and its antecedents has been explicitly grounded in this perspective. Essentially, the job demands–resources model suggests that job resources promote engagement through a moti-

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vational process and that job demands contribute to *burnout*—a syndrome of weariness with work characterized by exhaustion, cynicism, and inefficacy (Maslach & Leiter, 1997, 2008)—through an energy depletion process. The job demands–resources perspective is useful because, to the extent that the relationships of engagement with specific demands or resources do not vary significantly within these overarching categories, the model provides a good vehicle for summarizing these relationships in a concise way. Unfortunately, however, the model may be overly parsimonious. Because research grounded in this perspective has produced conflicting, inconsistent, and unexpected findings on the relationship between demands and engagement (e.g., Bakker, van Emmerik, & Euwema, 2006), scholars have generally concluded that demands are not relevant for predicting engagement (Schaufeli & Bakker, 2004). In contrast, we argue that the job demands–resources model fails to account for the important distinction among types of demands with respect to the way they tend to be appraised by employees (e.g., Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Lazarus & Folkman, 1984) and that when this distinction is made, meaningful relationships between demands and engagement emerge.

Thus, given the increasing interest in employee engagement and the parsimony of the job demands–resources model in organizing the antecedent influences of working conditions on engagement and burnout, the general purpose of our research is to quantitatively summarize and test the validity of the job demands–resources model as a theoretical basis for the influence of working conditions on engagement and burnout. We focus on individual-level perceptions of working conditions and their relationships with individual perceptions of engagement and burnout; however, for simplicity of presentation and consistency with terminology used in prior research, we refer to relationships between job demands, job resources, engagement, and burnout. In providing the first quantitative summary of the research findings in this area, we resolve inconsistencies in job demands–engagement relationships by integrating knowledge from the transactional theory of stress (Boswell, Olson-Buchanan, & LePine, 2004; Cavanaugh et al., 2000; Lazarus & Folkman, 1984; LePine, Podsakoff, & LePine, 2005) to propose that job demands tending to be appraised by employees as *hindrances* are negatively related to engagement, whereas job demands tending to be appraised by employees as *challenges* are positively related to engagement. We tested hypotheses from this refined and updated theory by obtaining meta-analytic estimates from primary research of the relationships between job demands, resources, engagement, and burnout, and by submitting that meta-analytic correlation matrix to a path analysis to quantitatively summarize and statistically verify the propositions of this new model.

Our research makes several important theoretical contributions. First, although prior meta-analyses have examined some of the relationships in our model (e.g., Halbesleben, 2006; Lee & Ashforth, 1996; LePine et al., 2005), the most central relationships with engagement have not been meta-analyzed, and no prior meta-analytic research has examined the relationships simultaneously in a way that allows for the falsification of a theoretical model in which engagement plays a central role. Thus, our research tests a theoretical model of engagement rather than isolated, disconnected relationships that could change if considered in concert with other variables. Second, by extending the distinction of challenges ver-

sus hindrances in the examination of the relationship between demands and engagement, we advance theoretical understanding of engagement by challenging status quo thinking in an area where quite a bit of research has taken place. Importantly, we show that true relationships exist between different types of demands and engagement where scholars have generally concluded there are none (e.g., Hallberg, Johansson, & Schaufeli, 2007; Llorens, Bakker, Schaufeli, & Salanova, 2006; Mauno, Kinnunen, & Ruokolainen, 2007; Schaufeli & Bakker, 2004; Schaufeli et al., 2008). Third, although prior research has shown that challenge and hindrance stressors are related in opposing directions to outcomes such as performance, motivation, and job attitudes (LePine et al., 2005; Podsakoff, LePine, & LePine, 2007), none of this research has examined relationships with engagement. Although it might seem reasonable to presume that engagement should operate similarly, researchers have demonstrated that engagement is a unique concept that has functional relationships with more distal criteria that differ from various other job attitudes and motivational concepts. For example, Rich et al. (in press) showed that engagement was distinct from job satisfaction, job involvement, intrinsic motivation, task performance, and citizenship behavior. Further, they showed that the indirect effects of proposed antecedents on performance and citizenship were mediated entirely through engagement. None of the other attitudes (all included as simultaneous mediators in their model) exhibited significant indirect effects. Thus, our research provides evidence necessary to test, rather than assume by virtue of its presumed similarity to other attitudinal or motivational concepts, that engagement exhibits hypothesized relationships with challenge and hindrance stressors. Finally, by providing evidence as to the consistency of engagement relationships within the broad categories of resources, challenge demands, and hindrance demands, we provide an examination of the support for the utility of the job demands–resources perspective and our extension of it as a means of parsimoniously depicting relationships among working conditions and engagement.

## A Theory of Differentiated Job Demands and Resources

### The Job Demands and Resources Perspective

The job demands–resources perspective assumes that whereas every occupation may have its own specific risk factors associated with motivation and job stress, these factors can be classified in two general categories—job demands and job resources—that constitute an overarching model that may be applied to various occupational settings, regardless of the particular demands and resources involved (Bakker & Demerouti, 2007; Bakker, Demerouti, de Boer, & Schaufeli, 2003; Bakker, Demerouti, & Euwema, 2005; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). *Job demands* refer to those physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain psychological costs (e.g., exhaustion) and include aspects such as workload, time pressure, and difficult physical environments. *Job resources* refer to those aspects of the job that are functional in achieving work goals, stimulate personal growth and development, and reduce job demands and their associated physiological and psychological costs and include aspects such as job control, opportunities for devel-

opment, participation in decision making, task variety, feedback, and work social support.

The job demands–resources model assumes two processes that explain the relationships with engagement and burnout (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). First, job demands are assumed to activate an energy depletion process whereby an employee's sustained increases in effort to meet perceived job demands are met with an increase in compensatory psychological and physiological costs that drain the employee's energy. The depletion of energy and increased stress from responding to demands gradually leads employees to feel used up and worn out. Thus, job demands are assumed to have a direct positive relationship with burnout. Second, job resources are assumed to activate a motivational process whereby perceived resources that are instrumental in achieving work goals can also foster employees' growth, learning, and development; satisfy needs for autonomy and competence; and increase willingness to dedicate one's efforts and abilities to the work task. These perceptions and beliefs increase the degree to which individuals are willing to invest their selves into their role performances. Thus, job resources are assumed to have a direct positive relationship with engagement. Empirical evidence from multiple studies in various occupations and countries confirms that job demands are positively associated with burnout, whereas job resources are positively related to engagement (Bakker & Demerouti, 2007).

Evidence from several studies (e.g., Bakker, Demerouti, & Euwema, 2005; Bakker, Demerouti, & Schaufeli, 2003; Schaufeli & Bakker, 2004) also suggests that job resources have a direct negative relationship with burnout. The conservation of resources theory suggests this is so because stress occurs when resources are lost or threatened, and this stress will lead employees to burn out over time (Hobfoll & Freedy, 1993). Individuals with larger pools of resources are more easily able to meet demands and to protect themselves from the strains of resource depletion (Lee & Ashforth, 1996), whereas individuals with limited resources to meet demands more quickly accrue strains that over time result in burnout. Thus, job resources are assumed to have a direct negative relationship with burnout.

