

The Struggle With Employee Engagement: Measures and Construct Clarification Using Five Samples

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Among scholarly researchers, the Utrecht Work Engagement Scale (UWES) is a popular scale for assessing employee or work engagement. However, challenges to the scale's validity have raised major concerns about the measurement and conceptualization of engagement as a construct. Across 4 field samples, we examined 2 measures of engagement, the UWES and the Job Engagement Scale (JES), in both factor structure and patterns of relationships with theoretically hypothesized antecedents and consequences. In a fifth field sample, we examined the construct-level relationships between engagement and related variables, while controlling for sources of measurement error (i.e., item-specific factor, scale-specific factor, random response, and transient). By examining 2 measures, each derived from different theoretical bases, we provide unique insight into the measurement and construct of engagement. Our results show that, although correlated, the JES and UWES are not interchangeable. The UWES, more so than the JES, assesses engagement with overlap from other job attitudes, requiring improvement in the measurement of engagement. We offer guidance as to when to use each measure. Furthermore, by isolating the construct versus measurement of engagement relative to burnout, commitment, stress, and psychological meaningfulness and availability, we determined (a) the engagement construct is not the same as the opposite of burnout, warranting a reevaluation of the opposite-of-burnout conceptualization of engagement; and (b) psychological meaningfulness and engagement are highly correlated and likely reciprocally related, necessitating a modification to the self-role-expression conceptualization of engagement.

Keywords: engagement, construct validity, measurement, JES, UWES

Although still striving to solidify its place in the nomological network of organizational constructs (Cronbach & Meehl, 1955), employee engagement (i.e., positive motivational state at work) has become a popular construct characterized by high emotion and energy, and focused attention. Of the most popular measures of engagement, the Utrecht Work Engagement Scale (UWES; Schaufeli, Salanova, González-Romá, & Bakker, 2002), has recently been criticized for its inability to empirically distinguish between low engagement and burnout (i.e., state of mental and emotional exhaustion; Maslach, 1982). The criticism is directed at the UWES's lack of distinctiveness from the Maslach Burnout Inventory (MBI; Cole, Walter, Bedeian, & O'Boyle, 2012;

Maslach & Jackson, 1981). This criticism, along with accumulating challenges to the construct validity of the UWES (i.e., Newman & Harrison, 2008; Wefald, Reichard, & Serrano, 2011), raises concerns for the measurement of engagement and construct explication, especially because there are so few validated engagement measures available (Byrne, 2015) and because of the widespread use of the UWES (Saks & Gruman, 2014). Consequently, scholars have suggested taking a step back to address the measurement issues that ultimately clarify the construct of engagement (e.g., Byrne, 2015; Cole et al., 2012; Saks & Gruman, 2014; Viljevac, Cooper-Thomas, & Saks, 2012).

Yet stepping back need not mean starting over—fields of study mature through scrutiny of their constructs and measures (Nunnally & Bernstein, 1994), and recent reviews have provided impetus for construct clarification in engagement (e.g., Saks & Gruman, 2014). Comparing different measures of the same construct is a common practice in the scholarly literature (e.g., Ilgen, Nebeker, & Pritchard, 1981), typically employed during construct explication, test construction, and in the accumulation of validity evidence. Conclusions about engagement for both practice and science are useless if the measurement of the construct, and consequently the construct itself, is considered indistinguishable from other construct measures.

In search for evidence of its distinctiveness, researchers have compared versions of the UWES (9-item vs. 17-item; Mills, Cul-

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bertson, & Fullagar, 2012) to the MBI (Cole et al., 2012), as well as to an engagement scale developed by May, Gilson, and Harter (2004; Viljevac et al., 2012). Paradoxically, these examinations have created concerns rather than resolutions. For instance, the UWES cannot be distinguished from the MBI (Cole et al., 2012). Neither the UWES nor May et al.'s (2004) measure fit their conceptualized structures, nor could they be distinguished from job satisfaction (e.g., Viljevac et al., 2012). The next step to resolving engagement scale concerns requires examining the UWES alongside another rigorously constructed and validated measure of engagement, while testing both measures within theoretically derived models of antecedents and consequences to assess nomological validity (Campbell, 1960; Cronbach & Meehl, 1955). For this juxtaposition, we chose the job engagement scale (JES; Rich, LePine, & Crawford, 2010) based on Kahn's (1990) groundbreaking conceptualization derived from theories of motivation and sociology.

Since its introduction, the JES has accumulated validity evidence for its structure and use (e.g., Alfes, Shantz, Truss, & Soane, 2013; Chen, Yen, & Tsai, 2014; He, Zhu, & Zheng, 2014; Rich et al., 2010; Shuck, Twyford, Reio, & Shuck, 2014). Even though other researchers have developed measures of engagement (e.g., May et al., 2004; Saks, 2006; Shirom & Melamed, 2006), in practice these measures fall short of their conceptualized structures, lack validity evidence, overlap significantly with the UWES, are proprietary, or were initially constructed and validated for an entirely different purpose but later used for assessing engagement (i.e., Shirom & Melamed, 2006; Wefald et al., 2011). No study to date has compared the UWES to another well-constructed and acceptable measure of engagement, such as the JES.

We depart from previous studies by not only comparing measures, but also by contrasting underlying conceptualizations within theoretically derived models of antecedents and consequences. A reconsideration of engagement—both its measurement and as a construct—has significant ramifications for the study of engagement because (a) the UWES has been used in the vast majority of engagement studies thereby shaping our understanding of engagement, and (b) the overwhelming popularity of engagement has made it a key focal construct of many organizations. Therefore, the present study contributes to both science and practice, above and beyond existing engagement scale comparison studies in the following ways. First, we compare the JES and UWES with each other and against theoretically related constructs using four different field samples, thereby contributing to construct validity of engagement. Second, we contrast underlying conceptualizations of engagement by examining the pattern of relationships of the two measures in four structural models. Though one can expect some differences because of distinct underlying theoretical frameworks, if measures are claiming to assess the same construct, there should be more similarities than differences in patterns of relationships with antecedents and outcomes. Lastly, using a fifth sample employing procedures that control for random response error, transient error, item-specific factor error, and scale-specific factor error that bias self-report measures (Le, Schmidt, & Putka, 2009), our study is one of the first to examine construct-level relationships between engagement and several antecedents and outcomes. By controlling for all four sources of measurement bias and using multiple measures of each construct, we evaluate engagement as a

construct within its nomological network, providing clarity and essential construct validity evidence.

Background: Employee Engagement

In applied settings, the concept of employee engagement is most often described by what happens to organizations when engagement is lacking. For example, Harter, Schmidt, and Hayes (2002) estimated that roughly 70% of the workforce lacks engagement and as a result businesses are losing between \$292 and \$355 billion annually in lost revenue (Gallup, 2001). Such figures, along with stories of engaged employees' displays of high energy and organizational attachment (e.g., Gebauer, Lowman, & Gordon, 2008; Macey & Schneider, 2008), have excited an interest in understanding what inhibits or promotes engagement at work. Consequently, scientific exploration of employee engagement has focused on identifying antecedents and consequences of engagement, pursued under the umbrella of two distinct approaches: the investment of the self into one's work role, and engagement as the opposite of burnout.

Self-Role-Expression Approach to Engagement

Kahn (1990) conceptualized engagement as the "harnessing of the organizational members' selves in their work roles" (p. 694), expressed affectively, cognitively, and physically. *Affective* expression of engagement incorporates an empathetic connection to others and expression of excitement in the work role. *Cognitive* expression of the binding of the self in one's work role means being aware, actively thinking and tracking information, mentally connecting disconnected puzzle pieces in problem solving, questioning and displaying genuine curiosity, and being focused and absorbed during role performance. Lastly, *physical* expression includes energetic and active physical movement at work. Kahn (1990) framed engagement within Goffman's (1961) role theory, which says people vary in their attachment to their roles, and their role performance demonstrates their level of attachment or detachment. Based on motivation and interpersonal/group theories, such as the job characteristics theory (Hackman & Oldham, 1980) and existence, relatedness, and growth theory (Alderfer, 1972), Kahn proposed a theoretical model that says people are engaged when experiencing three psychological conditions: availability, meaningfulness, and safety. Kahn referred to engagement as a single concept expressed by the synergistic combination of affect, cognition, and behavior.

Rich, LePine, and Crawford's (2010) job engagement scale (JES) was specifically designed to measure Kahn's (1990) conceptualization of engagement, but theirs was not the first attempt. A previous effort failed to provide construct validity evidence for the measure (May et al., 2004), although did demonstrate the distinctiveness of Kahn's three psychological conditions.

Opposite-of-Burnout Approach to Engagement

In response to the positive psychology movement, Maslach and Leiter (1997) repositioned burnout, a state of complete mental and emotional exhaustion (Maslach, 1982), as the loss of engagement. They proposed that work begins as energizing, fulfilling, and meaningful, but as job demands increase employees become ex-

hausted, cynical, and detached—the three dimensions of burnout. The components of engagement were naturally best represented as the direct opposites of the three components of burnout (vigor to exhaustion; dedication to cynicism; absorption to lack of efficacy or detachment), and as such were assessed using the MBI (reverse scored; Maslach & Jackson, 1981). However, due to psychometric problems exploiting the same measure to assess both burnout and engagement yet also distinguish engagement as a unique construct, the UWES was created using items from the MBI rephrased to reflect a positive state as opposed to a negative one. For example, “I have become less enthusiastic about my work” representing cynicism on the MBI was reworded to “I am enthusiastic about my job” and called dedication on the UWES (see Schaufeli & Bakker, 2003, p. 6).

To match the new measure, Schaufeli, Salanova, González-Romá, and Bakker (2002) defined engagement as a stable, “pervasive affective-cognitive state” (p. 74) composed of three dimensions: vigor, dedication, and absorption. *Vigor* refers to the level of energy and mental resiliency used to complete work, willingness to work hard, and to persist when challenged. *Dedication* denotes enthusiasm for work, commitment, strong involvement, and pride. *Absorption* represents being fully focused and deeply immersed in the work.

Measures for Comparison

Given our goal of scrutinizing measures and clarifying the conceptualization of the engagement construct, it is logical to ask “Why the UWES and JES only—why not other measures or conceptualizations of engagement?” First, the UWES is currently the most popular measure of engagement, thereby dominating the field and thoughts of what engagement is. We chose the JES as the comparator because it assesses Kahn’s (1990) groundbreaking conceptualization, considered one of the most complete and articulated conceptualizations of engagement, thereby making the comparison useful, possible, and potentially theoretically advancing.

Second, despite Christian, Garza, and Slaughter’s (2011) mention of incorporating six engagement measures in their meta-analysis, there are not six comprehensive validated measures of engagement from which to choose. A review of the 90 studies Christian et al. (2011) included shows 73 used the UWES, six used a measure of disengagement (arguably a different construct than engagement; Kahn, 1990), four used a measure of vigor (considered one dimension of the UWES, but also a unique construct; Shirom, 2004), three used May et al.’s (2004) measure, three studies used the JES, and one used Saks’ (2006) job and organizational engagement measures. Hence, the selection of comprehensive engagement measures in the public domain is sparse.

Third, engagement measures other than the UWES and JES have unclear or poorly specified conceptualizations (Byrne, 2015) making comparison impossible. For example, on the one hand, Saks (2006) suggested his measures are based on both Kahn’s (1990) self-role and Schaufeli et al.’s (2002) opposite-burnout conceptualizations of engagement. On the other hand, he based his scale development on social exchange theory (Blau, 1964). In the end, as appropriate per Saks’ study, the scales assess his conceptualization of engagement as a multifoci exchange construct (organization vs. job), and do not assess Kahn’s three-dimension structure of engagement. Consequently, comparing Saks’ mea-

sures to the UWES or JES provides little traction toward addressing our study objectives. The JES is currently the only measure with construct validity evidence for assessing Kahn’s three-component conceptualization of employee engagement (e.g., Alfes et al., 2013; Byrne, 2015; He et al., 2014; Rich et al., 2010; Shuck et al., 2014).

Lastly, measures of engagement not yet mentioned were specifically designed for a unique sample (e.g., Kamalanabhan, Sai, & Mayuri, 2009; Xu & Thomas, 2011), or the measures are proprietary and therefore cannot be compared easily. For example, Macey and Schneider (2008) defined employee engagement as a broad construct comprising trait, state, and behavioral components expressing a predisposition to feel and behave positively toward work and the organization. Macey, Schneider, Barbera, and Young (2009) report sample items from their proprietary measure of engagement assessing Macey and Schneider’s conceptualization, however, the measure is not available for scrutiny. A popular instrument used in applied settings is Gallup Organization’s 12-item Work Audit Scale (i.e., the Q¹²). Though proprietary, items in the Q¹² appear in a few peer-reviewed publications (e.g., Harter et al., 2002). The scale does not assess engagement per se, but rather satisfaction with proposed work conditions, such as resources, support, and task significance that might relate to engagement (Christian et al., 2011; Harter et al., 2002). Thus, given our study purpose the best measure for comparison with the UWES is the JES.

Development of Hypotheses

The similar conceptual structures yet different theoretical foundations between the UWES and JES allow for a scale comparison and construct explication that generates three decision paths (Cook & Campbell, 1976). First, if the two measures relate to each other and are similarly related/unrelated to constructs that should theoretically be related/unrelated to engagement (i.e., convergent/discriminant validity evidence), we can conclude the two measures assess the same construct. For example, analogous patterns of results were found when researchers considered the Organizational Commitment Questionnaire (OCQ; Mowday, Steers, & Porter, 1979) versus the 3-Type Organizational Commitment Scale by Allen and Meyer (1990). Both measures were constructed using different conceptualizations of commitment, yet they correlated with each other and fit within the same nomological network (Allen & Meyer, 1990). Researchers concluded the scales both measure organizational commitment.

