The Independence of Burnout and Engagement: Incremental Predictive Validity and Construct Reappraisal as Different Combinations of the Same Components (Energy and Evaluation)

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A thesis submitted in partial fulfillment of the requirements for the degree in Master of Science  
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THE INDEPENDENCE OF BURNOUT AND ENGAGEMENT: INCREMENTAL PREDICTIVE VALIDITY AND CONSTRUCT REAPPRAISAL AS DIFFERENT COMBINATIONS OF THE SAME COMPONENTS (ENERGY AND EVALUATION)

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by

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science

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Abstract

The present investigation was conducted in response to recent concerns regarding the redundancy/independence of two related constructs in I/O Psychology: Burnout and engagement. Using students in an academic context, I first addressed this issue by investigating the incremental validity of the Utrecht Work Engagement Scale (UWES) over the Maslach Burnout Inventory (MBI) and vice versa in the prediction of six criterion variables (academic performance, physical ill-being, positive affect, negative affect, subjective experience of growth, eudaimonic well-being) in a sample of undergraduate students. Contrary to the recent meta-analysis by Cole, Walter, Bedeian, and O’Boyle (2012), I did not find evidence for construct redundancy. Engagement seems better suited to the prediction of positive outcomes (e.g., subjective experience of growth) whereas burnout seems better suited to the prediction of negative outcomes (e.g., physical ill-being). Next, I sought to address whether the constructs of burnout and engagement might be better conceptualized as simply different amalgamations of energy and evaluation. In that regard, I provide the first attempt at direct replication of Demerouti, Mostert, and Bakker’s (2010) recent investigation in an academic context. Based on a series of confirmatory factor analyses, I failed to find evidence in support of the contention that engagement and burnout would be better conceptualized as different amalgamations of energy and evaluation. In that regard, I failed to replicate the findings of Demerouti et al. (2010). I discuss theoretical and practical implications of this investigation as well various limitations and possible future directions.
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Introduction

In this paper, the topic of inquiry concerns two constructs relevant to the field of organizational psychology: Burnout and engagement. The first objective of the present investigation was to assess the extent to which these constructs are functionally independent. Beyond this, it is recognized that while it is possible that burnout and engagement are better suited for the prediction of different outcomes, conceptualizing these constructs as distinct separate predictors may be suboptimal due to the possibility that both burnout and engagement are functions of the same two core components (a subjective perception of energy and a summative overall evaluation of one’s work).

Even when burnout and engagement instruments are not used simultaneously, it might be myopic to rely on either a dedicated burnout-only or a dedicated engagement-only instrument since low levels of burnout are inherently ambiguous (a lack of burnout could imply engagement or neutrality) in the same manner that low levels of work engagement are ambiguous (a lack of engagement could imply burnout or neutrality).

I argue that it might be more informative to use scales that assess individuals’ subjective levels of energy and individuals’ evaluation of their work which would be more meaningful in determining whether individuals are experiencing burnout, engagement, or neither. In addition to the advantage of informational clarity is financial/procedural practicality: Instead of relying on two instruments with considerable content overlap, one instrument would suffice.

For the benefit of the reader, I provide now a figurative roadmap of the content contained herein. I begin with a brief literature review of my focal constructs: Organizational burnout and subsequently engagement. Next, I discuss how the literature has framed the relationship between these two constructs, emphasizing concerns over the independence of these constructs.
Ultimately, I argue that while these constructs may be functionally independent in the sense that use of one instrument does not necessarily obviate the other, it might be more optimal and useful to re-conceptualize these two constructs as different amalgamations of the same components: Evaluation and energy. To that end, I outline a series of hypotheses to be tested in the present investigation. Using a convenience sample of students, I hoped to provide empirical evidence regarding the nature of burnout and engagement in an academic context under the assumption that the results may generalize to employees in an organizational context.

Burnout

History

Burnout, as an organizational phenomenon, has been the subject of great scholarly interest and attention ever since the mid 1970s (Angerer, 2003; Chang, 2009). Many literature reviews (e.g., Savicki & Cooley, 1982; Meier, 1983; Glass & McKnight, 1996; Seti, 2007; Kaschka, Korczak, & Broich, 2011) have credited the psychiatrist Herbert Freudenberger with first introducing a scholarly definition of burnout as a state characterized by the experience of subjective exhaustion as well as the experience of psychosomatic ailments. While Freudenberger (1975) acknowledged that the experience of burnout may well afflict anyone, it was suggested that those working in occupations pertaining to human services (e.g., clinical staff, hot line operators, mental health counselors) in particular were more prone to “burn out.”

Indeed, subsequent research regarding burnout continued to characterize this phenomenon as one that was of special interest to those working in the human services (Maslach, 2003). However, in more recent years, it has been acknowledged that burnout is likely a broader phenomenon afflicting those who work outside the human services as well (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Halbesleben & Demerouti, 2005).
The Three-Factor model of Burnout

While initial scholarly investigations of this construct spawned various fledgling models of burnout (e.g., Meier, 1983; Perlman & Hartman, 1982) it eventually became apparent that Maslach and Jackson’s 1981 (as cited by Qiao & Schaufeli, 2011) three-factor model of Burnout had claimed dominance in that it was particularly well-regarded and oft-cited by scholars (Demerouti et al., 2001; Angerer, 2003; Seti, 2007; Skirrow & Hatton, 2007; Chang; 2009; Qiao & Schaufeli, 2011). Thus, for a time, burnout was widely regarded as a multidimensional construct consisting of: (1) emotional exhaustion, which was characterized as a subjective sense of “depletion of one’s emotional resources”, (2) depersonalization/cynicism which was characterized as the endorsement of “negative and callous attitudes” towards work-related targets and (3) reduced personal accomplishment which was characterized by the perception that one’s achievements are unsatisfactory (Maslach & Florian, 1988, p. 85).