Finally, although the job demands–resources model clearly predicts that job demands lead to burnout, the evidence concerning the relationship between job demands and engagement is ambiguous, and as a result, scholars have generally concluded that demands are not relevant for predicting engagement. Further, when researchers have found demands and engagement to be related, the findings were most often unexpected rather than hypothesized. For example, in a study of job demands, resources, burnout, and engagement using four independent employee samples, Schaufeli and Bakker (2004) concluded from their structural equation models that job demands do not predict engagement. In a later study, Schaufeli et al. (2008) unexpectedly found that job demands such as time pressure (e.g., having to work very fast) were actually positively related to engagement. As other examples of unexpected findings, Sonnentag (2003) found in a study of 147 German public service employees that although the job demand of situational constraints (e.g., missing or defective equipment; missing or outdated information) was significantly negatively associated with engagement, the job demand of time pressure was not significantly related to engagement. Xanthopoulou, Bakker, Demerouti, and Schaufeli (2007) found in a study of 714 Dutch employees that although two

job demands (emotional dissonance, organizational changes) were significantly negatively related to engagement, one other demand (high workload) was significantly positively related to engagement. Bakker et al. (2006) found that although physical workplace demands were negatively related to engagement, work time pressure demands were positively related to engagement, and the positive relationships were of a greater magnitude than the negative ones (average  $r = .35$  vs.  $r = -.19$ , respectively).

As these examples reveal, the general conclusion from previous research that demands and engagement are not related does not quite tell the whole story. Unexpectedly, in some cases demands appear to be unrelated to engagement, in other cases demands appear to detract from engagement, and yet in other cases demands appear to promote engagement. In the aggregate, these differences may result in overall relationships that appear weak and insignificant, especially if these differences are assumed to result from random variation in the relationships of demands and engagement. A shortcoming of the job demands–resources model is that it currently lacks theory to account for this variation, and given the importance of predicting engagement in the model, it is crucial to consider whether these differences in relationships with demands are systematic, and if so, what explains them? It is here that we clarify and update the job demands–resources model with reasoning from the transactional theory of stress to show that demands vary by type. In essence, we argue that the failure to differentiate the type of demand in the current job demands–resources model masks relationships with engagement that in fact exist. Although all demands require sustained effort, deplete energy, and result in strain and burnout, demands also vary systematically in terms of the psychological responses they tend to trigger. Thus, as we explain below, whereas some demands should reduce engagement, other demands may actually promote engagement.

### Differentiating Job Demands

According to the transactional theory of stress, people appraise stressful situations such as job demands in terms of their significance for well-being as either potentially challenging or threatening (Lazarus & Folkman, 1984). Supporting this reasoning, Cavanaugh et al. (2000) found two factors, labeled *challenge* stressors and *hindrance* stressors, underlying scores on items from several popular measures of stress. Challenges tend to be appraised as stressful demands that have the potential to promote mastery, personal growth, or future gains. Examples of challenges include demands such as a high workload, time pressure, and high levels of job responsibility. Employees tend to perceive these demands as opportunities to learn, achieve, and demonstrate the type of competence that tends to get rewarded. Hindrances tend to be appraised as stressful demands that have the potential to thwart personal growth, learning, and goal attainment. Examples of hindrances include demands such as role conflict, role ambiguity, organizational politics, red tape, and hassles. Employees tend to perceive these demands as constraints, barriers, or roadblocks that unnecessarily hinder their progress toward goal attainment and rewards that accrue as a result of being evaluated as an effective performer. We acknowledge that appraisals of demands vary somewhat as a function of the characteristics of the individual doing the appraising (Lazarus & Folkman, 1984). However, as Brief and George (1995) argued, work contexts evoke a fairly consistent economic

meaning to individuals, and consequently, individuals tend to appraise work-related stressors in fairly consistent ways. Empirical evidence from samples of executives (Cavanaugh et al., 2000), lower level employees (Boswell et al., 2004), and part-time master of business administration (MBA) students (LePine et al., 2005) supports the notion that despite individual differences and experiences that result in unique perceptions regarding the level of job demands, certain types of demands are more likely to be appraised as challenges, and other types of demands are more likely to be appraised as hindrances.

The outcome of the initial appraisal of demands as challenges or hindrances influences subsequent emotions and cognitions, which in turn, influence how a person copes with the demand (Lazarus & Folkman, 1984; LePine et al., 2005). Challenge demands, because they tend to be appraised as having the potential to promote personal growth or gains, tend to trigger positive emotions (e.g., eagerness, excitement, exhilaration) and an active or problem-solving style of coping (e.g., strategizing, increases in effort). Individuals should be more willing to invest themselves in response to challenging demands because they are likely to feel more confident and secure that expending their effort will allow them to successfully meet these demands, and they are likely to see the opportunity for growth or gain achieved by meeting them as meaningful and desirable (Kahn, 1990; Lazarus & Folkman, 1984). As an example, people with a high level of job responsibility are likely to feel that they can successfully meet this demand by working very hard and that by doing so they will experience a sense of personal accomplishment and perhaps receive formal recognition. This is consistent with Macey and Schneider's (2008) view that challenging situations promote engagement when employees trust their investment of time and energy will be rewarded in some meaningful way. Further, Britt, Adler, and Bartone's (2001) research has shown that perceiving opportunity and meaning in the face of stressful demands predicts individuals' deriving benefits from coping with those demands. Other research has shown that the experience of positive emotions and the experience of meaning emanating from being challenged are both associated with greater levels of motivation and engagement (Erez & Isen, 2002; May, Gilson, & Harter, 2004). This is also consistent with reasoning and empirical evidence from the job characteristics model, which has shown that job characteristics that promote the experience of meaningfulness and responsibility are highly associated with internal work motivation (Fried & Ferris, 1987; Hackman & Oldham, 1980). As people feel that coping efforts will be effective and expect to experience meaning in meeting these challenges, they become more willing to invest the energy to adopt more active, problem-focused styles of coping, and such investments should be reflected in greater engagement. Thus, challenge demands should have a positive relationship with engagement.

Hindrance demands, because they tend to be appraised as having the potential to harm or block personal growth or gains, tend to trigger negative emotions (e.g., fear, anxiety, anger) and a passive or emotional style of coping (e.g., rationalization, withdrawing from the situation). Individuals should be less willing to invest themselves to respond to hindering demands because the negative emotions they experience are likely to make them feel unable to adequately deal with these demands. In fact, because people are likely to believe that using up resources to cope with these demands will block them from attaining meaningful outcomes, they

are apt to have little motivation to actively cope with these demands and, thus, resort to a more passive, disengaging style of coping to deal with the negative emotions associated with these hindrances (Kahn, 1990). For example, people experiencing conflicting role demands at work are likely to believe that no reasonable amount of effort will be sufficient to simultaneously satisfy each demand, and they will likely devote energy that could otherwise be dedicated to meeting demands associated with valued outcomes to coping with the anxiety and frustration resulting from leaving conflicting roles unfulfilled. This is consistent with Harter et al.'s (2002) view that people are less likely to be cognitively and emotionally engaged to the extent that they encounter obstacles such as not knowing what is expected of them or lacking what they need to do their work. Indeed, research has shown that resources consumed dealing with negative emotions and the psychological threat associated with hindering situations are associated with decreased levels of motivation and engagement (May et al., 2004; Porath & Erez, 2009). This is also consistent with reasoning and findings from self-determination theory that show that threats to the satisfaction of needs for competence, relatedness, and autonomy serve to weaken internal motivation (Deci et al., 2001; Meyer & Gagné, 2008). Thus, as people feel that they will be frustrated in their efforts to overcome these hindrances or barriers and perceive they will be blocked from attaining meaningful outcomes, they become less willing to invest energy to deal with hindrances directly and will resort to more passive, emotion-focused styles of coping such as those reflected in withdrawal and decreased engagement. Thus, hindrance demands should have a negative relationship with engagement.