Second, if the UWES and JES are related to each other, yet are dissimilarly related/unrelated to expected antecedents and consequences of engagement, these results would suggest the two measures assess different but related constructs, or different aspects or dimensions of engagement. Results like these were shown when determining how procedural and interactional justice are related yet distinct types of fairness (McFarlin & Sweeney, 1992). Third, if the UWES and JES do not relate to each other (or demonstrate very low correlations) and display disparate relationships from each other with constructs expected to be related/unrelated to engagement, the results will suggest the two measures are assessing different constructs.

Scale Comparisons

To achieve our study objectives of scale comparison, we developed our hypotheses to assume that because both measures were designed to assess the construct of engagement, they should relate/not-relate to hypothesized constructs similarly, though not identically. We do not go so far as to hypothesize they are equivalent or parallel forms of each other because they were developed from substantially different theoretical foundations. However, we do expect them to behave similarly in terms of their relationships with other constructs. If the two engagement measures are indeed both assessing engagement in a similar manner, there should be no significant differences between how the two measures relate to theoretically relevant constructs.

To create hypotheses with some precision, we turned to the literature (Edwards & Berry, 2010; Lykken, 1968; Meehl, 1990). To be exact, when engagement is expected to relate to a construct in its nomological network, the correlation should be stronger than expected by chance but not so strong as to suggest redundancy with that construct. Researchers have argued and shown that constructs within psychology considered unrelated to one another still correlate between $r = .20$ and $r = .30$ (Lykken, 1968; Meehl, 1990). The implications are that a correlation higher than .30 represents related constructs, and one lower than .30, even if significant, may be interpreted as indicating the two constructs are discriminant and unrelated. Furthermore, a correlation of .80 or higher between two constructs suggests redundancy (Brown, 2006; Kline, 2005). Support or rejection for our hypotheses framed using these criteria should determine which of the three decision paths articulated above should be accepted.

Both the JES and UWES were designed to measure employee engagement; consequently, scores on the measures should positively correlate with one another, but not be redundant because each measure is based on a different conceptual foundation. In addition, the UWES and JES are designed to measure engagement defined as comprising three dimensions or components. Thus, we can hypothesize:

Hypothesis 1: The UWES and JES are positively correlated with each other, demonstrating a correlation between .30 and .79.

Hypothesis 2: The UWES and JES are each represented by a three-factor structure.

Based on the two conceptualizations of engagement each modeling three dimensions roughly categorized as emotion, cognition, and behavior, if we continue to assume the measures should relate to one another because they are both measuring engagement we might speculate that the factors of the UWES have three corresponding factors to those of the JES. Based on labels only, we should expect the following correlations between the JES and UWES, respectively: physical with vigor, emotional with dedication, and cognitive with absorption. However, turning to the items themselves (Appendix A and B) we note several items of the UWES do not fit this suggested pairing, and could be grouped across the JES into more than one dimension. For example, vigor items referring to *perseverance*, *mental resiliency*, and *feeling like working* could be placed within the cognition and/or affect dimensions of the JES. Likewise, the absorption item “feel happy when

working intensely” could be placed in the affect and/or physical dimension of the JES. Also difficult to categorize are the items in the UWES that ask about Kahn’s (1990) antecedents of engagement; specifically, challenging job, and meaning and purpose of work.

Assuming support for Hypotheses 1 and 2, we propose that paired dimensions (e.g., vigor with physical) between the UWES and JES should correlate strongly, thus between .50 (Cohen, 1988) and .79, whereas dimensions not paired (e.g., vigor with emotional) should demonstrate correlations less than .30 (Lykken, 1968; Meehl, 1990).

Hypothesis 3a: The physical dimension of the JES is more strongly correlated with the vigor dimension of the UWES (greater than .50 but less than .79) than it is with the dedication or absorption dimensions of the UWES (less than .30).

Hypothesis 3b: The affect dimension of the JES is more strongly correlated with the dedication dimension of the UWES (greater than .50 but less than .79) than it is with the vigor or absorption dimensions of the UWES (less than .30).

Hypothesis 3c: The cognition dimension of the JES is more strongly correlated with the absorption dimension of the UWES (greater than .50 but less than .79) than it is with the vigor or dedication dimensions of the UWES (less than .30).

Discriminant and convergent validity using consequences.

Discriminant validity evidence exists when constructs theoretically unrelated are empirically unrelated (Campbell & Fiske, 1959). If the theoretical frameworks of engagement suggest it should not be related to a particular construct, scores on the UWES and JES should similarly not relate to that construct, or show small correlations (e.g., $r < .30$; Lykken, 1968; Meehl, 1990). Neither Kahn’s (1990) nor Schaufeli et al.’s (2002) frameworks suggest constructs for divergent or discriminant validity.

By definition, if engagement is a unique construct it should be distinct from other organizational constructs, such as commitment, support, performance, and stress or burnout. In support, using the JES, Rich et al. (2010) reported engagement distinct from job involvement, job satisfaction, citizenship behaviors, and organizational support. Using the UWES, several researchers found engagement distinct from supervisory support, organizational commitment, and self-reported in-role and extrarole job performance (Hakanen et al., 2006). Accordingly, we expect to replicate extant discriminant validity evidence for the constructs included in the present study, such as commitment and performance, for engagement assessed using the UWES and JES.

A few researchers have criticized engagement as a new label for existing constructs, such as commitment, job involvement, and job satisfaction (e.g., Newman & Harrison, 2008). However, using the JES, Rich et al. (2010) reported engagement distinct from these constructs. Likewise, using the UWES, researchers reported engagement separate from supervisory support, organizational commitment, and self-reported in-role and extrarole job performance (Hakanen et al., 2006). Others have demonstrated using confirmatory factor analyses similar uniqueness between engagement and commitment, job involvement, and job satisfaction (Christian et al., 2011; Hansen, Byrne, & Kiersch, 2014; Rich et al., 2010). In keeping with these previous studies, we expect to replicate dis-

criminant validity evidence for the constructs included in the present study, such as commitment and performance, from engagement assessed using the UWES and JES.

Convergent validity exists when measures of the same or theoretically related constructs are also empirically related (Campbell & Fiske, 1959). Because the UWES and the JES both claim to measure engagement, they should similarly correlate with constructs expected to relate to engagement. Both Kahn (1990) and Schaufeli et al. (2002) defined engagement as a motivational state. Motivation is observed through “direction of behavior,” “intensity of action (cognitive effort and/or physical force),” and “persistence of direction-specific behaviors” (Kanfer, 1990, p. 78). An indication of motivation at work can be evidenced via a positive relationship with job performance. Correspondingly, research supports a low to moderate positive relationship (correlations ranging from .21 to .36) between engagement and job performance (e.g., Christian et al., 2011, UWES with task = .36 and contextual performance = .26; Halbesleben, Wheeler, & Shanine, 2013, UWES with in-role performance from .21 to .26; Rich et al., 2010, JES with task performance = .35). We, therefore, expect:

Hypothesis 4a: The UWES and JES are positively related to job performance, demonstrating a correlation between .30 and .79.

Hypothesis 4b: The correlations between the UWES and JES with job performance are not significantly different from one another.

Given that several consulting firms conceptualize engagement as commitment (e.g., see Towers-Watson’s position clarified in Gebauer et al., 2008), we examine the relationship between engagement and commitment in detail. Organizational commitment describes the emotional attachment an employee makes to the organization and his or her identification with espoused organizational values (Mowday et al., 1979). Research has shown moderate to high correlations between the UWES and organizational commitment (e.g., Christian et al., 2011, $M_p = .59$; Hansen et al., 2014, $\beta = .29$). Examining the UWES and JES side-by-side provides insight into whether the two engagement measures are similarly related to commitment, and whether they are distinct from measures of commitment. We hypothesize the UWES and JES should be distinct from but relate to organizational commitment positively and similarly.

Hypothesis 5a: The UWES and JES measures are distinct from the organizational commitment measure.

Hypothesis 5b: The UWES and JES are positively related to organizational commitment, demonstrating a correlation between .30 and .79.

Hypothesis 5c: The correlations between the UWES and JES with organizational commitment are not significantly different from one another.

Commitment, however, has multiple foci (Becker, 1960), which means people can form a commitment toward a specific or target, such as their supervisor or organization. Relationships between predictors and different foci of commitment are frequently explained using social exchange theory (Blau, 1964). For example, in

exchange for fairness (i.e., interpersonal or procedural), employees demonstrate commitment to their supervisor or organization dependent on the type of fairness (e.g., Flint, Haley, & McNally, 2013). We examine whether the UWES and JES are related to job and supervisory commitment, representing two different foci of commitment. If we find the two engagement scales relate differently to the two foci of commitment, we might conclude the UWES and JES assess unique aspects of engagement, with each eliciting a different targeted form of engagement, and that social exchange theory may explain these differences (similar to Saks’s, 2006, idea of job and organizational engagement).

Hypothesis 6a: The UWES and JES are positively related to job commitment, demonstrating a correlation between .30 and .79.

Hypothesis 6b: The correlations between the UWES and JES with job commitment are not significantly different from one another.

Hypothesis 6c: The UWES and JES are positively related to supervisor commitment, demonstrating a correlation between .30 and .79.

Hypothesis 6d: The correlations between the UWES and JES with supervisor commitment are not significantly different from one another.

Convergent validity using antecedents. Kahn (1990) suggested that *psychological meaningfulness*, *psychological availability*, and *psychological safety* foster employee engagement. Psychological meaningfulness refers to feeling one’s work is worthwhile and valuable. Kahn referred to meaningfulness as a type of return on investment, whereby one desires to invest oneself physically, emotionally, and cognitively at work and feel worthwhile for that work. Psychological availability refers to feeling one has the physical energy, and emotional and cognitive bandwidth to be engaged at a specific moment. It reflects the degree of freedom from nonwork distractions that would otherwise prevent one from fully expressing oneself at work (W. A. Kahn, personal communication, May 6, 2012). Lastly, psychological safety refers to feeling able to express oneself without fear of negative consequences to one’s career, professional or personal status, or self-image. Assuming the UWES and JES are both assessing engagement, we should expect both to relate similarly to these antecedents.

Hypothesis 7a: Psychological meaningfulness is positively related to the UWES and JES, demonstrating a correlation between .30 and .79.

Hypothesis 7b: The correlations between the UWES and JES with psychological meaningfulness are not significantly different from one another.

Hypothesis 7c: Psychological availability is positively related to the UWES and JES, demonstrating a correlation between .30 and .79.

Hypothesis 7d: The correlations between the UWES and JES with psychological availability are not significantly different from one another.

Hypothesis 7e: Psychological safety is positively related to the UWES and JES, demonstrating a correlation between .30 and .79.

Hypothesis 7f: The correlations between the UWES and JES with psychological safety are not significantly different from one another.

The job demands-resource model (JD-R; Bakker & Demerouti, 2007) provides a framework for engagement as defined and measured by Schaufeli et al. (2002). The JD-R model combines the demand-control model (Karasek, 1979) and the effort-reward imbalance model (Siegrist, 1996) to suggest that job stress is a function of job demands (i.e., create distress: stress perceived as negative) and job resources (i.e., create eustress: stress perceived as challenging), both of which include physical, psychological, social, and organizational components of the job. At the center of the JD-R is the supposition that having job resources (e.g., support, challenging work) directly predicts engagement. Job demands, aspects of work that are draining, make the presence of resources salient but are not essential for predicting engagement (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). Therefore, we focus on the job resources component of the JD-R, and expect both the UWES and JES to relate positively and similarly to job resources.

Hypothesis 8a: Job resources is positively related to the UWES and JES, demonstrating a correlation between .30 and .79.

Hypothesis 8b: The correlations between the UWES and JES with job resources are not significantly different from one another.

Social support, a powerful construct in the stress literature (Ganster, Fusilier, & Mayes, 1986), has been proposed as a job resource, hence an antecedent to engagement (Bakker & Demerouti, 2007; Kahn, 1990). Because the study of employee engagement centers on the workplace, we focus on support within organizations as opposed to general social support, which includes support mechanisms outside of work. Perceptions of support from the organization and supervisor are both hypothesized to foster employee engagement (Kahn, 1990). Engagement assessed with the UWES positively correlates with perceived supervisory and organizational support (Gillet, Huart, Colombat, & Fouquereau, 2013; Hakanen, Bakker, & Schaufeli, 2006). To date, only perceptions of organizational support have been examined with the JES and exhibited positive correlations (Rich et al., 2010).

Though supervisory support leads to perceptions of organizational support (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002), understanding the nature of the relationship between the JES and UWES to each type of support may expose how the engagement scales are similar to or different from one another. Based on the theoretical suppositions of Kahn (1990) and the empirical findings of previous research (e.g., Gillet et al., 2013; Hakanen et al., 2006), we expect the JES and UWES to be positively related to supervisory and organizational support.

Hypothesis 9a: The UWES and JES are positively related to supervisor support, demonstrating a correlation between .30 and .79.

Hypothesis 9b: The correlations between the UWES and JES with supervisor support are not significantly different from one another.

Hypothesis 9c: The UWES and JES are positively related to organizational support, demonstrating a correlation between .30 and .79.

Hypothesis 9d: The correlations between the UWES and JES with organizational support are not significantly different from one another.

Lastly, perceptions of stress and the experience of physical strains, such as chronic pain, as well as burnout are responses to stressors that reduce one's performance, often because they affect one's ability and motivation to concentrate (Byrne & Hochwarter, 2006). Situations in which employees experience chronic or excessive stress eventually drain employees of their ability to be themselves on the job and perform at their best (e.g., Brotheridge & Lee, 2002; Mann & Cowburn, 2005). Consistent with the JD-R, we expect that perceptions of stress, and the experience of physical strains and burnout negatively relate to the UWES and JES.

Hypothesis 10a: The UWES and the JES are negatively related to physical strains, demonstrating a correlation between $-.30$ and $-.79$.

Hypothesis 10b: The correlations between the UWES and JES with physical strains are not significantly different from one another.

Hypothesis 10c: The UWES and the JES are negatively related to perceived stress, demonstrating a correlation between $-.30$ and $-.79$.

Hypothesis 10d: The correlations between the UWES and JES with perceived stress are not significantly different from one another.

Hypothesis 10e: The UWES and the JES are negatively related to burnout, demonstrating a correlation between $-.30$ and $-.79$.