Based on the aforementioned three-factor model, the measurement of burnout has predominantly been achieved using some variant of the Maslach Burnout Inventory (MBI) which has been generously described as “the gold standard for identifying burnout in the medical research literature” (Thomas, 2004, p. 2881). As might be expected based on the previous discussion, the original MBI was designed for use amongst individuals working in human service occupations (Maslach, Schaufeli, & Leiter, 2001) though the scope of this instrument was expanded in later variants to include, for example, those working in educational contexts (via the MBI Educators Survey, or MBI-ES) as well as those in even more general contexts (via the MBI General Survey, or MBI-GS). In each variant, the measurement involves self-report items that purportedly assess individuals’ emotional exhaustion, depersonalization, and sense of reduced personal accomplishment.
Problems with the Three-Factor Model of Burnout

Theoretical Ambiguities. Kalliath et al. (2000) noted that scholars have equivocated on exactly how the three factors of burnout are supposed to be related. For example, while Maslach (1993, as cited by Kalliath et al., 2000) proposed that emotional exhaustion results in depersonalization and later reduced personal accomplishment, others (e.g., Golembriewski & Munzenrider, 1988, as cited by Kalliath et al., 2000) have suggested that it is depersonalization that causes emotional exhaustion, and not the reverse.

Basic Psychometric Properties of the MBI. The psychometric properties of the MBI (in its various forms) are, surprisingly, somewhat modest relative to the praise it receives. In a recent meta-analysis of the internal reliability of the MBI’s three subscales, Wheeler, Vassar, Worley, and Barnes (2011) compared Cronbach’s $\alpha$ for the three subscales of the MBI across 84 empirical studies. They found that internal reliability coefficients tended to fall between the .70 to .80 range, with only emotional exhaustion consistently scoring above .80. It is generally understood that this is indicative of acceptable (but not particularly exceptional) internal consistency. Halbesleben and Demerouti (2005) also noted that the unidirectional phrasing of items on the MBI was suboptimal and may have lead to artificial clustering (i.e., inflated substantiation) of the MBI’s factor structure. Still, with regards to predictive validity, burnout (as assessed by the MBI) has been associated with various intuitive, theoretically defensible covariates including job performance, turnover intention, actual turnover, physiological ill-health, and mental ill-health (Maslach, Schaufeli, & Leiter, 2001).

Empirical Substantiation of the MBI. As noted by Kalliath et al. (2000), many prior empirical studies that ostensibly supported the three-factor model of burnout championed by the developers of the MBI were in many ways flawed methodologically (i.e., poor fit statistics,
inability to validate across samples, extensive model respecifications to achieve acceptable
degrees of model fit). The prevalence of these methodological flaws is perhaps not too surprising
given that the factor structure of the MBI is often tested via structural equation modeling, a
relatively contemporary family of statistical techniques which (despite its contemporary
proliferation) is often misused and misinterpreted (Kline, 2011).

In their own investigation of the factor structure of the MBI, Kalliath et al. (2000) failed
to confirm the popular three-factor model. In their attempts to respecify a better fitting model,
the authors sought to eliminate problematic items defined by the characteristic of having the least
amount of variance explained by their corresponding latent factor. The authors noted during this
process that many of the items that were specified as indicators of the latent factor personal
accomplishment were problematic in this regard: Personal accomplishment explained very low
amounts of variance in each of its indicators (less than 40% for each indicator).

In light of this, the authors retained a two-factor model that excluded reduced personal
accomplishment, resulting in a conceptualization of burnout based only on emotional exhaustion
and depersonalization. This two-factor model demonstrated good overall model fit based on a
variety of indices (e.g., chi square test, RMSEA) and also demonstrated model invariance (i.e.,
cross validation) across two additional samples of human service employees.

**Three or Two Factor Models of Burnout?**

A two-factor conceptualization of burnout (similar to that retained by Kalliath et al.,
2000) that emphasizes emotional exhaustion and depersonalization/cynicism has begun to gain
traction in the burnout literature. For example, some (e.g., Cordes & Dougherty, 1993, as cited in
Seti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Schaufeli & Taris, 2005, as cited
in Qiao & Schaufeli, 2011) do not consider reduced personal accomplishment to be a third core
dimension of burnout at all. This may well be due to the fact that this dimension yields the least consistent relationships to theoretical outcomes (e.g., job satisfaction) of burnout compared to emotional exhaustion and depersonalization (Demerouti et al., 2001; Halbesleben & Buckley, 2004; Halbesleben & Demerouti, 2005). Furthermore, Qiao and Schaufeli (2011) noted that practitioners have frequently observed exhaustion and cynicism as concurrent symptoms amongst clinically burnt out individuals, but this is not the case for reduced personal accomplishment.

One newer alternative to the three-factor conceptualization of burnout (and the MBI with which it is associated) is reflected in the Oldenburg Burnout Inventory (OLBI; Demerouti, 1999 as cited in Demerouti et al., 2001). This instrument considers two core dimensions for burnout: Exhaustion (similar to emotional exhaustion) and disengagement which is characterized as “distancing oneself from one’s work and *experiencing negative attitudes toward the work object, context, or in general.*” (Demerouti et al., 2001, p. 501. Emphasis added). Advantages over the MBI include: The expansion of exhaustion to include not only affective, but cognitive and physical perceptions of exhaustion and bidirectionally-phrased items for each subscale. With regards to the latter point, it has been argued that unidirectionally-phrased items are potentially problematic in that they are more prone to acquiescent responding by participants.