To summarize our refinement of the job demands–resources perspective, all job demands, whether challenges or hindrances, should be positively related to burnout because the increased effort associated with the appraisal of demands and coping with them results in strain (e.g., anxiety, fatigue), which in turn, is dissatisfying and over time can lead to employees feeling exhausted and worn out. However, this does not mean that individuals who may at some point feel exhausted will necessarily be unwilling to invest themselves (be engaged) when they are confronted with demands, especially in regards to demands they appraise as being particularly meaningful and important to address. As we have reasoned, on the one hand, challenge demands should be positively related to engagement because they trigger positive emotions and active, problem-focused coping styles that increase willingness to invest energy in efforts to meet these demands. Individuals may work very passionately to respond to challenge demands because they believe doing so is meaningful and important, even though they simultaneously recognize that doing so may also leave them feeling exhausted. On the other hand, hindrance demands should be negatively related to engagement because they result in negative emotions and passive, emotion-focused coping styles that reflect withdrawal and reduced employee engagement. Individuals may be very detached in addressing hindrance demands because they believe they will be frustrated by having to waste additional energy and personal resources, beyond the exhaustion they may experience from having to deal with these obstacles. Finally, and consistent with previous theory, job resources should be negatively related to burnout because individuals with greater resources are more easily able to meet demands and to protect themselves from the strains of further resource depletion, whereas those with fewer

resources accrue strains that result in burnout more quickly. Job resources should be positively associated with engagement because they are instrumental in achieving work goals, foster employees' growth and development, satisfy needs for autonomy and competence, and increase willingness to dedicate one's efforts and abilities to the work task.

*Hypothesis 1:* Job demands, whether challenges or hindrances, are positively associated with burnout.

*Hypothesis 2:* Job resources are negatively associated with burnout.

*Hypothesis 3:* Job resources are positively associated with engagement.

*Hypothesis 4:* The relationship between job demands and engagement depends on the type of the demand such that job challenge demands are positively associated with engagement, and job hindrance demands are negatively associated with engagement.

## Method

To test our hypotheses, we used Hunter and Schmidt's (1990) method of meta-analysis. Accordingly, we estimated true population correlations among variables by sample weighting correlations from primary studies and by applying formulas that account for sampling and measurement error in both the predictor and criterion. We searched the PsycINFO and Web of Science databases through April 2008 for articles with meta-analyzable results. We used the keyword *engagement* independently and in conjunction with the keywords *burnout*, *demands*, and *resources* to conduct the search. To be considered, studies needed to include employee engagement or burnout as an individual-level criterion and at least one job demand or resource and report a correlation coefficient ( $r$ ) or information that could be used to compute this coefficient.<sup>1</sup> To identify additional studies, we examined the reference sections of meta-analyses, narrative reviews, book chapters, and conceptual articles on employee engagement and the job demands–resources model. We also contacted 16 scholars who have published in the employee engagement and/or job demands–resources domain and asked for unpublished manuscripts or raw data. Finally, we included previously unidentified manuscripts if they were in our possession or were identified by friendly reviewers. The final database included 55 manuscripts and articles reporting relationships from 64 samples.

The first and second authors jointly developed a standardized procedure for coding the articles and identified an exhaustive set of decision rules for all coding decisions. The first author then used this procedure to independently code all studies. We recognized that questions would arise in the course of coding the articles, and we decided that when this happened, the other two authors would be contacted, and the issue would be resolved through consensus. To provide a check on the accuracy and reliability of coding regarding (a) the way the variables in the primary studies were categorized, (b) the effect sizes, and (c) the reliabilities of the predictor and criterion, the second author independently coded 20 studies. Across these studies, we found that the first and second authors agreed 97% on the categorization of the variables, 100%

on the effect sizes, and 95% on the reliabilities. We returned to the primary studies to determine where the differences occurred. Nearly all the discrepancies were due to mistakes in data entry, and all other disagreements were minor and resolved through a consensus discussion.

Measures of demands were categorized as challenges or hindrances on the basis of the two-dimensional framework that has been validated by factor analysis, subject matter experts' categorizations, employee ratings of job demands as challenging and/or hindering, critical incident techniques, and previous meta-analyses (Boswell et al., 2004; Cavanaugh et al., 2000; LePine, LePine, & Jackson, 2004; LePine et al., 2005; Podsakoff et al., 2007). When there was doubt as to the appropriate category for a particular measure, we examined the content of the measure and reached a consensus using Lazarus and Folkman's (1984) theory. Consistent with this body of previous research, job challenge demands included measures of the level of attention required by job/role demands, job complexity, job responsibility, pressure to complete tasks, time urgency, and quantitative and subjective workload; whereas job hindrance demands included measures of situational constraints, hassles, organizational politics, resource inadequacies, role ambiguity, role conflict, and role overload. We note that our search identified studies with measures of demands that combined challenges and hindrances (e.g., Jackson, Rothmann, & van de Vijver, 2006) or were difficult to classify as either challenges or hindrances for other reasons (e.g., emotional demands; Llorens et al., 2006). Although we did not report meta-analyses that included effect sizes from these measures, they are available from the first author upon request. Measures of resources included job control; autonomy; coworker, supervisor, and organization support; feedback; access to information; work opportunities for development; positive social climate; innovative organization climate; job variety; and positive workplace events.

In studies grounded explicitly in the job demands–resources perspective, employee engagement has been measured predominantly using the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2002). We found fewer studies relating job demands or resources with engagement measured by scales on the basis of other perspectives (e.g., Britt, 1999; Kahn, 1990; May et al., 2004). One other common measure of employee engagement is the Gallup Workplace Audit (Harter et al., 2002). This measure comprises employee perceptions of work characteristics such as supervisor feedback and coworker support considered to be “engagement conditions,” each of which is a causal contributor to engagement but not a measure of engagement itself (Harter & Schmidt, 2008). Because associations between job resources and this measure of engagement may be driven by overlap in predictor and criterion, the Gallup measure of engagement was not included in this analysis. Finally, Maslach and Leiter's (1997) perspective equates engagement and burnout as exact empirical opposites by

<sup>1</sup> Salanova et al.'s (2005) study, which surveyed three employees from each of 114 work units of restaurants and hotel chains and aggregated employee data to the work-unit level, was included. This study contributed only one estimate of the resource–engagement relationship to the meta-analysis, and we chose to retain it in the analysis because the ratio of employees to work units was very small (3:1), and the effect size was consistent with those reported at the individual level of analysis.