Hypothesis 10f: The correlations between the UWES and JES with burnout are not significantly different from one another.

To date, no relationships between the JES and age or sex have been reported, even though researchers have included these demographics in their studies. Empirical findings using the UWES show sex and age are not related to engagement (Andreassen, Ursin, & Eriksen, 2007). As with all other constructs in the present study, we expect the JES to perform similarly to the UWES with regards to correlations with sex and age. However, the cognitive aging and physical performance literatures intimate that attention and cognitive processing speeds, as well as physical performance levels, may reduce with age (e.g., Kenny, Yardley, Martineau, & Jay, 2008). Although this research suggests lower levels of job performance should be seen with advancing age, researchers have not observed such degradation in older adults (Ng & Feldman, 2008). These results indicate older workers may be expending additional cognitive effort to compensate for otherwise noticeable reductions in attention and ability, so that they may perform physically on par

with their younger peers. Consequently, the additional cognitive investment of older workers to maintain comparable levels with their younger peers may cause correlations between engagement and age to be significant but small, as opposed to nonsignificant.

Hypothesis 11a: The UWES and JES demonstrate nonsignificant relationship with sex.

Hypothesis 11b: The UWES and JES demonstrate small relationships with age, at least .30 but no larger than .79.

Construct-Level Relationships

A secondary purpose of our study that complements measurement scrutiny is to clarify construct-level relationships between engagement and constructs commonly confused with engagement, such as commitment and burnout (Macey & Schneider, 2008). To do so we followed a rigorous methodology that corrects for measurement error inherent in self-report studies (i.e., Le et al., 2009), which causes inaccurate construct-level examination. As noted, engagement has been equated with commitment and the opposite of burnout; yet, both positions present a challenge if engagement is considered a unique construct. Based on both Kahn's (1990) and Schaufeli et al.'s (2002) conceptualizations of engagement, as well as previously cited empirical evidence on engagement, we expect the constructs are distinct from each other, yet related.

Hypothesis 12a: Engagement demonstrates a correlation between .30 and .79 with commitment.

Hypothesis 12b: Engagement demonstrates a correlation between $-.30$ and $-.79$ with burnout.

Method

Participants and Procedure

We tested our hypotheses across five different self-report samples. Studies using self-report instruments suffer from common method bias, and therefore we took recommended procedural actions to minimize its potential (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In particular, we included temporal separation of measures by splitting survey items across two surveys completed a few weeks apart. We used established scales with minimal item overlap to minimize potential construct contamination. Additionally, we applied remedies known to reduce socially desirable responding, including promising anonymity, providing privacy while completing the survey online, and accessibility from any convenient location (Podsakoff et al., 2003). In Sample 5, we controlled for all four sources of measurement error by following Le et al.'s (2009) method for examining construct level relationships, which they note also controls for the only source of method variance (i.e., temporal) identified in self-report measures (Doty & Glick, 1998).

No incentives were offered in the first four samples. Participation was voluntary and all studies were conducted with institutional review board approval. All participants were provided informed consent before taking the surveys. Data from Samples 1–4 were collected as part of several larger data collection efforts and

have not yet been published elsewhere. Sample 5 was collected for the current manuscript only and is not intended for use elsewhere.

Sample 1. As part of a class project in 2010, university seniors in an upper-division psychology class were trained to recruit five working adults (20 or more hr per week in a permanent job) to respond voluntarily to two online surveys. A total of 317 participants were recruited, of which 198 completed both Time 1 and Time 2 surveys (response rate of 63%), separated by a little over 2 weeks.

Participants were on average 40.30 years of age ($SD = 14.91$), 55.6% female and 44.4% male, mostly Caucasian (87.4%), and 73% reported working at least 40 hr per week. Participants reported their organizational tenure in categories: 19.2% less than 1 year, 11.1% between 1 and 2 years, 22.2% between 2 and 5 years, 18.7% between 5 and 10 years, and 28.8% for 10 years or more. Represented industries included education (19.2%), professional services (12.6%), health care (10.6%), retail (10%), and finance (6.6%), with the rest of participants spread across agriculture, utilities, construction, manufacturing, transportation, public administration, and arts or entertainment.

Sample 2. As part of a class project in 2012, university seniors in an upper-division psychology class were trained to recruit five working adults (20 or more hr per week in a permanent job) to complete two online surveys 3 weeks apart, voluntarily. A total of 300 participants were recruited, of which 156 completed both Time 1 and Time 2 surveys (response rate of 52%).

Respondents averaged 42.38 years of age ($SD = 12.48$), were 53% female and 47% male, 85% Caucasian, and 78.3% reported working 40 hr or more per week. Organizational tenure was reported in categories: 13.4% less than 1 year, 23.1% between 1 and 3 years, 13.5% between 3 and 5 years, 16.0% between 5 and 10 years, and 33.3% for 10 or more years. Represented industries included education (23.6%), professional and technical services (15%), health care (8.3%), retail (8.3%), finance or insurance (5.8%), and the rest of participants worked in agriculture, utilities, construction, transportation, public administration, and arts or entertainment.

Sample 3. To control for potential spurious findings in the first two samples due to the mix of employees from vastly different industries and work norms, our third sample was drawn from a single mental health care organization recruited through an acquaintance of the first author. At the time of a larger project in 2012, of which this study was a subset, the organization employed 440 individuals who were all recruited to participate voluntarily. A total of 203 responded to both Time 1 and Time 2 surveys, separated by 3 weeks (response rate of 46%).

Of the 203 participants, their average age was 46.16 years ($SD = 12.13$; one did not report age), 76% were female and 24% male, and average organizational tenure was 6.05 years ($SD = 7.46$). Employees worked as accountants, front desk receptionists, administrative personnel (e.g., executive levels), clinicians and therapists, social workers, nurses, psychologists, psychiatrists, and specialists in fund development, human resources, employment rehabilitation, and community safe-house recovery.

Sample 4. To provide validity evidence to our findings for Sample 3 and to examine the two engagement measures with an assessment of burnout, our fourth sample was drawn from the corporate offices of a global retail organization headquartered in the Midwestern United States, and recruited through an acquaint-

tance of the first author. At the time of data collection in 2014, the corporate offices employed 294 people, who were all recruited to participate voluntarily in a larger project, of which our study was a subset involving two online surveys separated by 2 weeks. A total of 190 responded to both surveys (response rate of 65%). Participants' average age was 39.20 years ($SD = 9.59$; 19 did not report their age), 46% were male and 44% female (10% were not identified), predominantly Caucasian (66%; other races represented less than 5% each with over 24% unidentified), and worked across a variety of divisions within the corporate office, including retail, marketing, and finance.

Sample 5. Two constructs are considered indistinguishable if they cannot be empirically separated, even if they are conceptually distinct (Le et al., 2009). A problem, however, in distinguishing constructs when using self-report measures is measurement error; specifically, transient, random response, and scale-specific factor errors (Cronbach, 1947; DeShon, 1998; Schmidt, Le, & Ilies, 2003). Although confirmatory factor analysis and structural equation modeling using item parceling controls for random response error and item-specific factor errors (Le et al., 2009), it does not account for transient error (DeShon, 1998; Schmidt et al., 2003). Following the suggestion of a reviewer, we collected a fifth sample and applied Le et al.'s (2009) procedure that accounts for all four forms of bias, for estimating the construct-level relationships between engagement, psychological availability, psychological meaningfulness, organizational commitment, perceived stress, and burnout.

Sample 5 was recruited from Amazon's crowd sourcing pool, Mechanical Turk (MTurk). MTurk samples are considered closely related to general working populations (Buhrmester, Kwang, & Gosling, 2011; Casler, Bickel, & Hackett, 2013), and previously used in work-related studies (e.g., Kaufmann, Schulze, & Veit, 2011). Using MTurk, 350 participants were recruited and surveyed at Time 1, of which 348 completed the survey but only 315 passed all validity checks (three were rejected for failing checks). Responses were rejected because of incorrect responses to verification items or for completing the survey too quickly (i.e., under 5 min). One week later, the 315 participants from Time 1 were recruited, of which 24 started but did not complete the survey. A total of 230 completed the survey and passed all validity checks (response rate 79%).

MTurk workers with rejected responses were not compensated (as noted in the consent form) and their data were discarded. All participants who successfully completed the surveys and passed validity checks were each compensated \$0.65 for the first survey and \$1.10 for the second, for a total of \$1.75 for completing both surveys. Participants' average age was 37.64 years ($SD = 12.48$), 45% were male and 55% were female, 88% were employed outside of their MTurk work, and 77% reported working less than 20 hr per week on MTurk tasks.

Measures

Scale items were averaged to create scale scores. All alpha coefficient reliability estimates are for the samples in the present study (Appendix C summarizes when each measure was given for each sample).

Sample 1. At Time 1, we assessed *engagement* using Rich et al.'s (2010) 18-item JES scale ($\alpha = .96$) comprising three dimen-

sions: emotional or affective, cognitive, and physical engagement with a response scale from 1 = *strongly disagree* to 5 = *strongly agree*. At Time 2, we used Schaufeli et al.'s (2002) 17-item UWES ($\alpha = .95$) consisting of three components: vigor, absorption, and dedication. Responses to the UWES were reported on a 0 = *never* to 6 = *always/every day* response scale. We assessed *perceived supervisor support* at Time 1 using Kottke and Sharafinski's (1988) 15-item measure ($\alpha = .97$) on a 1 = *strongly disagree* to 7 = *strongly agree* response scale. At Time 2, we assessed *perceived stress* using Cohen, Kamarck, and Mermelstein's (1983) 14-item scale ($\alpha = .83$) on a 0 = *never* to 4 = *very often* response scale. At Time 2, we assessed *job performance* using Van Scotter, Motowidlo, and Cross' (2000) 15-item contextual performance measure ($\alpha = .87$) of personal facilitation and job dedication rated on a 1 = *never* to 5 = *always* response scale.

Sample 2. We assessed *engagement* using the same measures and scoring as Sample 1, with the JES ($\alpha = .95$) at Time 1 and the UWES ($\alpha = .95$) at Time 2. *Perceived supervisory commitment* was assessed at Time 1 using Allen and Meyer's (1990) 8-item affective organizational commitment scale ($\alpha = .86$) modified to assess commitment to one's supervisor. Items were rated on a 1 = *strongly disagree* to 7 = *strongly agree* response scale. *Organizational commitment* was assessed using Allen and Meyer's 8-item affective commitment scale ($\alpha = .86$) given at Time 2, on a 1 = *strongly disagree* to 6 = *strongly agree* response scale. *Perceived organizational support* was assessed at Time 2 using Eisenberger, Cummings, Armeli, and Lynch's (1997) 8-item measure ($\alpha = .93$) captured on a 1 = *strongly disagree* to 7 = *strongly agree* response scale. We assessed *physical strains* at Time 2 using Quinn and Shepard's (1974) 19-item measure ($\alpha = .91$) rated on a 1 = *never* to 5 = *I always have this problem* response scale.

Sample 3. *Engagement* was assessed the same as in Samples 1 and 2, with the UWES ($\alpha = .93$) at Time 1 and the JES ($\alpha = .93$) at Time 2. To assess *psychological availability* as Kahn defined it (W. A. Kahn, personal communication, May 6, 2012), we created a measure of seven items (shown with factor loadings in Appendix D). The measure ($\alpha = .87$) was given at Time 1 and rated on a 1 = *strongly disagree* to 5 = *strongly agree* response scale. *Psychological meaningfulness* was assessed at Time 2 using May et al.'s (2004) 5-item measure ($\alpha = .93$) reported on the same response scale as psychological availability. We did not assess *psychological safety* because the three items from May et al. (2004) were considered inappropriate by the human resource manager at the organization. Items include "I'm not afraid to be myself at work," "I'm afraid to express my opinions at work," and "There is a threatening environment at work." The human resources manager felt the items would be misunderstood and result in high positive responses to every item, not because the workplace is psychologically unsafe but because of the nature of the work involved potentially volatile clientele. *Organizational commitment* ($\alpha = .87$) was measured the same as Sample 2, given at Time 2, reported on a 1 = *strongly disagree* to 5 = *strongly agree* response scale. We assessed *job commitment* ($\alpha = .89$) at Time 1 using Allen and Meyer's (1990) affective commitment scale modified to focus on the job. Participants responded using the same 5-point scale as organizational commitment. As with previous studies examining job resources, we created our own assessment. We assessed *job resources* ($\alpha = .88$) at Time 2 using three items developed from

the works of Bakker, Demerouti, Taris, Schaufeli, and Schreurs (2003), Bakker, Demerouti, and Verbeke (2004), and Hackman and Oldham (1976). The three items asked about the “opportunity for development,” “opportunity to ask colleagues for help,” and “receiving useful feedback (either constructive or rewarding)—detailed enough to use.” Responses were reported on a scale of 0 = *never* to 6 = *daily* response scale.

Sample 4. We assessed *engagement* using the same method as Samples 1–3, with the JES ($\alpha = .94$) measured at Time 1 and the UWES ($\alpha = .94$) measured at Time 2. *Burnout* was assessed at Time 2 using the 7-item work-related scale ($\alpha = .90$) of the Copenhagen Burnout Inventory (CBI; Kristensen, Borritz, Villadsen, & Christensen, 2005). We purposefully chose a scale other than the MBI, given the results of Cole et al. (2012), and because the UWES was developed using the MBI items as its foundation. Studies assessing the work-related scale of the CBI and the 9-item UWES report a negative relationship ($r = -.47$; Hopkins & Gardner, 2012). Responses were reported on a 1 = *never/almost never* to 5 = *always* response scale. Because we did not assess *psychological safety* as desired in Sample 3, we assessed it in Sample 4 at Time 1 using a modified version of Edmondson’s (1999) team psychological safety 7-item scale ($\alpha = .82$). We changed the referent in the items from teams to organization. For example, “People on this team sometimes reject others for being different” was modified to “People in this organization sometimes reject others for being different.” Responses were reported on a 1 = *strongly disagree* to 4 = *strongly agree* response scale.