Recently, Qiao and Schaufeli (2011) explicitly sought to assess the factor structure of burnout (i.e., what number of factors most accurately represents burnout?) by simultaneously including subscales from four of the most predominant burnout measures in the literature: Maslach and Jackson’s (1981, as cited in Qiao & Schaufeli, 2011) MBI, Demerouti et al.’s (2001) OLBI, Pines and Aronson’s (1988, as cited in Qiao & Schaufeli, 2011) Burnout Measure (BM), and Shirom’s (1989, as cited in Qiao & Schaufeli, 2011) Shirom-Melamed Burnout
Measure. After testing a series of confirmatory factor analysis models, it was determined that the best model was one wherein all subscales were thought to be indicators of two constructs which the authors named Withdrawal (which manifested in the cynicism and depersonalization subscales of the MBI and OLBI) and Exhaustion (which manifested in every other subscale).

**Summary**

While the MBI has received arguably the most attention and use in the burnout literature, a two-factor conceptualization of burnout is becoming plausible and attractive. As alluded to previously, limitations in the psychometric properties of the MBI (i.e., modest internal reliability, unidirectional phrasing of items) justified continued efforts to find (and use) better measurement tools. These methodological concerns were compounded by both theoretical and empirical challenges to the supposed “gold-standard” (Thomas, 2004, p. 2881) three-factor model that has reigned supreme for decades. An alternative (and more contemporary) perspective of burnout characterizes it as a state of overall exhaustion and negative attitudes/evaluations towards one’s work (generally or specifically).

**Work Engagement**

**History**

Relative to burnout, work engagement (as a subject of scholarly investigation) is a much younger construct. The earliest scholarly treatment of this subject has been attributed to Kahn (1990, as cited by Bakker, 2011) who described “engaged employees as being fully physically, cognitively, and emotionally connected with their work roles (p. 265).”

Interest in the work engagement construct has since proliferated (Nerstad, Richardsen, & Martinussen, 2010). For example, Kahn’s seminal work has since been cited over 600 times at the time of this writing and a search on the database, PsycInfo for either “organizational
engagement” or “work* engagement” yields 414 peer-reviewed papers, with more than 95% (398) of those papers being published within the last decade.

The recent fervour with which contemporary organizational researchers are now investigating (or at the very least considering) engagement as a positive state of optimized performance and well-being does well to satisfy Seligman and Csikszentmihalyi’s (2000) call for a paradigm shift towards what they called, “positive psychology.” Proponents of positive psychology note that scholars have historically placed a disproportionate emphasis on a “disease model of human functioning” (p. 5) wherein the objective implicitly pertained to “fixing what is broken” (p. 7) as opposed to “nurturing what is best.” (p. 6). Indeed, positive psychology as a school of thought has flourished tremendously in the last decade (Csikszentmihalyi, 2009) and thus it is perhaps not surprising that work Engagement, too, would have proliferated.

**Schaufeli and Bakker’s Predominant Model of Work Engagement**

While there are a number of definitions of engagement in the literature, the most predominant conceptualization is the three-factor model proposed by Wilmar Schaufeli and Arnold Bakker (Schaufeli & Bakker, 2004) who were the first to characterize engagement as the opposite of burnout, thusly consisting of three dimensions: Vigour, dedication, and absorption (Demerouti, Bakker, de Jonge, Janssen, & Schaufeli, 2001).

Perhaps consequentially, Bakker and Schaufeli’s (1999, as cited in Demerouti et al., 2001) Utrecht Work Engagement Scale (UWES) is the most widely used measurement tool for the assessment of work engagement (Viljevac, Cooper-Thomas, & Saks., 2012) in the scholarly literature. The original UWES consisted of 17 items aimed at assessment of the three aforementioned components of engagement (e.g., vigour, dedication, and absorption) though a
more recent shortened 9-item version of this scale seems to be at least equally valid (Schaufeli, Bakker, & Salanova, 2006).

**Psychometric Properties of the UWES: Reliability, Validity, and Factor Structure**

The UWES, in both its original 17-item format and its revised 9-item shortened format, has generally demonstrated good inter-item reliability in a number of different languages and contexts. In the last 10 years, authors have reported acceptable to excellent inter-item reliability coefficients when used with Italian (Balducci, Fraccaroli, & Schaufeli, 2010), Dutch (Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002; Breevaart, Bakker, Demerouti, & Hetland, 2012), Spanish (Schaufeli et al., 2002; Salanova, Schaufeli, Martinez, & Breso, 2010; Extremera, Sanchez-Garcia, Duran, & Rey, 2012; Vecina, Chacon, Sueiro, & Barron, 2012), Chinese (Fong & Ng, 2012), Swedish (Hallberg & Schaufeli, 2006), American (Mills, Culbertson, & Fullagar, 2012), Norwegian (Nerstad, Richardsen, & Martinussen, 2010), Portugese (Schaufeli et al., 2002), Finnish (Seppala et al., 2009), and Japanese (Shimazu et al., 2008) samples.