definition rather than by hypothesis, and for this reason studies measuring engagement by reverse-scoring measures of burnout (e.g., Maslach & Leiter, 2008) were excluded from the analysis, as a test for covariation between this measure of engagement and burnout is not possible. As for burnout, it has been measured in job demands–resources research nearly exclusively using some form of the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996; Schaufeli, Leiter, Maslach, & Jackson, 1996). Fewer studies used alternative measures of burnout (e.g., Little, Simmons, & Nelson, 2007). We compared the results of our meta-analyses using data from all samples regardless of which measure of engagement or burnout was used to restricted meta-analyses using data from research that only used the UWES and the MBI. Results and conclusions are virtually identical between the two sets of analyses, and we report the meta-analyses from the studies using the full set of engagement and burnout measures here. Meta-analyses of samples using only the UWES and MBI measures are available from the first author upon request. In studies with multiple measures of a construct, we calculated average correlations and reliabilities ensuring that each sample contributed one independent relationship to the meta-analysis.<sup>2</sup>

## Results

Table 1 reports the results of the meta-analyses among the study constructs, giving the number of correlations ( $k$ ), total sample size ( $N$ ), estimated sample-weighted mean correlation ( $r$ ), estimated true correlation corrected for sampling error and unreliability ( $\rho$ ), and the 95% confidence interval around the estimated true correlation (95% CI). Confidence intervals provide an estimate of the variability around the estimated mean correlation; a 95% confidence interval excluding zero indicates that if we repeatedly sampled the population of correlations, 97.5% or more of the associated confidence intervals would exclude zero (the other 2.5% of the average correlations would lie in the other tail of the distribution) (Judge, Ilies, Bono, & Gerhardt, 2002).

The first column of Table 1 includes meta-analyses with undifferentiated job demands to estimate a path model of the conventional job demands–resources perspective. This column shows that undifferentiated demands have a positive relationship with burnout ( $\rho = .27, p < .05$ ) and a negative relationship with engagement ( $\rho = -.07, p < .05$ ). We note here that our estimate for the job demands–burnout relationship is very consistent with Lee and Ashforth's (1996) estimate (average corrected correlation = .28). These results appear to support the conventional propositions of the job demands–resources model that job demands are primarily predictive of burnout, whereas job demands are much less relevant to engagement.

The second and third columns of Table 1, however, include meta-analyses with job demands differentiated as challenges and hindrances, respectively, to estimate the refined model we have proposed. These columns show that although both types of job demands still have positive relationships with burnout (challenge with burnout,  $\rho = .16, p < .05$ ; hindrance with burnout,  $\rho = .30, p < .05$ ), job demands differentiated as challenges and hindrances now also have opposing relationships with engagement. Challenge demands have a positive relationship with engagement ( $\rho = .16, p < .05$ ), whereas hindrance demands have a negative relationship with engagement ( $\rho = -.19, p < .05$ ). Of note, both of these

estimates are larger in magnitude than is the estimate of undifferentiated demands with engagement, and their signs are in the direction expected. That is, challenge demands are associated with higher levels of engagement, whereas hindrance demands are associated with lower levels of engagement. Thus, the separation of job demands into challenges and hindrances uncovers true relationships that exist between demands and engagement that have thus far been masked by their nondistinction in the traditional job demands–resources model.

The fourth column of Table 1 presents relationships of resources with burnout and engagement. This column shows that job resources have a positive relationship with engagement ( $\rho = .36, p < .05$ ) and that job resources have a negative relationship with burnout ( $\rho = -.27, p < .05$ ). These relationships support the predictions of the job demands–resources model that job resources positively predict engagement but can also negatively predict burnout. The final column shows that burnout and engagement have a strong negative relationship ( $\rho = -.48, p < .05$ ), which is consistent with their positioning in the job demands–resources model as independent, yet negatively correlated constructs (Schaufeli & Bakker, 2004).

Because we are interested in the simultaneous effects of the job demands and resources antecedents on the engagement and burnout outcomes, and to formally test our hypotheses, we input matrices of the relevant estimated true correlations using the harmonic means of the cell samples sizes into LISREL 8.52 (Jöreskog & Sörbom, 2002) to estimate meta-analytic path models using procedures outlined by Viswesvaran and Ones (1995). As shown in the top panel of Figure 1, we first estimated a conventional job demands–resources model without differentiating challenge demands from hindrance demands. As shown in the bottom panel of Figure 1, we then estimated the updated job demands–resources model we have proposed by differentiating challenge demands from hindrance demands. Because previous job demands–resources research has shown that, on the antecedent side, demands and resources are negatively correlated, and that, on the outcome side, burnout and engagement are negatively correlated (Schaufeli & Bakker, 2004), we allowed these correlations to be estimated in both of our models. Further, because prior research has shown that challenge demands and hindrance demands are moderately related ( $\rho = .33, p < .05$ ; LePine et al., 2005), and because our estimate reported in Table 1 is consistent with this relationship ( $\rho = .23, p < .05$ ), we also allowed this correlation to be estimated in our path model. As a result, each model has the maximum number of paths specified, and although we were theoretically and empirically justified in doing so, this created saturated models that fit the data perfectly (i.e.,  $\chi^2 = 0.00$ ). Thus, we do not report fit indices in our focus on the substantive relationships to test our hypotheses.

The parameter estimates to test our hypotheses are found in the bottom panel of Figure 1. In regards to relationships with burnout,

<sup>2</sup> Although we could have calculated composite correlations using Hunter and Schmidt's (1990) formulas, the population estimates would have been marginally stronger, and this would have given us an advantage in confirming our hypotheses. Thus, because our study focused more on testing hypotheses rather than providing population parameters, we chose the more conservative approach.

Table 1  
Meta-Analytic Results for the Relationships Among Demands, Resources, Burnout, and Engagement

Variable	Demands (undifferentiated)					Challenge demands					Hindrance demands					Resources					Burnout						
	<i>k</i>	<i>N</i>	<i>r</i>	<i>p</i>	95% CI	<i>k</i>	<i>N</i>	<i>r</i>	<i>p</i>	95% CI	<i>k</i>	<i>N</i>	<i>r</i>	<i>p</i>	95% CI	<i>k</i>	<i>N</i>	<i>r</i>	<i>p</i>	95% CI	<i>k</i>	<i>N</i>	<i>r</i>	<i>p</i>	95% CI		
Demands																											
Challenge demands																											
Hindrance demands																											
Resources	32	18,348	-.06	-.07	[-.12, -.02]	23	11,629	-.01	-.01	[-.06, .04]	19	11,127	-.10	-.13	[-.19, -.06]												
Burnout	27	16,607	.22	.27	[.22, .32]	18	9,794	.14	.16	[.10, .22]	15	9,439	.24	.30	[.23, .37]	24	14,392	-.22	-.27	[-.31, -.24]							
Engagement	43	26,724	-.06	-.08	[-.13, -.03]	26	12,487	.14	.16	[.11, .21]	28	18,540	-.16	-.19	[-.23, -.16]	54	27,200	.30	.36	[.33, .39]	54	25,998	-.39	-.48	[-.51, -.45]		

Note. *k* is the number of correlations used for the meta-analysis; *N* is the combined sample size for the meta-analysis; *r* is the sample-weighted correlation; *p* is the estimated true correlation corrected for sampling error and unreliability; 95% CI is the 95% confidence interval around the estimated true correlation. As indicated by the 95% confidence intervals, all estimated true correlations are significant at  $p < .05$  except for the challenge demands-resources relationship ( $p > .05$ ).