Sample 5. *Engagement* was assessed using the same method as all previous samples, with the UWES ($\alpha = .94$) measured at Time 1 and the JES ($\alpha = .96$) at Time 2. *Psychological availability* was assessed at Time 1 using the same measure ($\alpha = .86$) and rating scale as Sample 3, and at Time 2 we used May et al.’s (2004) 5-item availability scale ($\alpha = .85$), which gauges one’s confidence in being able to engage at work. The response scale is a 5-point scale from 1 = *strongly disagree* to 5 = *strongly agree*. *Psychological meaningfulness* was assessed at Time 1 using the same measure ($\alpha = .94$) and response scale as in Sample 3, and assessed at Time 2 using five items ($\alpha = .79$) from Brown and Leigh’s (1996) multidimensional psychological climate scale. We used three of the four contribution items and two of the three recognition items. Items were rated on the same response scale as May et al.’s (2004) availability scale. *Perceived stress* was assessed at Time 1 using the same 14-item scale ($\alpha = .89$) and response anchors as Sample 1, and at Time 2 using Cavanaugh, Boswell, Roehling, and Boudreau’s (2000) 16-item measure ($\alpha = .91$). The response scale ranged from 0 = *produces no stress* to 5 = *produces a great deal of stress that is unmanageable*. At Time 1, we assessed organizational commitment using Mowday, Porter, and Steers (1982) 9-item scale ($\alpha = .92$), with responses reported on a 6-point scale from 1 = *strongly disagree* to 6 = *strongly agree*, and at Time 2 using the same measure and response scale as in Samples 2 and 3 ($\alpha = .90$). *Burnout* was assessed at Time 1 using the same measure ($\alpha = .90$) and response anchors as Sample 4. At Time 2, we assessed burnout ($\alpha = .94$) using a combination of 20 items from Enzmann, Schaufeli, Janssen, and Rozeman’s (1998) with two items from Malach-Pines (2005), reported on the same scale as the UWES.

Data Analyses

All analyses were conducted using Mplus 6.0 (Muthén & Muthén, 1998–2010) with the maximum likelihood estimator, and bootstrapping with 5,000 draws (Preacher & Hayes, 2008) to obtain a 95% confidence interval (i.e., computed at the 2.5th and 97.5th percentiles) for parameter estimates. To evaluate and compare the UWES with the JES, we first conducted a series of isolated confirmatory factor analyses (CFA). We compared the hypothesized three-factor structures of the JES and UWES with one-factor models, wherein the structure supposes a single underlying conceptualization. We made other isolated comparisons between structures for constructs suspected of significant overlap (e.g., supervisory commitment with organizational commitment; UWES and JES with burnout). These isolated CFAs provide focused comparisons at the item level, as opposed to the scale level.

We followed Anderson and Gerbing’s (1988) two-step approach for structural equation modeling (SEM). Step 1 involves examining the measurement model wherein one confirms the distinctiveness of all study measures from one another using CFA. This step provides construct validity evidence that each item assesses its intended indicator, and that each indicator assesses the latent construct it was intended and not one of the other indicators or constructs within the model. As part of this step, we examine fit indices of the CFA as well as partial correlations between the JES and UWES with other constructs measured in the model. Step 2 involves estimating and examining the hypothesized relationships between latent constructs; in our case proposed antecedents and consequences of engagement. Thus, structural models take the measurement model and simultaneously estimate multiple regression paths between latent constructs, as specified by the researcher.

To evaluate the results of the CFAs, measurement model analyses, and structural model analyses, we used the chi-square (χ^2) statistic where nonsignificance indicates a good fit, as well as other common fit indices, namely the comparative fit index (CFI; above .90 is good), Tucker-Lewis index (TLI; above .90 is good), and the root mean square error of approximation (RMSEA; below .06 is good, less than .08 is reasonable; Hu & Bentler, 1999). Some isolated CFA comparisons, such as those between three-factor and one-factor structures, produce nested models; the one-factor model is nested within the three-factor structure. A significant change-in-chi-square ($\Delta\chi^2$) between the two models indicates the more parsimonious structure fits the data better.

To test our hypotheses where we compared correlations between the UWES and JES with other constructs, we used interactive calculators (Lee & Preacher, 2013a, 2013b; Preacher, 2002) that apply Fisher’s *r*-to-*z* transformations and Steiger’s (1980) formulas to the partial correlations obtained from the measurement model used in Step 1 of our SEM approach. Thus, all tests on observed correlations were executed on correlations corrected for measurement error. To facilitate comparing the means and standard deviations of the UWES to the JES, we applied a linear transformation (Colman, Norris, & Preston, 1997; Dawes, 2008; IBM support site, n.d.) to the UWES’s scaling changing it from 0 to 6, to 1 to 5 to match the JES.

To examine the distinctiveness of the UWES from the JES, we developed a measurement model constraining the correlations between the UWES and other study variables, and the JES and other

study variables to be equal (Le, Schmidt, Harter, & Lauver, 2010). For example, in Sample 1 we constrained the correlation between the UWES and supervisory support to be equal to the correlation between the JES and supervisory support. Along with the $\Delta\chi^2$ test, we evaluated the difference in CFI between models (using $\Delta\text{CFI} > .002$ cutoff per Le et al., 2010). Results from this test indicate whether the pattern of relationships between the UWES and JES with other study variables is the same.

To conduct the measurement and structural modeling analyses, we followed an empirically based item-parceling strategy (Landis, Beal, & Tesluk, 2000). This method is appropriate when the study focuses on examining relationships between latent constructs and not scale items (Williams & O'Boyle, 2008), which is our objective in the measurement and structural model testing. Monte Carlo simulation studies have shown that empirically based parceling positively affects fit indices without biasing parameter estimates (e.g., Alhija & Wisenbaker, 2006; Nasser & Wisenbaker, 2003). In addition, maximum likelihood analyses are not robust to violations of non-normality and parceling reduces the probability of these violations (Williams & O'Boyle, 2008). In Samples 1–4, we created three parcels for each latent construct except physical strains, which comprised four parcels, and psychological meaningfulness and job resources, each indicated by their respective items (Williams & O'Boyle, 2008). In Sample 5, all latent constructs were indicated using two different measures of the same construct, assessed at two different times. The model in Sample 5 assumes the UWES and JES are both assessing engagement. For each latent construct, we created three parcels for burnout, organizational commitment, stress, meaning, and availability, and four parcels for engagement.

Although we did not explicitly hypothesize engagement as a mediator, the JD-R model and Kahn's (1990) framework suggest engagement acts as a mediator between factors of the work environment and outcomes. Thus, in Samples 1–4 we developed eight models of the UWES and JES with antecedents and consequences, framing engagement as a mediator in each model (Figures 1–4) to add to our comparison of the UWES versus the JES, and to provide information about the nomological validity of engagement (Campbell, 1960; Cronbach & Meehl, 1955). Using our fifth sample, we developed a ninth model (see Figure 5) with engagement as a single latent construct indicated by the UWES and JES, consistent with Le et al.'s (2009) recommendation for examining construct-level relationships. The theoretical underpinning of the ninth model incorporates Kahn's suppositions that engagement mediates the relationships between psychological meaningfulness and psychological availability with outcomes.

We estimated all direct paths (independent variable predicts dependent variable) and indirect paths (mediators) simultaneously for each of the nine models. We tested the significance of the indirect effects using bootstrapping procedures (Preacher & Hayes, 2008).

Results

Structures of the UWES and JES

The factor structures of the UWES and the JES were each independently confirmed as three-factor structures (see Table 1), fitting the data better than the scales each modeled as one-factor structures. For both scales, RMSEAs were not ideal. Besides the RMSEA, fit

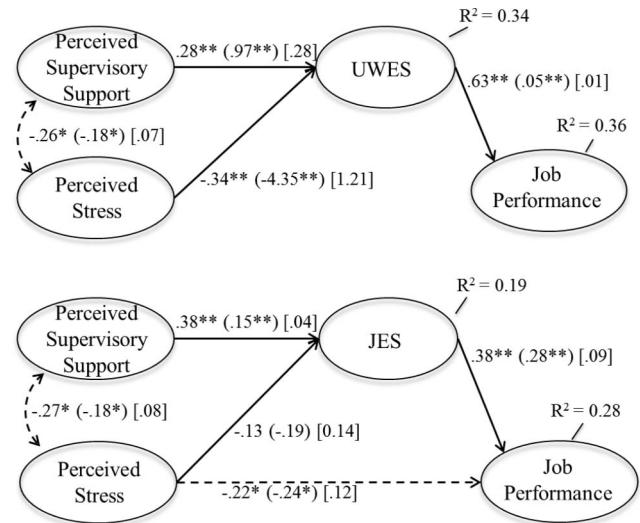


Figure 1. Structural Models in Sample 1. $N = 198$. Standardized coefficients shown with nonstandardized in parentheses and standard errors in brackets. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale. Dashed line indicates significant nonhypothesized path. * $p < .05$. ** $p < .01$.

indices for the JES as a three-factor structure met the criteria for an acceptable fit (Hu & Bentler, 1999), though they were somewhat less than ideal in Sample 2 (i.e., CFI and TLI should be above .90). None of the UWES models met the criteria for good fit. Because the fit of the three-factor model for the UWES in all Samples was statistically better than the one-factor (noted by the significant $\Delta\chi^2$), these results are consistent with Hypothesis 2.

We examined the distinctiveness of the JES from the UWES (see Table 2), modeling the scales as they were originally hypothesized (three first-order factors loading on a single second-order factor: Model A), and as alternative structures. Specifically, Model B included the UWES and JES as first-order factor scales with no dimension subscales, and Model C included the UWES and JES combined into a single engagement scale with six dimension subscales as first-order factors. In addition, for each CFA, we obtained modification indices to the factor structures to tell us whether, based on the statistics, individual items should cross load onto a factor other than, or along with the one specified. Although we did not apply any modification recommendations, we examined cross-loadings because they contribute to misfit indicating the model does not represent all relationships ideally. Lack of fit resulting from nonanticipated or nonhypothesized cross-loadings partially explains higher than desired fit indices (see Table 2).

The UWES and JES appear distinct from each other (Model A vs. Model C) regardless of a few cross-loadings of items from the UWES to the JES and vice versa.¹ In four of the five samples, two to three items from the UWES cross-loaded onto the JES. In one

¹ For example, in Sample 2 "At work, I focus a great deal of attention on my job" from the cognitive dimension of the JES cross-loaded to the vigor dimension on the UWES. Another example in the opposite cross-loading direction includes "I am immersed in my work" from the absorption dimension of the UWES cross-loaded on the cognitive dimension of the JES.

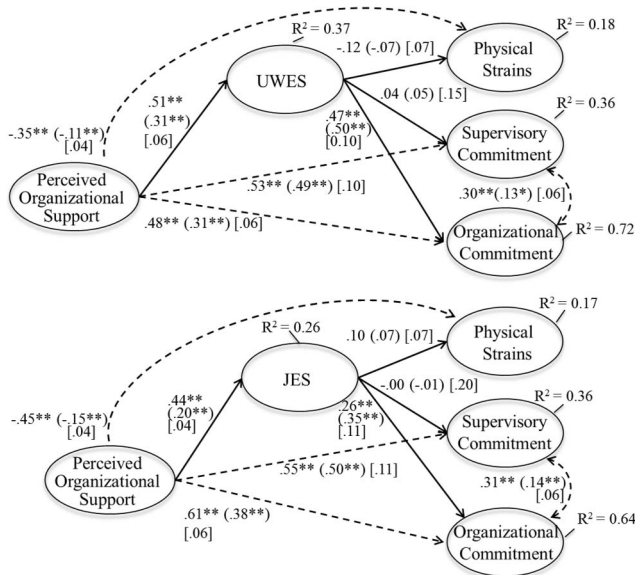


Figure 2. Structural Models in Sample 2. $N = 156$. Standardized coefficients shown with nonstandardized in parentheses and standard errors in brackets. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale. Dashed line indicates significant nonhypothesized path. * $p < .05$. ** $p < .01$.

sample, two items from the JES cross loaded onto the UWES. Sample 3 showed no cross-scale loadings. In all samples, other cross-loadings identified by modification indices were within scales across dimensions (i.e., item cross loading between absorption and dedication), with most occurring within the UWES (be-

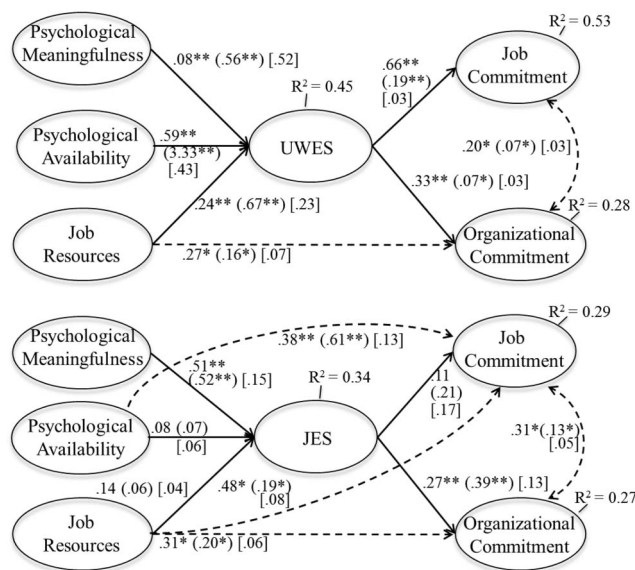


Figure 3. Structural Models in Sample 3. $N = 203$. Standardized coefficients shown with nonstandardized in parentheses and standard errors in brackets. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale. Dashed line indicates significant nonhypothesized path. * $p < .05$. ** $p < .01$.