With regards to the predictive validity of the UWES, authors have demonstrated that higher engagement scores on the UWES have been associated with greater work performance (Balducci et al., 2010), greater academic performance (Schaufeli et al., 2002; Salanova et al., 2010), better job-related affective well being (Balducci et al., 2010), greater job satisfaction (Shimazu et al., 2008; Vecina et al., 2012), stronger feelings of autonomy, stronger intentions to remain with one’s organization (Vecina et al., 2012), less burnout (Hallberg & Schaufeli, 2006; Fong & Ng, 2012), less strain (Shimazu et al., 2008), less perceived stress (Fong & Ng, 2012), less depressive symptomatology, fewer somatic complaints, fewer sleep disturbances, less role conflict, and weaker turnover intentions (Hallberg & Schaufeli, 2006).
With regards to the discriminant validity of the UWES, Hallberg and Schaufeli (2006) reported acceptably modest correlations between engagement scores derived from the UWES and scores pertaining to other superficially similar attitudinal constructs such as organizational commitment ($r = .46$) and job involvement ($r = .35$). That is, while similar and related, the constructs are not so highly correlated to the extent that they are redundant. Furthermore, the aforementioned authors compared two factor models: One wherein organizational commitment, job involvement, and work engagement items loaded on a single factor (named, “Work Attachments”) and one wherein each item loaded on its respective factor. The latter, three-factor model demonstrated superior fit, again attesting to the discriminant validity of work engagement.

Additional evidence for discriminant validity is provided by Vecina et al. (2012) who noted that work engagement and organizational commitment differ with regards to the strength of their relationships with various covariates. For example, work engagement has demonstrated stronger relationships with the absence of health complaints, while organizational commitment has demonstrated stronger relationships with intentions to remain with an organization.

In general, authors have found evidence for the adequate fit of a three-factor model in many instances (Balducci et al., 2010; Breevart et al., 2012; Extremera et al., 2012; Fong & Ng, 2012; Hallberg & Schaufeli, 2006; Nerstad et al., 2010; Schaufeli et al., 2002; Seppala et al., 2009; Vecina et al., 2012); that is, a three-factor structure of engagement fitted sample data better than a single-factor model of engagement. It should be noted, though, that occasionally, a 1-factor model fit the data equally well (e.g., Seppala et al., 2009) and in other instances, a one-factor model was superior to the theorized three-factor model (e.g., Shimazu et al., 2008). Indeed, due to a tendency to observe high correlations between the three supposed latent factors underlying engagement, many scholars (e.g., Fong & Ng, 2012; Shimazu et al., 2008; Nerstad et
al., 2010) have endorsed the opinion that engagement could be conceptualized either as a three-factor construct or a unidimensional construct. This will be discussed in greater detail later.

**Uncertainty over the Factor Structure UWES**

Despite a substantial amount of evidence attesting to the validity of the UWES, several issues of concern are worth noting. For instance, many (e.g., Breevart et al., 2012; Fong & Ng, 2012; Hallberg & Schaufeli, 2006; Nerstad et al., 2010; Seppala et al, 2009) have noted high inter-correlations between the three latent factors, casting some amount of uncertainty upon the supposed three-factor structure of the construct.

While many (e.g., Fong & Ng, 2012; Mills et al., 2012; Nerstad et al., 2010; Shimazu et al., 2008) have noted that data derived from the UWES-9 (as opposed to the UWES-17) has tended to result in better overall model fit and better model stability over time, these issues are still not entirely resolved. For instance, even while using UWES-9, Seppala et al. (2009) found high latent factor inter-correlations of .83 and .97.

**Engagement as a two-factor construct**

Despite the original three-factor model of engagement, many have already implicitly suggested a two-factor conceptualization of engagement that emphasizes vigour and dedication while de-emphasizing absorption. For example, Bakker et al. (2011) described “engaged” employees as ones who “feel energetic and dedicated” (p. 5) while Nerstad et al. (2010) explicitly suggested that “vigor and dedication are considered to be the core constructs of engagement (p. 331).” In a similar vein, Salanova et al. (2010) measured both engagement and burnout in their investigation while opting to exclude the supposed third dimensions of each respective construct (absorption and reduced efficacy).
The aforementioned conceptualization of work engagement as possibly a two-factor construct is not necessarily contradictory to the empirical tests of the UWES discussed previously. It should be noted that while there have been many studies advocating for the adequate fit of a three-factor model of engagement, most of these studies (e.g., Breevaart et al., 2012; Extremera et al., 2012; Fong & Ng, 2012; Seppala et al., 2009; Shimazu et al., 2008; Vecina et al., 2012) have only compared the fit of a three-factor model vs. that of a one-factor model, thereby not considering the possibility that the difference in model fit between a three-factor model and a two-factor model might be negligible.

One exception wherein the adequacy of a three-factor model was compared to that of a two-factor model of work engagement is seen in the work of Nerstad et al. (2010). The authors attempted to examine a two-factor model of work engagement after observing high correlations between the latent factors vigour and dedication (.96 in the UWES-17 and .99 in the UWES-9). While they did find that a three-factor model fitted the data significantly better than a two-factor model, it should be noted that these authors assessed a two-factor model such that vigour and dedication would load on one factor while absorption loaded on another. Interestingly, the authors considered the possibility of Engagement being a two-factor construct consisting of vigour and dedication as a means of reconciling the high inter-correlation between these factors.