Hypothesis 1 is supported, as both challenge demands ( $\beta = .10, p < .05$ ) and hindrance demands ( $\beta = .25, p < .05$ ) are positively and significantly related to burnout. Hypothesis 2 is also supported, as job resources ( $\beta = -.24, p < .05$ ) are negatively and significantly related to burnout. Together, challenge demands, hindrance demands, and job resources explain 15% of the variance in burnout. In regards to relationships with engagement, Hypothesis 3 is supported, as job resources ( $\beta = .34, p < .05$ ) are positively and significantly related to engagement. Hypothesis 4 is also supported, as challenge demands ( $\beta = .21, p < .05$ ) are positively and significantly related to engagement, whereas hindrance demands are negatively and significantly related to engagement ( $\beta = -.19, p < .05$ ). Together, challenge demands, hindrance demands, and job resources explain 19% of the variance in engagement. As shown in the contrasting top panel of Figure 1, the variance explained in engagement by the conventional model was only 13%. Thus, distinguishing demands as challenges and hindrances increased the variance explained in engagement by nearly half.

Previous meta-analyses have provided estimates of the relationships of burnout with specific demands and resources (e.g., Halbesleben, 2006; Lee & Ashforth, 1996). However, there is no meta-analysis reporting the relationships of engagement with similar specific demands and resources. Because a purpose of this article was to clarify inconsistencies in previous relationships of demands with engagement and to provide evidence as to the consistency of relationships within categories, we report in Table 2 meta-analytic estimates of the relationships of engagement with specific types of resources, challenge demands, and hindrance demands. Doing so allowed us to understand whether the clarified relationships of engagement with challenge demands and hindrance demands occur as a function of one or two specific demands, or whether this pattern is observed generally across each demand within the challenge and hindrance categories. These results also provide clearer information regarding the frequency with which different types of demands and resources have been related to engagement. Results are reported for nine main categories of resources (autonomy and job control; feedback and access to information; opportunities for development; positive workplace climate; recovery time; rewards and recognition; organizational, supervisor, coworker, and social support; job variety; and work role fit), three main categories of challenge demands (job responsibility, time urgency, and workload), and six main categories of hindrance demands (administrative hassles, emotional conflict, organizational politics, resource inadequacies, role conflict, and role overload).

In addition to reporting the number of correlations (*k*), total sample size (*N*), estimated sample-weighted mean correlation (*r*), estimated true correlation corrected for sampling error and unreliability (*p*), the 95% confidence interval around the corrected correlation (95% CI), we also report the 80% credibility interval around the corrected correlation (80% CV), the percentage of variance in the correlations explained by statistical artifacts (percentage of variance explained), and the *Q* statistic. Credibility intervals provide an estimate of the variability of individual correlations in the population; an 80% credibility interval excluding zero indicates that more than 90% of the individual correlations in the population will exclude zero (another 10% will lie above the upward limit of the interval). Thus, as noted before, whereas

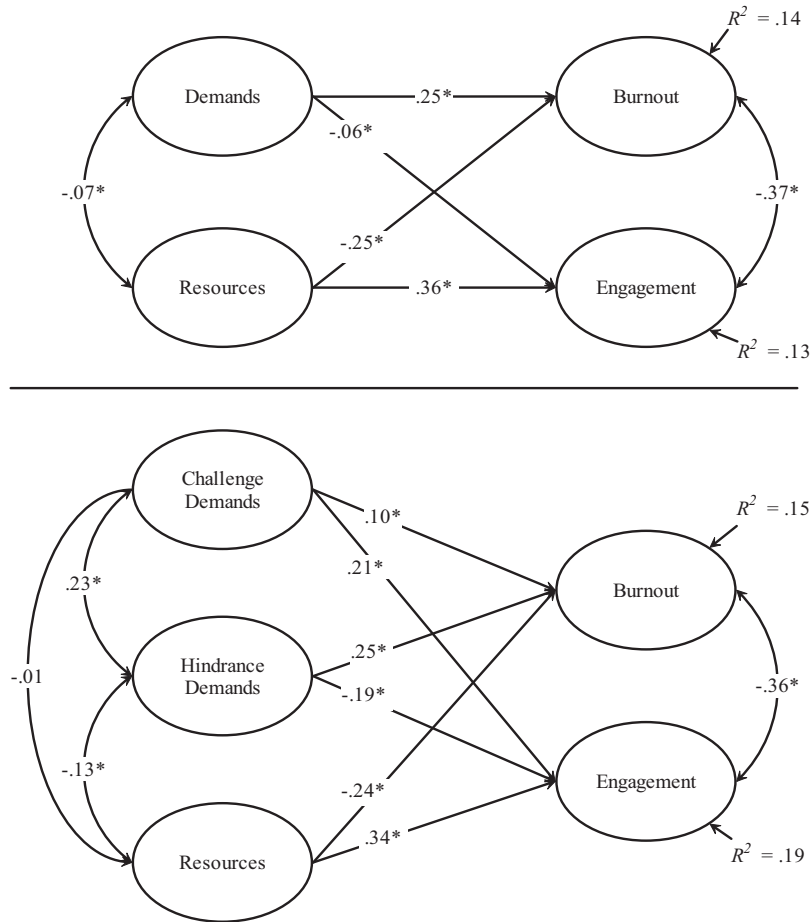


Figure 1. Summary of meta-analytic path analyses of the conventional (top panel—job demands undifferentiated; harmonic  $M = 20,212$ ) and the differentiated (bottom panel—job demands differentiated as challenges and hindrances; harmonic  $M = 11,889$ ) job demands–resources models. Values are standardized estimates. \*  $p < .05$ .

confidence intervals estimate variability in the estimated mean correlation, credibility intervals—as described here—estimate variability of the individual correlations in the population of studies (Judge et al., 2002). The percentage of variance explained by artifacts and the  $Q$  statistic are two indicators of the amount of heterogeneity in the corrected correlations across studies. A low percentage of variance explained and a statistically significant  $Q$  suggest heterogeneous effect sizes, which indicate the presence of potential moderators. However, because of the small number of studies for most variables, it was not possible to conduct any moderator analysis on the correlates with heterogeneous effects sizes. Thus, their individually corrected correlations should be interpreted with caution, especially where the credibility interval includes zero (Whitener, 1990).

As can be seen in Table 2, a pattern of fairly uniform positive correlations with engagement is observed across the nine different types of job resources. Autonomy ( $\rho = .37, p < .05$ ), feedback ( $\rho = .35, p < .05$ ), opportunities for development ( $\rho = .47, p < .05$ ), positive workplace climate ( $\rho = .28, p < .05$ ), recovery ( $\rho = .29, p < .05$ ), rewards and recognition ( $\rho = .21, p > .05$ ), support ( $\rho = .33, p < .05$ ), job variety ( $\rho = .53, p < .05$ ), and work role fit ( $\rho = .52, p < .05$ ) all had significant positive relationships with

engagement. The majority of the confidence intervals overlap with each other and with the confidence interval for job resources in general reported in Table 1. The confidence interval for positive workplace climate [.23, .33] is slightly lower than that of job resources in general [.33, .39], whereas the confidence intervals for job variety [.49, .57] and work role fit [.43, .61] are somewhat higher. These two intervals do overlap, however, with those of opportunities for development [.30, .63] and recovery [.07, .51] as well as with each other. All of the confidence intervals and credibility intervals exclude zero except for the credibility interval for rewards and recognition. Thus, in general, it appears that the positive relationship of job resources with engagement is fairly robust across the specific types of resources.