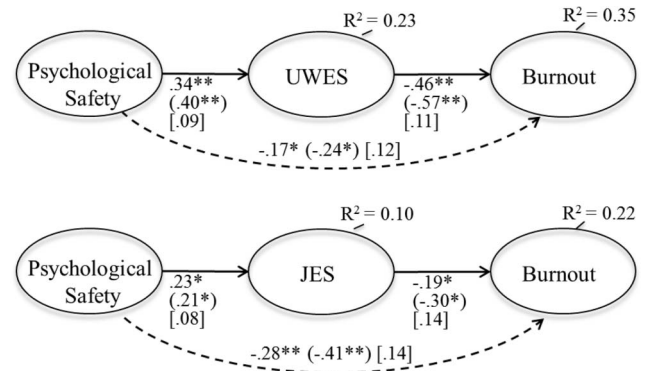


Figure 4. Structural Models in Sample 4. $N = 190$. Standardized coefficients shown with nonstandardized in parentheses and standard errors in brackets. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale. Dashed line indicates significant nonhypothesized path. * $p < .05$. ** $p < .01$.

tween six and 11 cross-loadings). Within the JES, three items at most cross loaded between dimensions (e.g., between cognitive and physical). In addition, the three-factor structures originally proposed by the scale authors fit the data better than each scale with no subfactors (Model A vs. Model B).

These combined results suggest the dimensions of the UWES are not that distinct from each another (i.e., overlap between absorption, vigor, and dedication), whereas the JES dimensions are for the most part distinct. We also conclude from the results that the JES and UWES items are not redundant and tend to cluster to their intended scale.

Treating the measures as originally defined with three dimensions each, the dimensions within and between the JES and the UWES were correlated (see Table 3). The dimensions within the UWES were highly correlated with each other; visibly higher than dimension correlations within the JES, and in Samples 1, 2, and 4 correlations were indicative of redundancy (Brown, 2006). Sample 3 was unique in that the physical and cognitive dimensions of the JES were not significantly correlated with any of the UWES dimensions. The cumulative findings across all samples show no support for Hypothesis 3a–3c (pairing dimensions between UWES and JES).

In summary, the dimensions of the UWES and JES are positively related. Even though the correlations of the dimensions within the UWES are very high, we can conclude from the CFAs the two scales comprise three factors each. Lastly, the UWES and JES assess three dimensions each, yet they lack parallelism or an identifiable pattern between them.

Confirming Uniqueness and Evaluating Relationships

Scale distinctiveness. In Samples 1–4, we evaluated the relationships between the two measures of engagement and constructs hypothesized to relate to each, as well as confirmed the factorial structures and uniqueness of all study variables in each sample by examining the measurement models using CFA.

In Sample 1 (see Table 4), perceived stress, performance, and perceived supervisor support were confirmed as distinct constructs from each other demonstrated by acceptable fit indices. CFA

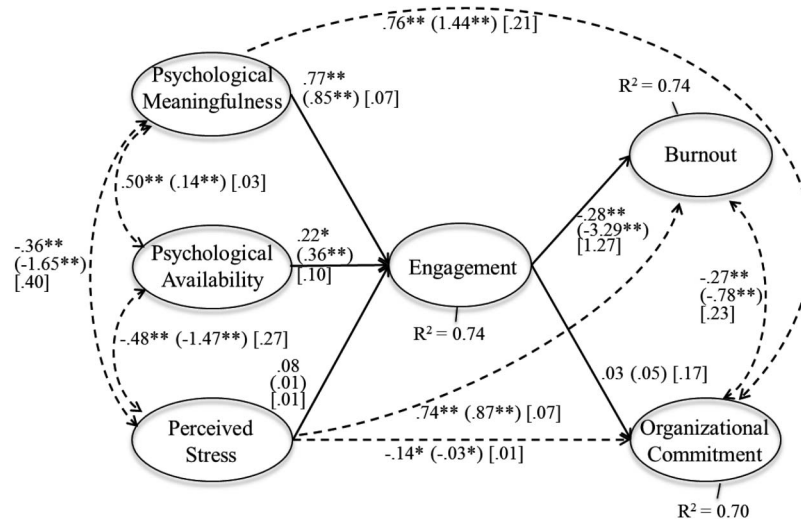


Figure 5. Structural Model of Engagement in Sample 5. $N = 230$. Standardized coefficients shown with nonstandardized in parentheses and standard errors in brackets. Dashed line indicates significant nonhypothesized path. * $p < .05$. ** $p < .01$.

results from placing stress, performance, and support with the UWES and JES confirmed the variables in Sample 1 were considered distinct from each other. The ΔCFI test confirmed the UWES and JES are not redundant in Sample 1 and their patterns of relationships differ.

In Sample 2 (see Table 5), supervisor and organizational commitment fit the data as two-factors better than one. Placing support and commitment into full measurement models with the UWES and JES confirmed all variables in Sample 2 were considered separate from one another. Results of ΔCFI also verified the

Table 1
Fit Indices for Confirmatory Factor Analyses on UWES and JES

Model	χ^2	df	CFI	TLI	RMSEA	90% CI for RMSEA	$\Delta\chi^2(\Delta df)$
Sample 1 ($N = 198$)							
JES: 3-factor	460.41	132	.908	.893	.112	[.101, .123]	
JES: 1-factor	1,217.30	135	.696	.656	.201	[.191, .212]	756.89(3)
UWES: 3-factor	509.00	116	.843	.816	.131	[.119, .143]	
UWES: 1-factor	532.49	119	.834	.811	.132	[.121, .144]	23.49(3)
Sample 2 ($N = 156$)							
JES: 3-factor	419.63	132	.899	.883	.118	[.106, .131]	
JES: 1-factor	1,158.77	135	.642	.594	.220	[.209, .232]	739.14(3)
UWES: 3-factor	511.17	116	.822	.792	.148	[.135, .161]	
UWES: 1-factor	545.12	119	.809	.781	.152	[.139, .165]	33.95(3)
Sample 3 ($N = 203$)							
JES: 3-factor	397.29	132	.920	.908	.100	[.088, .111]	
JES: 1-factor	1,597.98	135	.561	.503	.231	[.221, .241]	1200.69(3)
UWES: 3-factor	440.74	116	.853	.827	.117	[.106, .129]	
UWES: 1-factor	495.23	119	.829	.805	.125	[.114, .136]	54.49(3)
Sample 4 ($N = 190$)							
JES: 3-factor	363.10	132	.925	.913	.096	[.084, .108]	
JES: 1-factor	1,259.58	135	.633	.584	.209	[.199, .220]	896.48(3)
UWES: 3-factor	371.75	116	.875	.853	.108	[.096, .120]	
UWES: 1-factor	380.91	119	.872	.854	.108	[.096, .120]	9.16(3)*
Sample 5 ($N = 230$)							
JES: 3-factor	466.10	132	.916	.902	.105	[.095, .115]	
JES: 1-factor	1,294.17	135	.708	.669	.193	[.184, .203]	828.07(3)
UWES: 3-factor	554.58	116	.823	.849	.128	[.118, .139]	
UWES: 1-factor	684.73	119	.806	.778	.144	[.133, .154]	130.15(3)

Note. JES = Job Engagement Scale; UWES = Utrecht Work Engagement Scale.

† Significant to $p < .01$ unless noted otherwise. * $p < .05$.

Table 2
Fit Indices for Confirmatory Factor Analyses on UWES Compared With JES

Model	χ^2 [†]	df	CFI	TLI	RMSEA	90% CI for RMSEA	$\Delta\chi^2(\Delta df)$ [†]
A: UWES and JES as originally proposed (three-factor models)							
Sample 1	1,683.04	553	.827	.814	.102	[.096, .107]	
Sample 2	1,454.33	553	.833	.820	.102	[.096, .109]	
Sample 3	1,259.21	553	.875	.866	.079	[.074, .085]	
Sample 4	1,295.31	553	.863	.852	.084	[.078, .090]	
Sample 5	1,709.69	553	.843	.831	.095	[.090, .101]	
B: UWES and JES as single factor scales with no dimension subscales							
Sample 1	2,460.27	559	.710	.691	.131	[.126, .136]	777.23(6)
Sample 2	2,215.46	559	.693	.673	.138	[.132, .144]	794.25(6)
Sample 3	2,512.72	559	.655	.632	.131	[.126, .136]	1253.51(6)
Sample 4	2,199.55	559	.696	.677	.124	[.119, .130]	904.24(6)
Sample 5	2,633.74	559	.719	.700	.127	[.122, .132]	924.05(6)
C: Engagement as a single scale with the six dimension subscales as first order factors (combines UWES and JES into one factor)							
Sample 1	1,799.97	554	.810	.796	.107	[.101, .112]	116.93(1)
Sample 2	1,617.44	554	.803	.788	.111	[.105, .117]	163.11(1)
Sample 3	1,405.46	554	.850	.838	.087	[.081, .093]	146.25(1)
Sample 4	1,350.31	554	.853	.842	.087	[.081, .093]	55.00(1)
Sample 5	1,809.95	554	.830	.817	.099	[.094, .104]	100.26(1)

Note. Sample 1 $N = 198$; Sample 2 $N = 156$; Sample 3 $N = 203$; Sample 4 $N = 190$; Sample 5 $N = 230$. JES = Job Engagement Scale; UWES = Utrecht Work Engagement Scale. Models B and C are nested within A; all comparisons for chi-square difference test made to Model A and within samples (not across samples).

[†] Significant to $p < .01$ unless noted otherwise.

UWES and JES are not redundant in Sample 2 and their patterns of relationships differ.

Table 6 shows the results of CFA for Sample 3. The two forms of commitment fit the data better than as a single factor representing a unidimensional construct of commitment. Results of CFA on the full measurement model confirmed all variables in Sample 3 distinct from one another. Results additionally confirmed the patterns of relationships between the UWES and JES with other study variables differ and the two measures are distinct from one another ($\Delta CFI > 1.002$).

Table 7 shows the findings from CFA on Sample 4 for the UWES and JES each distinct from burnout, and from all other focal variables in the full measurement model. Results from tests on the constrained model confirmed the UWES and JES are not redundant and their patterns of relationships differ from one another.

The results from the CFAs shown in Tables 5 and 6 demonstrate support for Hypothesis 5a. Furthermore, the cumulative results shown in Tables 4 through 7 add to the construct validity evidence of both the UWES and JES by demonstrating their distinctiveness from all constructs measured in Samples 1–4.

Table 8 provides the results of CFAs and measurement models for Sample 5. Because of high correlations between engagement and psychological meaningfulness, and meaningfulness and commitment, we conducted several isolated CFAs to confirm their distinctiveness. Results indicate the variables in Sample 5 are considered distinct from one another.

Using the correlations generated from the measurement models (shown in Tables 9–12), the overall scores on the UWES and JES in all samples positively related to one another and within the expected range (i.e., between 1.30 and 1.79), except for Sample 3. These cumulative results provide partial support for Hypothesis 1.

Table 3
Intercorrelations of Engagement Dimensions Between UWES and JES

	Sample 1 (<i>N</i> = 198)					Sample 2 (<i>N</i> = 156)					Sample 3 (<i>N</i> = 203)					Sample 4 (<i>N</i> = 190)					Sample 5 (<i>N</i> = 230)				
Dimension	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. Emotional																									
2. Physical	.61[†]					.47[†]					.42[†]					.45[†]					.58[†]				
3. Cognitive	.66[†]	.73[†]				.67[†]	.71[†]				.37[†]	.68[†]				.49[†]	.78[†]				.63[†]	.85[†]			
4. Dedication	.67[†]	.36[†]	.48[†]			.70[†]	.35[†]	.61[†]			.28[†]	.07	.13			.77[†]	.32[†]	.38[†]			.78[†]	.57[†]	.57[†]		
5. Vigor	.61[†]	.40[†]	.49[†]	.83[†]		.63[†]	.40[†]	.62[†]	.86[†]		.30[†]	.04	.08	.79[†]		.71[†]	.34[†]	.42[†]	.98[†]		.64[†]	.54[†]	.57[†]	.76[†]	
6. Absorption	.53[†]	.46[†]	.51[†]	.81[†]	.81[†]	.60[†]	.38[†]	.62[†]	.81[†]	.86[†]	.16[*]	.07	.13	.72[†]	.75[†]	.62[†]	.36[†]	.44[†]	.94[†]	.96[†]	.62[†]	.52[†]	.54[†]	.77[†]	.79[†]

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale; Bold italic correlations are factors within the UWES; bold nonitalic correlations are factors within the JES.

[†] $p < .01$. * $p < .05$.

Table 4

Sample 1 Fit Indices for Confirmatory Factor Analyses ($N = 198$)

Model	χ^2 [†]	<i>df</i>	CFI	TLI	RMSEA	90% CI for RMSEA	$\Delta\chi^2(\Delta df)$ [†]
Isolated confirmatory factor analyses							
Stress, performance, perceived supervisor support as separate factors	39.22	17	.980	.966	.081	[.048, .115]	
Measurement models							
UWES, JES, perceived supervisory support, perceived stress, job performance, sex, age	214.16	100	.963	.949	.076	[.062, .090]	
UWES and JES correlations with other focal variables constrained to equal	238.71	103	.956	.942	.082	[.068, .095]	24.55(3) –.007

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale.

[†] Significant to $p < .01$ unless noted otherwise.

Neither the UWES nor the JES was significantly related to sex in all five samples, demonstrating support for Hypothesis 11a. In Sample 1, the UWES was significantly related to age whereas the JES was not. In Samples 2 and 4, both the UWES and JES were significantly related to age. In Sample 3, the JES was significantly related to age whereas the UWES was not. The significant correlations between the UWES and JES with age were all below .79, but not all were above .30 as hypothesized. These mixed results for the UWES and JES related to age provide partial support for Hypothesis 11b. We controlled for age in all structural models because of significant correlations across samples.

In summary, the cumulative CFA findings indicate the factorial structures of the UWES and JES are distinct from the variables examined in Samples 1–4. In Sample 5, engagement was confirmed distinct from the other five constructs examined. In addition, results from the measurement models show the UWES and JES are not related to sex but do relate to age, though differently from each other across samples.