Summary

Work engagement is a young construct that has, in recent years, captured the interest and attention of many organizational scholars. Predominantly, the measurement tool of choice used in such investigations is the UWES. Many have noted and recommended the use of the abbreviated, shortened UWES-9 over its lengthier predecessor UWES-17 citing better model fit to the data (as well as better model stability over time) but questions of factor structure still
linger. While originally conceived of as consisting of three dimensions (vigour, dedication, and absorption) there is reason to consider a two-factor model of engagement consisting primarily of vigour and dedication.

**Burnout and Work Engagement: Redundant Constructs?**

In this section, I argue for an alternative conceptualization of the relationship between burnout and engagement. The implicit treatment of these constructs as separate and distinct (but related) may be sub-optimal due to the redundant nature of these two constructs. It should be noted that the issue might not be as simple as burnout being sufficient and engagement being superfluous (or vice versa). Indeed, I do not suggest that either construct fails to add incremental predictive validity to the other. Rather, I argue that they are redundant to the extent that both are ultimately amalgamations of the same two core constituent components: A subjective perception of energy (e.g., exhaustion and vigour) and an overall summative evaluation of one’s work (e.g., cynicism and dedication). This assertion is not entirely unprecedented; here I discuss some of the conceptual rationale underlying this concern as well as some of the recent empirical investigations that have sought to address this issue.

**Theoretical and Conceptual Concern**

As noted by Cole et al. (2012), there have been two schools of thought pertaining to the relationship between burnout and engagement. The first, espoused by Maslach and colleagues (1997, as cited by Cole et al., 2012) posits that engagement and burnout occupy the same continuum and are opposites. Consequently, the dimensions of the MBI are sufficient to assess both burnout and engagement. The second, newer perspective championed by Schaufeli and Bakker (2004, as cited by Cole et al., 2012) posits that engagement and burnout are independent (i.e., non-redundant) states. It is somewhat confusing, though, that Schaufeli and Bakker (2004)
also contend that engagement is, “the positive antipode of burnout” (p. 294) which would suggest strong interdependence between the constructs. Is it possible for two constructs to be separate, distinct, and “independent” while simultaneously being each other’s opposite? Does independence refer to orthogonality of constructs? Or merely different spatial positions along a single continuum?

One way to reconcile this confusion may be to conceptualize the individual components of burnout and engagement as constituting two orthogonal and continuous dimensions: One spanning from exhaustion-to-vigour and the second spanning from cynicism-to-dedication (see Figure 1a). Indeed, others have already suggested that engagement and burnout are simply different amalgamations of these two core dimensions. Nerstad et al. (2010) described the engagement components of vigour and dedication as, “opposites of the two burnout dimensions of emotional exhaustion and cynicism (p. 331).” Similarly, Bakker and Schaufeli (2004) themselves suggested that “[vigour and exhaustion] span a dimension that might be labeled activation, whereas… [dedication and cynicism] constitute the opposite poles of a dimension that might be labeled identification (p. 295).”

In this sense, both schools of thought suffer some serious limitations. The perspective championed by Maslach and colleagues would be erroneous in the sense that a dedicated burnout instrument (e.g., the MBI) would be inadequate to assess engagement and vice versa. A high score on the exhaustion scale of the MBI might be meaningful but a low score would be ambiguous in the sense that it might reflect either energetic neutrality or vigour.

The perspective championed by Schaufeli and his colleagues is also flawed in the sense that burnout and engagement cannot be purely independent states. In order for engagement and burnout to be truly orthogonal constructs, it would have to be theoretically possible to
Figure 1a. Reconceptualising Burnout and Engagement as different amalgamations of the same core components, Evaluation and Energy.
simultaneously experience high levels of both burnout and engagement. Since Burnout is characterized by the joint experience of exhaustion and cynicism and engagement is characterized by the joint experience of vigour and dedication, it becomes difficult to imagine how one could simultaneously experience both exhaustion and vigour, or how one could simultaneously experience both cynicism and dedication towards one’s work.

One additional advantage of the conceptualization illustrated in Figure 1 is the explicit recognition that individuals might be neutral (neither burnt out nor engaged) for entirely different reasons: An individual might experience a high subjective sense of energy while feeling negatively towards their work, or they might experience a low subjective sense of energy while feeling positively towards their work. Furthermore, this model of burnout-engagement explicitly recognizes that it is currently ambiguous to what extent a dedicated burnout instrument overlaps with a dedicated engagement instrument regarding prediction of individuals’ evaluation and energy states. In the most optimistic scenario, there is minimal overlap and each instrument should provide substantial incremental predictive validity over the other; in the most pessimistic scenario, there is substantial overlap and each instrument should fail to provide incremental predictive validity over the other.

Thus, it might be worthwhile to shift our focus from using dedicated burnout instruments (e.g., MBI) and/or dedicated engagement instruments (e.g., UWES) and instead examine individuals’ subjective experience of energy and identification with their work. In theory, I contend that this should be more informative: Not only would this be useful for identifying engagement and burnout amongst individuals, it would also lend itself to allow for meaningful predictions for individuals who cannot be classified as either burnt out or engaged (a shortcoming of dedicated UWES and MBI measures). For example, how might individuals who
experience positive evaluation (i.e., dedication) but low energy (i.e., exhaustion) differ from individuals who experience negative evaluation (i.e., cynicism/disengagement) but high energy (i.e., vigour)?