A similar pattern of consistently positive correlations with engagement is observed across the three different types of challenge demands, albeit these relationships are somewhat smaller than the positive relationships of engagement with the various job resources. Job responsibility ( $\rho = .15, p < .05$ ), time urgency ( $\rho = .21, p < .05$ ), and workload ( $\rho = .13, p < .05$ ) all had positive relationships with engagement. All of the confidence intervals overlap and exclude zero, and all of the credibility intervals overlap and exclude zero. Further, the confidence and credibility in-



Table 2  
*Meta-Analytic Relationships of Specific Types of Resources, Challenge Demands, and Hindrance Demands With Engagement*

Variable	<i>k</i>	<i>N</i>	<i>r</i>	$\rho$	95% CI	80% CV	% variance explained	<i>Q</i>
<b>Resources</b>								
Autonomy	32	18,344	.31	.37	[.33, .42]	[.21, .53]	11.60	275.90*
Feedback	19	12,125	.28	.35	[.29, .40]	[.20, .49]	13.99	135.83*
Opportunities for development	6	4,980	.38	.47	[.30, .63]	[.20, .73]	3.10	193.74*
Positive workplace climate	13	10,322	.23	.28	[.23, .33]	[.16, .39]	17.45	74.52*
Recovery	3	350	.26	.29	[.07, .51]	[.07, .51]	23.81	12.60*
Rewards and recognition	7	6,372	.16	.21	[.06, .37]	[-.04, .57]	3.91	179.12*
Support	33	17,029	.27	.33	[.29, .36]	[.23, .42]	28.57	115.51*
Job variety	6	6,739	.42	.53	[.49, .57]	[.47, .59]	31.38	19.12*
Work role fit	6	4,559	.43	.52	[.43, .61]	[.39, .66]	10.62	56.49*
<b>Challenge demands</b>								
Job responsibility	7	2,583	.13	.15	[.14, .17]	[.15, .15]	100.00	0.63
Time urgency	9	6,561	.18	.21	[.10, .31]	[.02, .40]	7.57	118.97*
Workload	16	6,963	.11	.13	[.09, .18]	[.03, .24]	35.31	45.31*
<b>Hindrance demands</b>								
Administrative hassles	7	7,187	-.15	-.17	[-.23, -.12]	[-.25, -.10]	25.99	26.93*
Emotional conflict	4	3,220	-.16	-.19	[-.22, -.15]	[-.19, -.19]	100.00	3.00
Organizational politics	4	3,042	-.21	-.25	[-.27, -.23]	[-.25, -.25]	100.00	0.93
Resource inadequacies	11	11,770	-.15	-.18	[-.22, -.14]	[-.24, -.11]	33.51	32.82*
Role conflict	12	3,689	-.20	-.24	[-.29, -.18]	[-.34, -.14]	42.35	28.34*
Role overload	5	6,152	-.14	-.20	[-.32, -.08]	[-.37, -.03]	6.85	72.94*

*Note.* *k* is the number of correlations used for the meta-analysis; *N* is the combined sample size for the meta-analysis; *r* is the sample-weighted correlation;  $\rho$  is the estimated true correlation corrected for sampling error and unreliability; 95% CI is the 95% confidence interval around the estimated true correlation; 80% CV is the 80% credibility interval around the estimated true correlation; % variance explained is the percentage of variance explained by statistical artifacts; *Q* is the homogeneity statistic.

\*  $p < .05$ .

tervals for the specific types of demands all overlap with those of challenge demands in general reported in Table 2. This indicates that the positive relationship of challenge demands with engagement is robust across the specific types of challenge demands, or in other words, the specific types of challenge demands do not exhibit differential relationships with engagement. In terms of whether the relationships of challenge demands with engagement are significantly weaker than the relationships of job resources with engagement, the confidence interval for overall challenge demands [.11, .21] does not overlap with that of overall job resources [.33, .39], indicating that job resources have a significantly stronger relationship with engagement. However, when analyzed across the narrower types, this conclusion is not without exception, as the confidence interval for the challenge demand time urgency [.10, .31] overlaps with those of the job resources feedback [.29, .40], opportunities for development [.30, .63], positive workplace climate [.23, .33], recovery [.07, .51], rewards and recognition [.06, .37], and support [.29, .36]. Further, the confidence intervals for the challenge demands job responsibility [.14, .17] and workload [.09, .18] both overlap with those of recovery [.07, .51] and rewards and recognition [.06, .37]. In the aggregate, although resources generally have a stronger relationship with engagement than do challenge demands, this difference is not necessarily universal in terms of specific resources and challenges.

A pattern of consistently negative correlations with engagement is observed across the six different types of hindrance demands. Administrative hassles ( $\rho = -.17, p < .05$ ), emotional conflict ( $\rho = -.19, p < .05$ ), organizational politics ( $\rho = -.25, p < .05$ ), resource inadequacies ( $\rho = -.18, p < .05$ ), role conflict ( $\rho = -.24, p < .05$ ), and role overload ( $\rho = -.20, p < .05$ ) all had

negative relationships with engagement. All of the confidence intervals exclude zero, and the majority of the confidence intervals overlap. The confidence interval for organizational politics [-.27, -.23], however, did not overlap with those of administrative hassles [-.23, -.12], emotional conflict [-.22, -.15], and resource inadequacies [-.22, -.15]. However, this result should be interpreted cautiously, as the results for organizational politics were derived from only four correlations. All of the credibility intervals for the specific types of hindrance demands exclude zero. Thus, it appears that the negative relationship of hindrance demands with engagement is robust across the specific types of hindrance demands. The specific types of hindrance demands generally do not exhibit differential relationships with engagement.

## Discussion

The general purpose of our research was to examine and clarify the job demands-resources model as theoretical basis for understanding how working conditions function as antecedents of engagement and burnout. In doing so, we integrated knowledge from the transactional theory of stress to resolve inconsistencies in relationships between job demands and engagement by showing that job demands typically appraised as challenges are consistently positively related to engagement, whereas job demands typically appraised as hindrances are consistently negatively related to engagement. Research aimed at this purpose is important given (a) the increasing interest in job engagement among scholars and practitioners, (b) the parsimonious use of the job demands-resources model as a framework to explain how working condi-

tions influence employee engagement and burnout in theories of employee well-being and organizational life, and (c) the limitations of the model to explain inconsistencies in results of empirical research on this topic that have grown dramatically in the past decade. We highlight that our research is the first to examine these relationships simultaneously in a way that allows for the falsification of a theoretical model in which engagement plays a central role. We make an important contribution by showing that true relationships exist between demands and engagement, even though a substantial body of scholars has supposed there are none. Finally, because other research shows that engagement is functionally different than other attitudes and motivational concepts, we provide the evidence to test rather than assume that engagement exhibits similar relationships with challenge and hindrance stressors. Our results support our integrated model and have numerous theoretical implications with practical value.

### Theoretical Implications

At the most general level, our research has important theoretical implications to the job demands–resources model as articulated by scholars who have used the theory to understand the antecedents of engagement and burnout. On the one hand, we found results that are consistent with the model in that job demands have positive relationships with burnout, and this is the case whether demands are differentiated as challenges or hindrances. We found that job resources have positive relationships with engagement and that these relationships were fairly consistent across the various types of resources. We also found that job resources have negative relationships with burnout. On the other hand, we found results that suggest updates for the job demands–resources model. Specifically, whereas the theory does not expect direct relationships between job demands and engagement, we found that they are not only meaningfully related but also that the direction of the relationship varies systematically as a function of the type of demand in question. We note that by simply differentiating demands as challenges and hindrances, we were able to increase the variance explained in engagement by nearly half. Further, their relationships with engagement were rather consistent across the specific types of demands within the broader challenge and hindrance categories, providing support for the utility of the job demands–resources perspective and our extension of it as a means of parsimoniously depicting relationships among working conditions, engagement, and burnout.