Scale relationships. To test the relationships between the UWES and JES with all other constructs in Samples 1–4, we examined measurement models² computing the standardized parameter estimates and the unstandardized parameter estimates with 95% confidence intervals for the relationships between engagement measures and study constructs, computed across 5,000 bootstrapped samples. Shown in Tables 9–12, the UWES and JES were positively related, with correlations between |.30| and |.79|, to job performance, organizational commitment, supervisory commitment, supervisory support, organizational support, and burnout demonstrating full support for Hypotheses 4a, 5b, 6c, 9a, 9c, and 10e, respectively. In Sample 1 (see Table 9) perceived stress was correlated at $-.49$ with the UWES, it was only $-.26$ with the JES, thus rejecting Hypothesis 10c. In Sample 2 (see Table 10), the correlation between physical strains and UWES was $-.30$, and was not significant with the JES, thus rejecting Hypothesis 10a. In Sample 3 (see Table 11), the correlation between job commitment and the UWES was .70 but was .29 with the JES, rejecting Hypothesis 6a. Psychological meaningfulness was not significantly related to the UWES, thus rejecting Hypothesis 7a. Psychological availability was not related to the JES, rejecting Hypothesis 7c. Job resources was related .30 to the UWES but only .22 with the JES, rejecting Hypothesis 8a. Lastly, in Sample 4 (see Table 12), the correlation between psychological safety and the UWES was .37 but only .25 with the JES, rejecting Hypothesis 7e.

The standardized estimates shown in Tables 9–12 were subjected to Steiger's (1980) formulas via Lee and Preacher's (2013a)

online calculator to test whether individual correlations between the UWES and JES with other variables were not significantly different from each other: Hypotheses 4b, 5c, 6b, 6d, 7b, 7d, 7f, 8b, 9b, 9d, 10b, 10d, and 10f. Results indicate Hypotheses 4b (job performance), 6b (job commitment), 7b (psychological meaningfulness), 7d (psychological availability), 10b (physical strains), 10d (stress), and 10f (burnout) were rejected; correlations between the UWES and JES these variables differed significantly. Hypotheses 6d (supervisor commitment), 7f (psychological safety), 8b (job resources), 9b (supervisory support), and 9d (organizational support) were supported; correlations between the UWES and JES with these variables were not significantly different from each other. In Sample 3 (see Table 11), the correlations between the UWES with organizational commitment and the JES with organizational commitment were not significantly different, but they were in Sample 2, providing partial support for Hypothesis 5c (see Table A4 for summary of hypotheses).

In short, the UWES and JES related significantly differently with stress, job performance, physical strains, psychological availability and meaning, job commitment, and burnout. The UWES and JES related similarly with supervisor commitment, psychological safety, supervisor and organizational support, and job resources. In one sample, the UWES and JES related similarly to organizational commitment, whereas in another sample they did not. In all but one of the significantly different correlations, psychological meaningfulness, the UWES demonstrated higher correlations with other variables than did the JES with other variables. These cumulative findings indicate the JES and UWES are related to each other, yet demonstrate dissimilar relationships with several other constructs considered part of the engagement nomological network. One can conclude the two measures are not interchangeable, and are either assessing different but related constructs, or assessing different dimensions of engagement (our second decision path; Cook & Campbell, 1976).

Construct-level relationships. When examining the construct-level relationships (see Table 13) in Sample 5, engagement was positively related to commitment and within the expected range, providing support for Hypothesis 12a. Engagement was negatively related to burnout and within the expected range, supporting Hypothesis 12b.

The correlation between engagement and psychological meaningfulness exceeded .79, our cutoff for hypothesis testing (Brown,

² We thank an anonymous reviewer for this suggestion.

Table 5
Sample 2 Fit Indices for Confirmatory Factor Analyses ($N = 156$)

Model	χ^2 [†]	df	CFI	TLI	RMSEA	90% CI for RMSEA	$\Delta\chi^2(\Delta df)$ [†] ΔCFI
Isolated confirmatory factor analyses							
Supervisor and organizational commitment as 2-factors	322.32	103	.832	.804	.117	[.103, .131]	
Supervisor and organizational commitment as 1-factor	584.27	104	.632	.576	.172	[.159, .186]	261.95(1)
Measurement models							
JES, UWES, organizational support, physical strains, supervisor and organizational commitment, sex, age	279.24	163	.959	.947	.068	[.054, .081]	
UWES and JES correlations with other focal variables constrained to equal	306.84	167	.950	.937	.073	[.060, .086]	27.60(4) –.009

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale.

[†] Significant to $p < .01$ unless noted otherwise.

2006; Kline, 2005). To determine whether engagement and psychological meaningfulness were empirically redundant, consistent with Le et al. (2010) we created a hierarchically nested model in which we constrained the correlations between engagement and meaningfulness with all other variables to be equal. Results from chi-square difference tests and ΔCFI s (shown in Table 8) indicate that engagement and psychological meaningfulness are not empirically redundant. Instead, their high correlation may be an indication the two constructs are “reciprocally causally related” (Le et al., 2010, p. 122).

Structural Models: Nomological Validity

Scale relationships. To evaluate the mediating effect of engagement in each sample,³ which provides information about the nomological validity of engagement (Campbell, 1960; Cronbach & Meehl, 1955), we examined nine structural models shown in Figures 1–5 (fit indices in Table 14). In Sample 1 (see Figure 1), the UWES fully mediated the relationship between perceived supervisor support (indirect $\beta = .16, p < .01$) and job performance, and perceived stress with job performance (indirect $\beta = -.19, p < .01$). In contrast, the JES fully mediated the relationship between supervisor support and job performance only (indirect $\beta = .15, p < .01$). In Sample 2 (see Figure 2), both the UWES and JES partially mediated the relationship between perceived organizational support and organizational commitment (UWES: indirect $\beta = .24, p < .01$; JES: indirect $\beta = .12, p < .01$). No mediation effects were found for either the UWES or JES with physical strains or supervisor commitment. In Sample 3 (see Figure 3), the UWES fully mediated the relationships between psychological availability and job commitment (indirect $\beta = .39, p < .01$), and between job resources and job commitment (indirect $\beta = .16, p < .01$). The UWES only partially mediated the relationship between job resources and organizational commitment (indirect $\beta = .08, p < .01$), and did not mediate between psychological meaningfulness and outcomes. The JES did not mediate any relationships (nonsignificant indirect effects). In Sample 4 (see Figure 4), the UWES partially mediated the relationship between psychological safety and burnout (indirect $\beta = -.16, p < .01$), whereas the JES did not mediate this relationship (nonsignificant indirect effects).

Overall, these combined results demonstrate the UWES and JES do not relate similarly to variables within the engagement nomo-

logical network, providing additional confirmation the UWES and JES either assess different but related constructs (not both assessing engagement), or different aspects/dimensions of the same engagement construct.

Construct-level relationships. Turning to construct-level relationships (Sample 5, Figure 5), our results show engagement is a direct antecedent of burnout but not organizational commitment. Even though the partial correlation between engagement and commitment from the measurement parameter estimates ($r = .67$, Table 13) would suggest engagement should be directly related to commitment, the structural model estimates this relationship while taking all other paths in the model into consideration. The possibility exists that the relationship between engagement and commitment is actually through psychological meaningfulness, which would place psychological meaningfulness as an outcome of engagement as opposed to an antecedent as proposed by Kahn (1990). However, this causal direction cannot be tested with our current data. Engagement did significantly mediate the relationship between psychological meaningfulness and burnout (indirect $\beta = -.21, p < .05$), but not between psychological availability or stress and burnout.

Discussion

Out of 36 hypotheses, 16 were fully supported, three partially supported, and 17 were rejected. Support for all hypotheses would have provided conclusive evidence that the two scales are interchangeable, measuring the exact same construct. Instead, we found the UWES and JES are not interchangeable, were related to each other, displayed similar relationships with eight variables, differing patterns of relationships with six variables, and showed disparate relationships with five of the focal variables in the nomological network. These cumulative results indicate the UWES and JES measure different aspects of engagement, as opposed to different but related constructs. We explain our findings by delineating three main study contributions.

³ Tables with direct, indirect, and total effects available from first author.

Table 6

Sample 3 Fit Indices for Confirmatory Factor Analyses ($N = 203$)

Model	χ^2 [†]	<i>df</i>	CFI	TLI	RMSEA	90% CI for RMSEA	$\Delta\chi^2(\Delta df)$ [†] ΔCFI
Isolated confirmatory factor analyses							
Job and organizational commitment as 2-factors	253.79	103	.904	.888	.085	[.072, .098]	
Job and organizational commitment as 1-factor	675.86	104	.636	.579	.165	[.153, .177]	422.07(1)
Measurement models							
UWES, JES, meaning, availability, job resources, job and organizational commitment, sex, age	401.20	241	.956	.945	.057	[.047, .067]	
UWES and JES correlations with other focal variables constrained to equal	552.63	246	.915	.896	.078	[.070, .087]	151.43(5) –.041

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale.

[†] Significant to $p < .01$ unless noted otherwise.

UWES and JES are not Interchangeable, so What are We Measuring?

Our first main contribution is in identifying that the UWES and JES are not interchangeable, which then leads to the questions—what are these two scales measuring and which one assesses engagement? These questions are at the heart of the current conversation about engagement and its measurement (e.g., Byrne, 2015; Cole et al., 2012; Newman & Harrison, 2008; Wefald et al., 2011), a conversation that has turned to scrutinizing existing measures in an effort to solidify the construct. We advance and expand the conversation by applying our results to the theoretical origins of engagement in our study: Schaufeli et al.'s (2002) opposite-of-burnout perspective and Kahn's (1990) role-expression model.

What are we measuring? As previously noted, the UWES was designed to assess Schaufeli et al.'s (2002) conceptualization of engagement as the opposite of burnout and a “persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior” (p. 74). Schaufeli et al.'s (2002) orientation was toward helping people create positive attitudes. Consequently, the UWES captures “a general, positive, job attitude [that] leads individuals to contribute rather than withhold desirable inputs from their work” (Harrison, Newman, & Roth, 2006, p. 320, brackets for clarity). Our results support this perspective. Our findings also support Kahn's (1990) engagement defined as “the harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves

physically, cognitively, and emotionally during role performances” (p. 694). Furthermore, the UWES and JES are moderately correlated in all but one sample. Thus, from our results we infer the two measures assess at least some portion of the same construct of engagement.

However, our findings also support the conclusion that the UWES assesses a broader domain than the JES. Specifically, for most variables assessed in the first four samples (i.e., stress, job performance, strains, organizational commitment, job commitment, psychological availability, and burnout), correlations with the UWES were significantly higher than those with the JES. With the exception of the four variables with which the UWES and JES correlated similarly (i.e., supervisor and organizational support, job resources, and psychological safety), in only one case (i.e., psychological meaningfulness) did the JES correlate more strongly with another construct than the UWES.

Though one might think higher correlations across the board is positive and shows the UWES is superior to the JES because it correlates highly with all other variables, these higher correlations should not be interpreted to mean the UWES is necessarily a better measure or that it more accurately assesses engagement. In support, Klein, Cooper, Molloy, and Swanson (2014) stated

If two alternative measures of a construct are contrasted in terms of the variance they explain in the dependent variable, and one is confounded with that dependent variable, the confounded measure will yield the larger effect size. Yet, it would be erroneous to conclude

Table 7

Sample 4 Fit Indices for Confirmatory Factor Analyses ($N = 190$)

Model	χ^2 [†]	<i>df</i>	CFI	TLI	RMSEA	90% CI for RMSEA	$\Delta\chi^2(\Delta df)$ [†] ΔCFI
Isolated confirmatory factor analyses							
UWES and Burnout as 2-factors	670.09	251	.858	.844	.094	[.085, .102]	
UWES and Burnout as 1-factor	1,022.27	252	.740	.715	.127	[.119, .135]	352.18(1)
JES and Burnout as 2-factors	660.10	271	.900	.889	.087	[.079, .095]	
JES and Burnout as 1-factor	2,200.41	275	.506	.461	.192	[.185, .199]	1,540.31(4)
Measurement models							
UWES, JES, psychological safety, burnout, sex, age	159.27	64	.954	.935	.089	[.071, .106]	
UWES and JES correlations with other focal variables constrained to equal	184.24	66	.950	.932	.097	[.081, .114]	24.97(2) –.004

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale.

[†] Significant to $p < .01$ unless noted otherwise.