**Empirical Investigation**

Gonzalez-Roma et al. (2006) were the first to provide empirical evidence for the existence of such energy and evaluation continua. Indeed, they noted that, prior to their work, “the assumption that exhaustion-vigour and cynicism-dedication constitute two bipolar dimensions… has not been tested (p. 166).” The authors argued that the application of older, traditional techniques aimed at assessing scale dimensionality (e.g., principal components analysis, factor analysis) were inappropriate and even misleading in the context of assessing the items corresponding to work engagement and burnout. This is, the authors argued, because the core assumption of linearity was not met: Given a pair of “opposite” items, the bivariate response distribution tended to not be linear (i.e., individuals who respond with the lowest possible option to a question regarding exhaustion do not tend to respond with the highest possible option to a question regarding vigour).

Consequently, Gonzalez-Roma et al. (2006) sought to address their hypotheses using Mokken Scaling - a non-parametric, relatively contemporary technique based on Item Response Theory which does not assume linear relationships among items. Mokken-Scaling produces scalability coefficients which are used as indicators of the extent to which items might be considered scalable. The authors found evidence that “exhaustion-vigor items constitute a weak to moderate energy scale” (p. 171) and that, “cynicism-dedication items constitute a strong identification scale.” (p. 172).
Upon providing empirical support for the notion that engagement and burnout might be bipolar opposites, Gonzalez-Roma et al. (2006) noted that subsequent research might investigate the validity of what they called the energy (vigour and exhaustion) and identification (Dedication and Cynicism) scales respectively. Indeed, as discussed later, this is one of the very objectives of the present paper. However, one thing is to be noted before continuing forward: While Gonzalez-Roma et al. (2006) used the term, “Identification,” I opt to use the more theoretically neutral term “Evaluation.”

Demerouti et al. (2010) would later seek to replicate the findings of Gonzalez-Roma et al. (2006) using the more standard, traditional, parametric technique of confirmatory factor analysis. Using items from the UWES, the MBI, and the OLBI, the authors tested a series of models for the energy and identification/evaluation dimensions separately. While there was evidence that the evaluation dimensions (e.g., cynicism, dedication) were in fact bipolar opposites, this was not the case for the energy dimensions (i.e., vigour and exhaustion, though highly related, would appear to be separate constructs). In this regard, I can view the results of Demerouti et al. (2010) as providing mixed support for the burnout/engagement redundancy hypothesis: On the one hand, the evaluation dimensions appear to be redundant, but on the other hand the energy dimensions do not. While this parallels Gonzalez-Roma et al.’s (2006) finding that the cynicism-dedication items constituted a stronger scale relative to the exhaustion-vigour (a “weak-to-moderate energy scale,” p. 172) items, it also complicates our ability to definitively answer the question of whether or not burnout and engagement are in fact redundant.

Makikangas, Feldt, Kinnunen, and Tolvanen (2012) used a profile-centric longitudinal approach to addressing the burnout/engagement redundancy issue. Again, the data provided stronger support for an underlying evaluation continuum (i.e., based on cynicism and dedication
items derived from burnout and engagement scales) relative to an energy continuum (i.e., based on exhaustion and vigour items derived from burnout and engagement scales). Their study is particularly useful due to the longitudinal nature of their data: They noted that individuals’ levels of cynicism and dedication changed over time in a manner so as to suggest equivalence: “When mean levels of cynicism increased over time…levels of dedication decreased, and vice versa.” (p.111). While this finding might seem intuitive to the point of being trivial, it should be noted that the same was not found for the energy-related constructs such that “the latent stability and change classes of exhaustion and vigour were not connected to each other (Makikangas et al., 2011, p. 111).” Again, this is consistent with Demerouti et al. (2010) and to a lesser extent Gonzalez-Roma (2006).

Finally, Cole, Walter, Bedeian, and O’Boyle (2012) conducted a meta-analysis based on 50 samples with the intent of illuminating the issue of whether or not the dimensions underlying Burnout and Engagement might in fact be redundant. Their analytical strategy involved (1) using CFA to assess the relationship between burnout and engagement subdimensions as well as (2) an examination of how burnout and engagement were related to various antecedent and outcome covariates (i.e., an examination of the nomological networks of burnout and engagement.)

Based on a series of CFAs wherein burnout and engagement were treated as latent factors and the constituent dimensions (cynicism, exhaustion, inefficacy, dedication, vigour, and absorption) were treated as indicators, Cole et al. (2012) were unable to rule out the non-redundancy of burnout and engagement dimensions since the only instance of acceptable fit occurred when cross-loading was allowed to occur such that engagement indicators were also burnout indicators.
Cole et al.’s (2012) analysis of the nomological network is somewhat more difficult to comment upon. Their assessment was done in two parts. In their initial analysis, they noted that, burnout tended to be related to a set of seven covariates (job demands, work overload, job resources, co-worker support, health complaints, job satisfaction, and organizational commitment) in a manner that was symmetrical to engagement. Specifically, this symmetry was observed for the latter five covariates. For example, the average estimated true correlation between burnout and job resources was -.26 whereas the estimated true correlation between engagement and job resources was .32. This symmetry was not observed with respect to job demands or work overload. Note: It is not explicitly stated what statistical criteria (if any) were used by the authors in determining whether or not two true correlations were equivalent in magnitude.