Thus, we have proposed and empirically supported a refined job demands–resources model that requires distinguishing job demands as challenges and hindrances to model true relationships that exist between demands and engagement. Propositions of this refined job demands–resources model, which we refer to as the *differentiated job demands–resources model*, are as follows: (a) job characteristics can be broadly categorized in terms of challenge demands, hindrance demands, and job resources; (b) job demands, whether challenges or hindrances, activate an energy depletion process that builds up strain and results in increased burnout; (c) job resources activate a motivational process that increases willingness to dedicate one's efforts and abilities to the work task resulting in increased engagement; (d) job resources protect individuals from strains related to resource depletion accruing over time to result in burnout; (e) challenge demands trigger positive

emotions and cognitions that result in active, problem-focused coping styles reflected in increased engagement; (f) hindrance demands trigger negative emotions and cognitions that result in passive, emotion-focused coping styles reflected in decreased engagement.

We acknowledge that our theoretical extension and supportive findings for the linkages between job demands and engagement may seem fairly straightforward given what we know from the prior meta-analytic research on challenge and hindrance stressors. However, this is something that becomes obvious only in hindsight. Indeed, all of the studies on engagement in our meta-analysis have been published since the initial work on the challenge and hindrance stressor framework (Cavanaugh et al., 2000), and 39 of the 55 studies have been published since LePine et al.'s (2005) meta-analysis, and yet not a single one includes a hypothesis that recognizes the idea that relationships between demands and engagement are a function of the nature of the demand. Further, it is unlikely that any future individual primary study could resolve the observed inconsistencies in relationships between demands and engagement, as we have done in this meta-analysis, because of the inability of primary studies to correct for sampling error and other artifacts that may attenuate or mask true underlying relationships. This illustrates the usefulness of our meta-analysis to clarify existing research findings and to serve as a guidepost for future research on this topic, for without it authors of primary studies and narrative reviews may continue to suggest there is no relationship between job demands and engagement.

Beyond clarifying relationships among job demands, resources, engagement, and burnout, our research suggests an additional implication to the job demands–resources perspective that is somewhat broader in scope. Whereas the job demands–resources theory suggests that resources primarily impact more distal behavioral outcomes through engagement, and that demands primarily impact more distal behavioral outcomes through strain, our research results suggest that demands may function through the engagement pathway as well as the strain pathway. In other words, job demands likely have an additional important indirect relationship with more distal criteria that has not been specified and accounted for in previous research from the job demands–resources perspective. Being able to account for a total effect with additional indirect effects contributes to our theoretical knowledge because it increases our understanding of why important concepts are related to one another. Although job demands may negatively affect organizational outcomes through strain, which was previously understood in the job demands–resources perspective, those job demands appraised as challenges may simultaneously have a positive effect on organizational outcomes through increasing engagement, which is a new understanding in the job demands–resources perspective; likewise, those job demands appraised as hindrances may have a simultaneous negative effect on organizational outcomes through decreased engagement, which is also a new understanding. Because relationships among demands and engagement differ in direction as a function of the type of demand being considered, it would appear that it is necessary to consider the nature of the demand when developing and testing hypotheses grounded in the job demands–resources perspective.

Our research also has a theoretical implication related specifically to employee engagement as well. The patterns of the relationships in our model provide theoretical support for the distinc-

tiveness of the engagement and burnout constructs. If it were true that engagement and burnout were on opposite poles of the same continuum as some have suggested (e.g., Maslach & Leiter, 1997, 2008), then, because we found that challenges and hindrances were both positively related to burnout, we should have found both types of demands to be negatively related to engagement. This was not the case for challenge demands, which were positively related to both burnout and engagement. The relationships of the two types of demands with burnout were not mirrored by opposite relationships of these demands with engagement. This suggests that although engagement and burnout are negatively related ( $\rho = -.48$ , 95% CI  $[-.51, -.45]$ , 80% CV  $[-.61, -.34]$ ), the two constructs are not empirical opposites, and that additional variance in relationships with antecedents can be explained by maintaining their distinctiveness.

### Limitations and Future Research

There are some limitations of our work that we should acknowledge. First, the primary research we used in our meta-analysis was not conducive to assessing the underlying mechanisms that link job resources and demands to engagement and burnout. Future research could address this issue by considering the intervening theoretical processes we outlined earlier. Most important, perhaps, researchers could examine how demands are appraised as a challenge or a hindrance and how these appraisals impact the cognitions, emotions, and coping strategies that ultimately translate to self-perceptions of engagement. Although scholars have long been interested in the appraisal process (e.g., Lazarus & Folkman, 1984), the concept of engagement is new to this process and should be studied further. Beyond insights in regards to the appraisal process itself, such research could identify functional characteristics of engagement that provide further evidence of its distinctiveness relative to other affective-motivational concepts.

Second, there are limitations related to the primary research in this literature. For example, the modal research design is cross-sectional, and thus our meta-analytic estimates should not be interpreted as directly supporting the causal ordering of concepts as suggested by job demands–resources theory. Although there are certainly compelling theoretical reasons that support the presumed causal ordering, strong inferences regarding causality require experimental research in which the theoretical antecedents—the resources and demands—can be manipulated. Next, the majority of the primary research used self-report measures for both independent and dependent variables, creating the potential for same-source bias to inflate the size of the reported meta-analytic relationships. This concern is minimized by findings from Crampton and Wagner's (1994) meta-analysis of over 42,000 correlations from a 25-year period indicating that inflation from same-source bias occurs more as the exception than the rule. Further, their analyses revealed no significant differences in the size of same-source versus multi-source correlations in subsample clusters of relationships between motivation, stress, and work characteristics similar to those under consideration in the present research. Thus, although we cannot rule out the presence of same-source bias, it is not likely that our findings could be explained or our conclusions altered solely because of same-source bias in the primary research. Finally, because of the limited primary research examining certain relationships, our meta-analysis included some estimates based on

a relatively small number of studies. This was especially true in our supplemental analyses in which we considered narrowly defined resources and demands. Although meta-analyses produce estimates of true relationships that are superior to those relationships resulting from data collected in individual studies, it is likely that additional primary research will result in estimates that are more precise. However, given that the additional studies should reduce the size of the confidence intervals around the estimates, the additional studies would not likely result in changes that contradict the support we found for our hypotheses.

A characteristic of the literature on job demands and resources is that it generally focuses on perceived working conditions without considering the role of objective job characteristics or job-level aggregate measures. Although Hackman and Lawler (1971) argued that, in terms of working conditions, it is not their objective state that affects employee attitudes and behaviors but rather how employees experience them that affects their reactions to the job, other researchers have suggested there may be value in considering objective job characteristics to test theories of how working conditions influence affective and motivational job reactions (Spector & Jex, 1991). Although our findings on the relationships between perceived working conditions and engagement and burnout are important and interesting in and of themselves, future research designs grounded in the job demands–resources perspective could incorporate the use of job analysis, independent raters, or other external rating sources—such as the occupational information network (O\*NET)—to provide multiple non-job-incumbent measures of working conditions to examine the influence of objective job characteristics on engagement and burnout that may be potentially mediated through their relationships with perceived working conditions.