Table 8
Sample 5 Fit Indices for Confirmatory Factor Analyses ($N = 230$)

Model	χ^2 [†]	<i>df</i>	CFI	TLI	RMSEA	90% CI for RMSEA	$\Delta\chi^2(\Delta df)$ [†] ΔCFI
Isolated confirmatory factor analyses							
Engagement, commitment, meaning as 3-factors	99.63	30	.974	.962	.100	[.079, .123]	
Engagement, with commitment and meaning 2-factors	330.35	32	.890	.846	.201	[.182, .221]	230.72(2)
Engagement and meaning, with commitment 2-factors	110.74	32	.971	.959	.103	[.083, .125]	11.11(2)
Engagement, commitment, meaning as 1-factor	353.44	33	.882	.839	.205	[.186, .225]	253.81(3)
Engagement, burnout, commitment, meaning as 4-factors	152.37	57	.974	.965	.085	[.069, .102]	
Engagement and burnout, commitment, meaning, as 3-factors	511.90	60	.878	.842	.181	[.167, .196]	359.53(3)
Measurement models							
Engagement, meaning, availability, perceived stress, burnout, organizational commitment, sex, age	361.02	162	.961	.949	.073	[.063, .083]	
Correlations with engagement equal those with meaning	381.06	166	.957	.946	.075	[.065, .085]	20.04(4) −.004

[†] Significant to $p < .01$ unless noted otherwise.

that the confounded measure is the better measure because of the larger effect size. (p. 227)

Thus, the UWES may demonstrate high correlations because of substantial overlap with other variables in the nomological network. As evidence, Newman and Harrison (2008) took 16 of the 17 UWES items and identified them as identical or nearly identical with items from other established and well-known measures of

commitment, job involvement, and positive affect indicating “conceptual overlaps between engagement and well-known measures” (p. 32). Wefald et al. (2011) reached a similar conclusion in their examination of the UWES compared to two other measures: the Shirom-Melamed Vigor Measure (originally coined the Shirom-Melamed Burnout Measure, Shirom & Melamed, 2006) and Britt’s (1999) measure of self-engagement in a military operation. Wefald

Table 9
Parameter Estimates for Measurement Model Including Both UWES and JES in Sample 1 ($N = 198$)

Sample 1	1	2	3	4	5	6	7	95% CI for UWES	95% CI for JES
1. Age								[2.167, 5.411]	[−1.022, 1.841]
2. Sex	−.974 [.509] (−.132)							[−.067, .035]	[−.016, .074]
3. UWES	3.654** [.822] (.334**)	−.016 [.026] (−.044)							[.218, .389]
4. JES	.420 [.726] (.045)	.026 [.023] (.083)	.294** [.043] (.642**)					[.218, .389]	
5. Stress	−1.719* [.623] (−.265*)	.033 [.020] (.151)	−.158** [.034] (−.493**)	−.069* [.027] (−.255*)				[−.229, −.098]	[−.127, −.022]
6. PSS	−2.998 [1.645] (−.131)	.036 [.055] (.047)	.367** [.092] (.324**)	.389** [.100] (.406**)	−.186* [.075] (−.277*)			[.205, .565]	[.226, .623]
7. Job perf.	.609 [.507] (.087)	.040* [.018] (.170*)	.203** [.038] (.588**)	.137** [.025] (.468**)	−.071** [.021] (−.349**)	.204** [.060] (.283**)		[.135, .284]	[.091, .190]
<i>M</i>	40.30	1.56	3.71	4.12	1.55	5.05	3.06		
<i>SD</i>	14.91	.50	.71	.68	.46	1.47	.47		

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale; PSS = Perceived Supervisory Support; Job Perf = Job performance. Sex coded as 1 for male, 2 for female. Unstandardized coefficients, standard errors in brackets within the columns 1–6, and standardized coefficients in parentheses. Bold indicates correlations are not significantly different from one another.

* $p < .05$. ** $p < .001$.

Table 10

Parameter Estimates for Measurement Model Including Both UWES and JES in Sample 2 ($N = 156$)

Sample 2	1	2	3	4	5	6	7	8	95% CI for UWES	95% CI for JES
1. Age									[1.998, 5.264]	[.840, 3.447]
2. Sex	.299 [.495] (.047)								[−.060, .073]	[.001, .100]
3. UWES	3.949** [.817] (.354**)	.006 [.034] (.014)								[.229, .478]
4. JES	2.109** [.667] (.279**)	.049 [.026] (.159)	.339** [.064] (.704**)						[.229, .478]	
5. Physical strains	−.184 [.424] (−.035)	.047* [.017] (.215*)	−.100* [.041] (−.296*)	−.030 [.022] (−.116)					[−.194, −.031]	[−.074, .013]
6. POS	1.090 [1.405] (.067)	.010 [.055] (.016)	.544** [.102] (.525**)	.362** [.082] (.456**)	−.227** [.056] (−.409**)				[.360, .758]	[.220, .545]
7. SupC	4.039 [1.269] (.269)	−.030 [.052] (−.048)	.371** [.094] (.389**)	.228** [.063] (.311**)	−.161** [.049] (−.315**)	.880** [.150] (.560**)			[.202, .575]	[.111, .360]
8. OrgC	3.214 [1.016] (.307)	.000 [.037] (.000)	.503** [.094] (.755**)	.301** [.068] (.588**)	−.107** [.037] (−.299**)	.802** [.130] (.729**)	.612** [.116] (.604**)		[.334, .702]	[.184, .452]
<i>M</i>	42.38	1.54	3.80	4.08	1.86	4.81	4.14	3.85		
<i>SD</i>	12.48	.51	.73	.59	.50	1.25	1.27	.91		

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale; POS = Perceived Organizational Support; SupC = Supervisor Commitment; OrgC = Organizational Commitment. Sex coded as 1 for male, 2 for female. Unstandardized coefficients, standard errors in brackets within the columns 1–7, and standardized coefficients in parentheses. Bold indicates correlations are not significantly different from one another.

* $p < .05$. ** $p < .001$.

et al. (2011) concluded the UWES was redundant in assessing job satisfaction and organizational commitment, as compared to these other measures. Likewise, Cole et al. (2012) reported confounding between the UWES and MBI.

Thus, using the insight gained from our scale comparisons combined with results from several previous studies scrutinizing the UWES, we construe our findings as indicating the UWES assesses a broader portion of the engagement nomological network than does the JES, wherein the UWES's assessment includes overlapping peripheral attitudes related to engagement. Turning back to the definitions of engagement, a noticeable difference lies in the breadth of conceptualizations the two measures assess. Schaufeli et al.'s (2002) suggests an overarching, general state of mind, whereas Kahn's definition suggests a more concentrated state, centered on and in the job role.

Which scale should we use? We recommend leveraging each scale for its strength. Because the UWES measures engagement along with some portion of job attitudes within the nomological network, the UWES may be well suited for assessing engagement in applied settings where the intention is to assess with a wide net to capture global perceptions across a number of employee issues. Practitioners' goals are typically to get a quick reading on how employees feel and then devote energy only to critical issues that present themselves in the data. Their strategy is not to focus on one construct only, but to gather information on multiple constructs using the most efficient method. When a measure shares substantial content with existing measures and consequently demonstrates high correlations, its strength lies in providing summative infor-

mation and not in teasing apart narrow distinctions for scientific advancement (Newman & Harrison, 2008).

When the aim is to extract and delineate between concepts, such as in research settings, we recommend the JES for assessing engagement. Our findings show the JES has less overlap with associated attitudes than the UWES, making it potentially more useful in identifying the edges of engagement's construct domain (Klein et al., 2014).

Construct-Level Insight and Construct Validity Evidence

Our second main contribution is in augmenting the construct validity evidence of engagement, which contributes directly to the current conversation about what engagement is. Our construct-level results showed engagement is distinct from commitment, and is distinct from and highly correlated with psychological meaningfulness. Furthermore, psychological meaningfulness and organizational commitment were highly related at the construct level. Recently Kahn and Fellows (2013) noted an employee's engagement depends on what matters to him or her—essentially, what he or she finds meaningful. Thus, in light of our results, it may be that engagement is more accurately defined as incorporating meaningfulness rather than being fostered by meaningfulness. In addition “Engaged workers feel joined with something outside themselves” (Kahn & Fellows, 2013, p.109), which suggests commitment, highly related to yet distinct from both engagement and meaningfulness in our construct-level analyses, may also play a key role in

Table 11

Parameter Estimates for Measurement Model Including Both UWES and JES in Sample 3 (N = 203)

Sample 3	1	2	3	4	5	6	7	8	9	95% CI UWES	95% CI JES
1. Age										[−2.665, 8.827]	[.435, 2.011]
2. Sex	.094 [.343] (.018)									[−.131, .286]	[−.011, .049]
3. UWES	3.252 [2.911] (.088)	.062 [.107] (.047)									[.034, .513]
4. JES	1.191** [.404] (.215**)	.018 [.015] (.092)	.257* [.122] (.185*)							[.034, .513]	
5. Psyc. avail	.479 [.525] (.073)	.002 [.020] (.010)	1.027** [.283] (.623**)	.029 [.018] (.119)						[.598, 1.728]	[−.006, .066]
6. Psyc. mng	.828* [.387] (.157*)	.004 [.013] (.024)	.200 [.117] (.151)	.112** [.019] (.564**)	.007 [.020] (.032)					[.008, .477]	[.080, .154]
7. JobR	−2.008 [1.287] (−.150)	.038 [.042] (.080)	1.020* [.416] (.303*)	.111* [.049] (.220*)	.056 [.070] (.094)	.090 [.055] (.187)				[.264, 1.919]	[.024, .218]
8. JobC	1.635* [.732] (.159*)	−.022 [.028] (−.062)	1.822** [.268] (.704**)	.111** [.036] (.286**)	.195** [.052] (.424**)	.082* [.036] (.221*)	.272** [.101] (.292**)			[1.338, 2.416]	[.049, .188]
9. OrgC	1.298* [.572] (.162*)	.005 [.022] (.016)	.837** [.239] (.416**)	.114** [.028] (.378**)	.076 [.044] (.212)	.062* [.026] (.214*)	.256** [.072] (.350**)	.263** [.060] (.468**)		[.450, 1.382]	[.066, .175]
<i>M</i>	46.16	1.76	4.10	4.43	4.18	4.51	3.34	4.64	3.37		
<i>SD</i>	12.13	.43	.53	.46	.61	.63	1.16	.88	.73		

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale; Psyc avail = Psychological availability; Psyc mng = Psychological meaningfulness; JobR = Job resources; JobC = Job commitment; OrgC = Organizational commitment. Sex 1 = male, 2 = female. Unstandardized coefficients, standard errors in brackets within the columns 1–8, and standardized coefficients in parentheses. Bold indicates correlations are not significantly different from one another.

* $p < .05$. ** $p < .001$.

employees' experience of engagement. Because our methodology was nonexperimental thereby constraining our ability to draw causal inferences, researchers need to study engagement, meaningfulness, and commitment using experimental methods to obtain empirical confirmation for the directionality of these constructs. At minimum, the implication of our findings are that Kahn's (1990) theoretical framework of engagement should be refined to reflect the likely reciprocal nature of the relationship between engagement and psychological meaningfulness, and relationship between meaningfulness and commitment.

Relation to Burnout

Our third main contribution, based on our findings from scale comparisons and examination of construct-level relationships, is that the construct of engagement differs from burnout. Cole et al.'s (2012) meta-analytical findings showed the UWES assesses a reverse scored MBI, and as such, the authors concluded engagement might not be a unique construct. However, they acknowledged their limits in making construct-level conclusions. To draw construct-level conclusions, Le et al. (2009) recommend following a rigorous procedure that requires assessing multiple constructs using multiple measures at two different time points; a procedure Cole et al. (2012) could not employ using their meta-analytic data. By using Le et al.'s (2009) procedure, we determined empirically that the construct of engagement is not the same as the opposite of

the burnout construct. Our findings do not negate or contradict Cole et al.'s (2012) conclusions that the UWES possesses substantial overlap with a reverse-scored MBI. Rather, our study examines the construct-level relationships between engagement and burnout, which heretofore has not been done.

Intuitively, people may struggle with separating engagement from the opposite of burnout, potentially explaining some of the popularity with this approach (aside from the scarcity of engagement measures). It is hard to imagine someone experiencing engagement at work, expressing high energy-expenditure and focused attention while also experiencing burnout—a prolonged state of mental and physical exhaustion (Maslach & Jackson, 1981). Because engagement requires physical and mental energy, which when overconsumed for extended periods could lead to burnout (Maslach & Leiter, 1997), the two constructs are undeniably related. In support, our results show a small to moderate negative relationship between engagement and burnout.

Implications for Practice and Science

Our findings have direct implications for applied settings where the primary goal is to increase employee engagement. The intent of applied practices is to identify levels of engagement that guide company-wide interventions, yet a number of models of engagement in the practice literature equate engagement with commitment, and some even use commitment measures (see Towers-

Table 12

Parameter Estimates for Measurement Model Including Both UWES and JES in Sample 4 (N = 190)

Sample 4	1	2	3	4	5	6	95% CI for UWES	95% CI for JES
1. Age							[1.087, 2.653]	[.323, 1.570]
2. Sex	-.870*						[-.070, .015]	[-.037, .027]
	[.359]							
	(-.182)							
3. UWES	1.846**	-.029						[.119, .198]
	[.398]	[.022]						
	(.341**)	(-.102)						
4. JES	.922**	-.006	.155**				[.119, .198]	
	[.319]	[.016]	[.020]					
	(.224**)	(-.026)	(.634**)					
5. Psychological safety	.057	.003	.101**	.053**			[.061, .146]	[.020, .088]
	[.413]	[.020]	[.022]	[.018]				
	(.012)	(.013)	(.366**)	(.253**)				
6. Burnout	-1.978**	.025	-.238**	-.106**	-.129**		[-.324, -.169]	[-.156, -.061]
	[.509]	[.029]	[.039]	[.024]	[.030]			
	(-.288**)	(.068)	(-.586**)	(-.340**)	(-.369**)			
M	39.20	1.49	3.93	4.35	2.66	2.89		
SD	9.59	.50	.54	.47	.38	.79		

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale; Sex coded as 1 for male, 2 for female. Unstandardized coefficients, standard errors in brackets within the columns 1–5, and standardized coefficients in parentheses. Bold indicates correlations are not significantly different from one another.

* $p < .05$. ** $p < .001$.

Watson's position clarified in Gebauer et al., 2008). Their conclusions, however, are off-track if using a commitment measure rather than an engagement instrument. Although focusing on commitment is a worthy endeavor, our cumulative results show commitment is not the same as engagement.

Additional implications of our findings that engagement is a construct negatively related to but uniquely distinct from burnout, include a revision to the theoretical story supporting the UWES (Schaufeli et al., 2002). Moreover, if the goal of the UWES is to serve as a clear measure of engagement only and not engagement

Table 13

Parameter Estimates for Measurement Model in Sample 5 (N = 230)

Sample 5	1	2	3	4	5	6	7	8	95% CI for engagement
1. Age									[.676, 2.824]
2. Sex	.371								[-.026, .065]
	[.407]								
	(.060)								
3. Engagement	1.696**	.018							
	[.553]	[.023]							
	(.192**)	(.046)							
4. Psyc. avail	.527	-.003	.170**						[.111, .281]
	[.399]	[.014]	[.041]						
	(.100)	(-.013)	(.565**)						
5. Psyc. mng	1.640**	.015	.388**	.138**					[.305, .491]
	[.508]	[.022]	[.047]	[.028]					
	(.204**)	(.046)	(.846**)	(.504**)					
6. Stress	-15.206*	.078	-1.457**	-1.461**	-1.633**				[-2.287, -.663]
	[6.241]	[.241]	[.415]	[.269]	[.397]				
	(-.171*)	(.022)	(-.287**)	(-.481**)	(-.353**)				
7. OrgC	1.184	.045	.586**	.223**	.633**	-3.419**			[.441, .722]
	[.977]	[.040]	[.071]	[.049]	[.075]	[.660]			
	(.079)	(.075)	(.666**)	(.437**)	(.813**)	(-.397**)			
8. Burnout	-15.275*	.361	-2.926**	-1.597**	-2.945**	48.416**	-6.076**		[-4.216, -1.891]
	[7.268]	[.278]	[.583]	[.385]	[.467]	[4.981]	[.830]		
	(-.145*)	(.086)	(-.489**)	(-.446**)	(-.540**)	(.802**)	(-.598**)		
M	37.64	1.55	3.77	4.36	3.81	1.78	3.92	1.97	
SD	12.48	.50	.67	.45	.73	.74	.99	1.02	

Note. Psyc. avail = Psychological availability; Psyc. mng = Psychological meaningfulness; OrgC = Organizational commitment; Sex coded as 1 for male, 2 for female. Unstandardized coefficients, standard errors in brackets within the columns 1–7, and standardized coefficients in parentheses.