The second approach in assessing the differences in the nomological networks of burnout and engagement was more complex, but also more direct in addressing the redundancy of the dimensions underlying burnout and engagement. Essentially, the authors produced a matrix of “vector correlations” amongst the burnout-engagement dimensions. Essentially, each vector correlation represented “the correlation of a specific pair of burnout-engagement dimensions with all seven study correlates” (p. 1568). The results of this analysis were much more unequivocal regarding the redundancy of burnout and engagement dimensions: The vector correlation between dedication and cynicism being -.96 and the vector correlation coefficient between vigour and exhaustion being -.93, leading the authors to conclude that, “the various dimensions of burnout and engagement have a similar (at times nearly identical) pattern of association with the available correlates… rather than being independent constructs… the dimensions of burnout and engagement share a nomological net (p. 1568).”
Summary

While doubts regarding the utility and independence of engagement relative to burnout are not entirely new, few have empirically addressed this issue. It is difficult to arrive at a definitive conclusion with any great amount of certainty; Gonzalez-Roma (2006) asserted that the dimensions underlying Burnout and Engagement (Energy and Evaluation) are scalable based on non-parametric techniques (Mokken Scaling) but more recent parametric tests (i.e., CFAs) of dimension redundancy by Demerouti et al. (2010) and Makikangas et al. (2012) seem to suggest that only the evaluation factors of cynicism and dedication are equivalent. Meanwhile, the recent Cole et al. (2012) meta-analysis would seem to suggest that burnout and engagement are entirely redundant to the extent that they tend to have symmetrical effects on various covariates such as job satisfaction, organizational commitment, and job resources.

Objectives

Broadly, the ultimately purpose of this study was to evaluate the relationship between burnout and engagement. More specifically, I sought to address two issues surrounding these constructs: Assessing incremental predictive validity of each construct over the other and assessing the presence (or lack thereof) of the hypothesized evaluation and energy continua discussed previously.

Incremental Predictive Validity

As noted in Figure 1, it is not clear the extent to which dedicated burnout and engagement instruments might overlap with one another; it is unclear to what extent the application of one obviates the need for the other. If burnout and engagement instruments are truly assessing different phenomena, then I would expect minimal redundancy (see Figure 1b for a perfectly non-redundant scenario). If, however, burnout and engagement are essentially
Figure 1b. Hypothetical scenario in which Burnout measures and Engagement measures demonstrate no overlap in measurement.
assessing the exact same phenomena (see Figure 1c for a nearly perfectly redundant scenario), then I would expect poor incremental predictive validity of either instrument over the other.

Cole et al. (2012) suggested that overlap was substantial, but their selection of criterion variables were limited to health complaints, job satisfaction, and organizational commitment. To that extent, I wish to address this issue using a broader set of criterion variables including performance as well as indices of well-being that go beyond somatic ailments.

Scholars have identified eudaimonic well-being as a property that transcends merely the experience of contentment and absence of illness. Eudaimonic well-being is thought to be characterized by the subjective perception that one is progressing and “striving toward excellence” (Ryff & Singer, 2008, p. 14). It is also characterized by the subjective sense that one has achieved and found meaning in their lives (Waterman, Schwartz, & Conti, 2008). As such it is often contrasted with hedonic well-being which is synonymous with more traditional indices of well being such as psychosomatic complaints (or the lack thereof) and the experience of pleasure, in general (Waterman et al., 2008). I will examine two constructs (the subjective experience of growth and the experience of life as meaningful) that might be regarded as components of eudaimonic well-being, as well as constructs synonymous with more traditional indices of well-being (e.g., somatic complaints) to allow for a richer breadth of consideration for the present study.

**Evaluation and Energy Continua**

If the model seen in Figure 1a is accurate, there should indeed be evaluation and energy continua. As noted previously, few have endeavored to validate these continua. In that regard, I attempt to replicate both the methodology and the findings of Demerouti et al. (2010). In this
Figure 1c. Alternative hypothetical scenario in which Burnout measures and Engagement measures demonstrate considerable overlap in measurement to the point of being entirely redundant.
In regard, this investigation represents the first attempt at assessing the energy/evaluation continua in an academic context.

Consequently, this investigation contributes to the literature by (1) demystifying the functional independence of burnout and engagement instruments, (2) considering indices of well-being that extend beyond absence of illness (3) appraising the existence of evaluation and energy continua and (4) attempting to replicate, confirm, corroborate or contest the recent research findings of Cole et al. (2012) and Demerouti et al. (2010).

Hypotheses:

**Predictive Validity of Burnout.** There are many reasons to be optimistic about the utility of burnout in the prediction of various outcomes pertinent to performance and well-being. First and foremost, there is a wealth of empirical evidence demonstrating that burnout is related to work performance (e.g., Parker & Kulik, 1995; Maslach et al., 2001; Rudman & Gustavsson, 2012). There are many possible reasons for this as each core component of burnout might (by itself) influence performance.

Individuals high in cynicism experience a negative attitude towards their work in general. Given that attitudes influence behaviour (Ajzen, 1991), I might expect one behavioural response to a negative attitude of one’s work to be a diminished willingness to engage in high performance work activities (or even engagement in counterproductive work behaviours). That is, they would be less willing to expend effort. Individuals high in exhaustion may experience a lack of self-efficacy – that is they do not feel capable of high performance. Consequently, even if they wanted to perform well, they might feel unable to do so.

It should be noted that the aforementioned mechanism (i.e., reduced sense of self-efficacy) might appear to be similar to the third dimension of burnout specified in the MBI
(reduced personal accomplishment/professional efficacy) which I had previously argued against. Despite this similarity, I suggest that burnout (as a state) might still be more accurately characterized as a 2-factor construct of exhaustion and cynicism with reduced self-efficacy/professional performance as a possible consequence (not a fundamental constituent) that follows from the simultaneous experience of exhaustion and negative evaluation towards one’s work.