A limitation of the job demands–resources model is that it does not include all relevant predictors of employee engagement or burnout. Its greatest use is to broadly categorize *working conditions* as either resources or demands in predicting engagement, and to the extent that the relationships of resources, challenge demands, and hindrance demands are consistent within these overarching categories, the model and our extension of it summarizes these relationships in a concise way. However, other perspectives have proposed relevant predictors that are not included in the job demands–resources framework. For example, Kahn (1990) originally proposed that the three main predictors of engagement were the psychological conditions of meaningfulness, safety, and availability; however, these *psychological conditions* fall outside the scope of the job demands–resources model. Likewise, Macey and Schneider (2008) proposed that traits such as conscientiousness, proactive personality, and positive affectivity are important individual difference predictors of engagement; and Britt (2003) showed that aspects of personal identity relevant to the work domain also predict engagement. Yet, the job demands–resources model cannot incorporate *individual differences* as a job demand or a job resource, as these characteristics emanate from the individual and not the characteristics of the job. Finally, researchers have argued that *transformational leadership* is a key factor in promoting engagement (Harter et al., 2002; Macey & Schneider, 2008); however, the job demands–resources model does not incorporate transformational leadership directly as either a demand or resource. It captures leadership at best indirectly through narrower variables such as supervisor support, feedback, and coaching,

which do not constitute the leadership construct broadly. Thus, future research is necessary to summarize and clarify the relationships of engagement with all its studied antecedents, including those beyond working conditions.

A possible contingency exists regarding our observed pattern of relationships between challenge demands, engagement, and burnout. It may be possible that the appraisal of demand as a challenge can change as a result of experience over time, and as a consequence, the relationships between the demand and both burnout and engagement may change as well. For example, individuals might come to believe over time that the demands they face are more of a hindrance than a challenge (i.e., if the demands cannot be addressed, they become threatening to the self and a hindrance to accomplishing a sense of fulfillment), and as a consequence, the relationship between the level of the demands and engagement becomes negative. We also acknowledge that over time the level of burnout may become so overwhelming that it becomes impossible for the individual to marshal any personal resources to deal with his or her job. Unfortunately, research conducted to date has used cross-sectional designs, and we are limited in being able to assess these ideas. Accordingly, we urge researchers to use experience-sampling methods to elucidate the boundary conditions of how challenges are related to engagement and burnout.

Finally, as alluded to earlier, there is a need for studies that extend the differential relationships of challenge and hindrance demands to important behavioral outcomes—such as job performance, withdrawal, and turnover—with engagement and burnout as dual mediators. The limited research that has linked job demands to outcomes (e.g., Bakker, Demerouti, & Verbeke, 2004; Schaufeli & Bakker, 2004) has not differentiated between challenges or hindrances, and it has generally focused on burnout as the lone mediator to transmit those effects, assuming that job demands have no relationship with engagement. Our research shows that once job demands are differentiated as challenges and hindrances, challenge demands have a positive relationship with engagement, whereas hindrance demands have a negative relationship with engagement. Future primary research is necessary that incorporates this distinction of demands and specifies relationships with organizationally valued criteria through both burnout and engagement as dual mediators. With an increase in hindrance demands, organizationally valued criteria are not only likely to be negatively impacted through an increase in burnout but also by a decrease in engagement. With an increase in challenge demands, organizationally valued criteria are likely to be negatively impacted through an increase in burnout, but this negative effect should be offset by an increase in engagement. Past research suggests that the positive indirect path can offset the negative indirect path, and accordingly, challenge demands may have net positive relationships with the more distal criteria (e.g., LePine et al., 2005; Podsakoff et al., 2007). Although this line of reasoning needs to be directly addressed in future research, our findings also suggest this may be the case, as challenge demands exhibited a stronger effect on engagement ( $\beta = .22, p < .05$ ) than they did on burnout ( $\beta = .10, p < .05$ ). In sum, our research implies that to understand relationships among job demands on the one hand, and behavioral criteria such as job performance, withdrawal, and turnover on the other hand, it is necessary to account for a more complex and nuanced system of relationships than has previously been considered.

## Practical Implications

Notwithstanding the limitations we noted above, there are some potentially important practical implications of our research. First, it is clear that individual employee engagement is positively associated with perceived resources and that individual burnout is positively associated with perceived demands. Although we cannot rule out the possibility that employees who report higher levels of engagement receive additional resources such as supervisor support and rewards in the form of more job variety, it does seem reasonable at this point to suggest that a manager could potentially foster an individual's employee engagement by providing additional resources. Similarly, although we cannot rule out that employees who feel burned out simply perceive that they have greater job demands, it is also reasonable to suggest that managers could potentially reduce an employee's burnout by limiting the demands the employee must cope with, especially those demands perceived as hindrances or roadblocks. Likewise, although we cannot rule out that burned out employees simply feel they have fewer resources at their disposal, it is reasonable to suggest that an additional reason managers may wish to provide more resources for their employees is that doing so has the potential to reduce employee burnout because of the strain of having to meet demands with few resources. This suggests that in situations in which reducing demands is not a possibility, such as in a high workload environment, the strains of dealing with such demands may be reduced by providing additional resources.

Second, whereas job demands–resources theory suggests that job demands are not associated with engagement, our results suggest otherwise, and this opens the possibility that individual employee engagement could be influenced by managers through practices aimed at changing the level of demands confronted by employees. However, it is important to emphasize that decisions to adjust levels of demands to influence individuals' engagement are more complex and depend on the type of the demands being considered. On the one hand, our results suggest that individual employee engagement could be facilitated by a manager's attempts to reduce perceived hindrance demands such as administrative hassles, politics, and role conflicts. Although the positive relationship between these types of hindrance job demands and strain is well known, our results suggest that an additional reason why managers should attempt to minimize them is because of their negative relationship with employee engagement. On the other hand, our results suggest that individual employee engagement might be promoted in contexts in which the level of perceived challenge demands is increased. However, given that challenge job demands are also positively associated with strains, it would be premature to suggest that challenge job demands be increased simply for the sake of promoting employee engagement. Before such a recommendation could be made, it may be necessary to identify how the associated increase in strain could be reduced. As we have suggested earlier, it may be possible to identify commensurate levels of increased resources that could be put in place to reduce the strain associated with the increases in challenge demands.

## Conclusion

We have provided the first quantitative summary of the state of the research examining the influence of working conditions on

engagement and burnout organized according to the propositions of the job demands–resources model. We have also refined and updated the model with the transactional theory of stress to suggest that relationships between job demands and engagement vary as a function of the nature of the demand with respect to how it tends to be appraised by employees. Our meta-analyses show that job demands are indeed associated with increased burnout, that job resources are associated with increased engagement, and that job resources are also associated with decreased burnout. Our meta-analyses also confirm our reasoning that in regards to engagement, not all demands are created equal. When it comes to increasing levels of employee engagement, it appears that demands appraised as challenges tend to help, and demands appraised as hindrances tend to hurt.

## References

- References marked with an asterisk indicate studies included in the meta-analysis.
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