* $p < .05$. ** $p < .001$.

Table 14
Fit Indices for Structural Models for all Five Samples

Model	χ^2	df	CFI	TLI	RMSEA	90% CI for RMSEA
Sample 1 (<i>N</i> = 198)						
UWES (Figure 1)	138.11	58	.964	.954	.084	[.066, .100]
JES (Figure 1)	133.50	58	.965	.953	.081	[.063, .099]
Sample 2 (<i>N</i> = 156)						
UWES (Figure 2)	209.92	106	.950	.936	.079	[.063, .095]
JES (Figure 2)	178.80	106	.965	.956	.066	[.049, .083]
Sample 3 (<i>N</i> = 203)						
UWES (Figure 3)	243.68	172	.975	.970	.045	[.031, .058]
JES (Figure 3)	299.40	172	.956	.946	.061	[.049, .072]
Sample 4 (<i>N</i> = 190)						
UWES (Figure 4)	59.81	31	.975	.964	.074	[.045, .102]
JES (Figure 4)	88.65	31	.952	.931	.104	[.079, .130]
Sample 5 (<i>N</i> = 230) Figure 5	409.09	152	.949	.936	.086	[.076, .096]

Note. UWES = Utrecht Work Engagement Scale; JES = Job Engagement Scale. All models controlled for age.

† Significant to $p < .01$ unless noted otherwise.

along with a portion of its neighboring attitudes, then changes are required to the UWES to reduce overlap with other job attitudes.

We conclude from our results showing engagement is not a mediator between suggested antecedents such as psychological availability and outcomes such as commitment that extensions to Kahn's theoretical framework are necessary. Although we did not assess job performance as part of our construct-level model, the UWES and JES were positively related to job performance in our comparison studies, consistent with prior examinations (e.g., Christian et al., 2011; Rich et al., 2010). Hence, Kahn's framework could be extended to include performance as a direct outcome of engagement.

Strengths, Limitations, and Directions for Research

Strengths of our study include that we used five different samples enabling us to confirm and extend findings, and provide unique insights into the construct-level relationship between engagement and its antecedents and consequences. Results varied in some cases across samples, generating new questions for research. For example, results from our third sample differed somewhat from other samples. As a follow-up to Sample 3, we learned that work in the nonprofit mental health industry is particularly challenging because of the extreme conditions of most of the clientele, lack of adequate funds, and physical demands of the job. One's need for resiliency and perseverance in working with mentally ill patients is interpreted differently than the physical requirements of the job. This insight suggests job type or industry type may be a potential moderator in how engagement is perceived and how it relates to job attitudes or performance. For instance, it may be that engagement looks and feels differently to construction workers, health care workers, and lawyers. The jobs in one industry relative to the others may be considered more physically oriented (e.g., construction), more emotionally oriented (e.g., health care), or more cognitively based (e.g., law). The emphasis on one dimension of engagement, and the intensity and duration of the work may affect how people experience and report their engagement.

Other strengths of our study include proactively addressing the potential for common method bias, choosing established measures

where available, using SEM, and applying Le et al.'s (2009) procedures in Sample 5. Furthermore, we chose to compare validated measures engagement with different theoretical bases from each other. We also included burnout measures different from the MBI to provide more insight into the relationship between engagement and burnout, without the confounding of scale design (i.e., the UWES heavily leveraging MBI items). The comparisons allowed us to address existing measurement criticisms, while accumulating new validity evidence.

A final strength is our use of Le et al.'s (2009) method for assessing construct-level relationships while controlling for measurement artifacts commonly missed in organizational studies. Recommended by a reviewer, this method enabled us to determine the construct-level relationship between engagement and burnout, and advance theory in engagement in a way not possible with measurement-level comparisons only. Our study is a first to employ this rigorous technique to the study of engagement, making our construct-level examination a significant contribution.

A noted limitation in our study is the less than ideal fit indices for the UWES and JES reported in Table 2. In particular, when the base models used for chi-square difference tests are not well specified, resulting chi-square difference tests may be misleading (Yuan & Bentler, 2004). The fix is to "find a different model structure that better fits the data" (p. 755), which in our case was not possible because the base model was the conceptualized model. Our findings point to the need for future research to develop better measures of engagement.

Though the strength of snowball sampling is in recruiting people across industries, organizations, and locations, its weakness is potential bias due to participants being part of the same social network. Individuals from the same social group may answer surveys similarly, but this possibility exists of individuals working together in organizations—an often-preferred sample in social science research. To counter anticipated concerns, we collected data from two organizations and found similar results for factor structures and relations between engagement and constructs measured in the snowball samples.

Researchers should look at whether the JES and/or the UWES predict behavioral outcomes better than commitment and meaningfulness, to add to the utility of the scales and the engagement construct. Additionally, the UWES is rated on a relative frequency response scale, whereas the JES uses a strength-of-agreement scale. It is possible that response scale anchors influence employees' ratings of engagement, contributing to unmeasured differences in the scales, which is relevant in scale comparisons.⁴ Researchers should examine the impact of response scales on ratings of engagement.

Conclusion

Engagement is a positive motivational state directed toward deriving meaningfulness at work. It manifests as the expression of affect, attention, and physical energy, which results in key behavioral and attitudinal outcomes, such as performance and commitment. Psychological availability and work resources, such as support, relate positively to engagement. Although engagement as a concept draws substantial attention, recent criticisms about its measurement have instigated measurement comparison studies, such as this one. Our study significantly advances the conversation through not only comparing measurement instruments, but by contrasting underlying conceptualizations within theoretically derived models of antecedents and consequences. By causing a reconsideration of engagement—both its measurement and as a construct—we have furthered and changed the conversation about what engagement is and how it should be measured.

⁴ We thank an anonymous reviewer for raising this point.

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Appendix A

Job Engagement Scale (1–6 Assess Physical; 7–12 Assess Affective; 13–18 Assess Cognitive)

-
1. I work with intensity on my job.
 2. I exert my full effort to my job.
 3. I devote a lot of energy to my job.
 4. I try my hardest to perform well on my job.
 5. I strive as hard as I can to complete my job.
 6. I exert a lot of energy on my job.
 7. I am enthusiastic about my job.
 8. I feel energetic about my job.
 9. I am interested in my job.
 10. I am proud of my job.
 11. I feel positive about my job.
 12. I am excited about my job.
 13. At work, my mind is focused on my job.
 14. At work, I pay a lot of attention to my job.
 15. At work, I concentrate on my job.
 16. At work, I focus a great deal of attention on my job.
 17. At work, I am absorbed in my job.
 18. At work, I devote a lot of attention to my job.
-

(Appendices continue)

Appendix B

Utrecht Work Engagement Scale (1–6 Assess Vigor; 7–11 Assess Dedication; 12–17 Assess Absorption)

-
1. At my work, I feel bursting with energy.
 2. At my job, I feel strong and vigorous.
 3. When I get up in the morning, I feel like going to work.
 4. I can continue working for very long periods at a time.
 5. At my job, I am very resilient, mentally.
 6. At my work I always persevere, even when things do not go well.
 7. I find the work that I do full of meaning and purpose.
 8. I am enthusiastic about my job.
 9. My job inspires me.
 10. I am proud of the work that I do.
 11. To me, my job is challenging.
 12. Time flies when I'm working.
 13. When I am working, I forget everything else around me.
 14. I feel happy when I am working intensely.
 15. I am immersed in my work.
 16. I get carried away when I'm working.
 17. It is difficult to detach myself from my job
-

Appendix C

Summary of Construct and Measures by Sample and Time

Survey time point	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Time 1	Engagement (JES) Supervisory support	Engagement (JES) Supervisory commitment	Engagement (UWES) Psychological availability (this study) Job commitment	Engagement (JES) Psychological safety	Engagement (UWES) Psychological availability (from Sample 3) Psychological meaningfulness (May et al., 2004) Stress (Cohen et al., 1983) Org. commitment (OCQ) Burnout (CBI) Engagement (JES)
Time 2	Engagement (UWES) Stress (Cohen et al., 1983) Job performance	Engagement (UWES) Organizational commitment (Allen & Meyer, 1990) Organizational support Physical strains	Engagement (JES) Psychological meaningfulness (May et al., 2004) Org. commitment (Allen & Meyer, 1990) Job resources	Engagement (UWES) Burnout (CBI)	Psychological availability (May et al., 2004) Psychological meaningfulness (Brown & Leigh, 1996) Stress (Cavanaugh et al., 2000) Org. commitment (OC) Burnout (Enzmann et al, 1998; Malach-Pines, 2005)

Note. JES = Job Engagement Scale; UWES = Utrecht Work Engagement Scale; CBI = Copenhagen Burnout Inventory; OCQ = Organizational Commitment Questionnaire.

(Appendices continue)

Appendix D

Psychological Availability (Sample 3 Only)

Item	Factor loading
1. I am emotionally ready to deal with the demands of my work.	.88
2. I have the emotional resources to personally invest myself into my work role.	.82
3. I feel emotionally ready to experience what happens in my job.	.79
4. I am free mentally to concentrate on my job.	.76
5. I am able to do the thinking that is necessary to do my work.	.73
6. I am physically ready to get into my work.	.61
7. I do not have to expend mental energy worrying about my life outside of work.	.47

Appendix E

Summary of Hypotheses

Hypothesis number	Hypothesis	Support
H1	The UWES and JES are positively correlated with each other, demonstrating a correlation between .30 and .79.	partial
H2	The UWES and JES are each represented by a three-factor structure.	full
H3a	The physical dimension of the JES is more strongly correlated with the vigor dimension of the UWES (greater than .50 but less than .79) than it is with the dedication or absorption dimensions of the UWES (less than .30).	no
H3b	The affect dimension of the JES is more strongly correlated with the dedication dimension of the UWES (greater than .50 but less than .79) than it is with the vigor or absorption dimensions of the UWES (less than .30).	no
H3c	The cognition dimension of the JES is more strongly correlated with the absorption dimension of the UWES (greater than .50 but less than .79) than it is with the vigor or dedication dimensions of the UWES (less than .30).	no
H4a	The UWES and JES are positively related to job performance, demonstrating a correlation between .30 and .79.	full
H4b	The correlations between the UWES and JES with job performance are not significantly different from one another.	no
H5a	The UWES and JES measures are distinct from the organizational commitment measure.	full
H5b	The UWES and JES are positively related to organizational commitment, demonstrating a correlation between .30 and .79.	full
H5c	The correlations between the UWES and JES with organizational commitment are not significantly different from one another.	partial
H6a	The UWES and JES are positively related to job commitment, demonstrating a correlation between .30 and .79.	no
H6b	The correlations between the UWES and JES with job commitment are not significantly different from one another.	no
H6c	The UWES and JES are positively related to supervisory commitment, demonstrating a correlation between .30 and .79.	full
H6d	The correlations between the UWES and JES with supervisory commitment are not significantly different from one another.	full
H7a	Psychological meaningfulness is positively related to the UWES and JES, demonstrating a correlation between .30 and .79.	no
H7b	The correlations between the UWES and JES with psychological meaningfulness are not significantly different from one another.	no
H7c	Psychological availability is positively related to the UWES and JES, demonstrating a correlation between .30 and .79.	no
H7d	The correlations between the UWES and JES with psychological availability are not significantly different from one another.	no
H7e	Psychological safety is positively related to the UWES and JES, demonstrating a correlation between .30 and .79.	no
H7f	The correlations between the UWES and JES with psychological safety are not significantly different from one another.	full
H8a	Job resources is positively related to the UWES and JES, demonstrating a correlation between .30 and .79.	no
H8b	The correlations between the UWES and JES with job resources are not significantly different from one another.	full
H9a	The UWES and JES are positively related to supervisory support, demonstrating a correlation between .30 and .79.	full
H9b	The correlations between the UWES and JES with supervisory support are not significantly different from one another.	full
H9c	The UWES and JES are positively related to organizational support, demonstrating a correlation between .30 and .79.	full
H9d	The correlations between the UWES and JES with organizational support are not significantly different from one another.	full
H10a	The UWES and the JES are negatively related to physical strains, demonstrating a correlation between $-.30$ and $-.79$.	no
H10b	The correlations between the UWES and JES with physical strains are not significantly different from one another.	no
H10c	The UWES and the JES are negatively related to perceived stress, demonstrating a correlation between $-.30$ and $-.79$.	no
H10d	The correlations between the UWES and JES with perceived stress are not significantly different from one another.	no
H10e	The UWES and the JES are negatively related to burnout, demonstrating a correlation between $-.30$ and $-.79$.	full
H10f	The correlations between the UWES and JES with burnout are not significantly different from one another.	no
H11a	The UWES and JES demonstrate nonsignificant relationship with sex.	full
H11b	The UWES and JES demonstrate small relationships with age, at least .30, but no larger than .79.	partial
H12a	Engagement demonstrates a correlation with commitment that is between .30 and .79.	full
H12b	Engagement demonstrates a correlation with burnout that is between $-.30$ and $-.79$.	full

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