Similarly there is a wealth of evidence demonstrating that burnout is related to well-being outcomes (e.g., Maslach et al., 2001; Dahlin, Joneborg, & Runeson, 2007; Schaufeli, Bakker, van der Heijden, & Prins, 2009). There are many possible reasons why this may be the case. First and foremost, one of the core dimensions of burnout – exhaustion – is by definition a health/well-being oriented outcome in and of itself. It is quite possible that poor health begets poor health; perhaps the individual who experiences physical exhaustion cannot bring him/herself to engage in healthful behaviours such as regular exercise or appropriate dieting. Perhaps the individual who experiences emotional exhaustion does not feel compelled to engage socially, inviting loneliness and negative affectivity. It is less clear how the experience of cynicism (or disengagement, using OLBI nomenclature) towards one’s work might be related to health outcomes. It is possible that effects are indirect, or even non-existent (with any zero-order correlations owing to spurious relationships between cynicism, exhaustion, and poor health).

Most investigations involving well-being have traditionally focused on hedonic indices of well-being (Deci & Ryan, 2008), though it would be reasonable to expect that eudaimonic indices of well-being would also be related to burnout. First: It is understood that hedonic well-being and eudaimonic well-being tend to be positively correlated with one another (Deci & Ryan, 2008). If burnout is related to indices of hedonic well-being, it might be expected that
burnout would be related to indices of eudaimonic well being as well. Second: While the experience of exhaustion does not necessarily rob individuals of the experience of meaningfulness in their life (a characteristic component of eudaimonic well-being; Waterman et al., 2008), it might be more difficult to reconcile the simultaneous experience of (1) cynicism towards one’s work with (2) a sense of pride/meaningfulness in one’s life. Furthermore, the experience of exhaustion might hinder or reduce individuals’ experience of growth, a key component of thriving which is often regarded as an indice of eudaimonic well-being.

In light of the above discussion on why burnout might reasonably be expected to be related to performance as well as various well-being indices (both hedonic and eudaimonic), I propose the following first set of hypotheses:

\[ H1: \] The linear combination of core burnout dimensions will predict significant amounts of variance in students’ (a) academic performance, (b) physical ill being, (b) negative affect, (c) positive affect, (d) subjective experience of growth, and (f) subjective experience of meaningfulness in life.

**Predictive Validity of Engagement.** As with burnout, there is reason to suspect that engagement should predict both performance and well-being. Not surprisingly, there is empirical precedent demonstrating that the core dimensions of engagement predict organizational work performance (Balducci et al., 2010) as well as academic work performance (Schaufeli et al., 2002; Salanova et al., 2010).

There are many possible reasons why this may be the case. It might be that higher levels of dedication towards one’s work would represent a more favourable attitude towards one’s
work, thereby increasing the probability of increased effort on any given work-related task. This would certainly be consistent with our contemporary understanding of the relationship between attitudes and behaviors (Ajzen, 1991): A positive attitude towards one’s work may manifest itself in many different ways, some of which might be conducive to performance. Similarly, higher levels of vigour might represent a greater experienced capacity to do work. For example, the individual who experiences vigour might feel more resistant to fatigue induced by long hours of work. Thus, not only might the engaged employee want to perform at a high level, but he/she may feel more capable of performing at a high level as well. Indeed, the experience of vigour possibly contributes to one’s sense of self-efficacy, which likely influences actual work performance. Indeed, a previous meta-analysis found an estimated true score correlation of $r = .23$ between generalized self-efficacy and job performance (Judge & Bono, 2001) although, to be fair, it is difficult to discern the direction of causality based on correlation alone.

There is also reason to suspect that engagement should predict well-being. Again, there is empirical precedent for the relationship between engagement and various well-being outcomes such as depressive symptomatology, somatic complaints, sleep disturbances, and burnout (Hallberg & Schaufeli, 2006). The mechanisms by which engagement might influence well-being mirror those proposed earlier for how burnout might influence well-being. The experience of vigour might be considered an indicator of vitality, and therefore a well-being outcome in its own right. It is possible that the experience of vitality at work has a “spillover effect” such that individuals who feel vigorous at work also feel vigorous outside work as well.

Indeed, such a phenomenon is not without theoretical and empirical precedent: Edwards and Rothbard (2000) discussed various mechanisms by which moods (among other things) might “spillover” between work and non-work contexts. More recently, Ilies, Wilson, and Wagner
(2009) found evidence that employees’ job satisfaction at work did in fact “spillover” to non-work contexts, influencing affect at home (as rated by spouses/others).

It is less clear how dedication towards one’s work might influence individuals’ well-being in general, but it might be possible that individuals who feel positively towards their work are more likely to be at happy at work relative to those who feel negatively towards their work. It is then possible that being happy at work results in the experience of happiness outside of work as well, again owing to the aforementioned spillover effect. Using the subjective experience of happiness as a component of psychological well-being, it might be argued, then, that dedication at work might be causally related to well-being outside of work.

In addition to expecting engagement to be related to traditional indices of well-being (i.e., the absence of illness, negative affective states), it might also be expected that engagement ought to be related to eudaimonic indices of well-being as well. Again, as stated previously, hedonic well-being tends to covary positively with eudaimonic indices of well-being (Deci & Ryan, 2008). Consequently, if I am to expect engagement to predict hedonic indices of well-being, I might reasonably expect engagement to predict eudaimonic indices of well-being as well.

The mechanisms for which engagement might be positively related to eudaimonic well-being are similar to those suggested for the relationship between burnout and eudaimonic well-being. The experience of dedication towards one’s work is likely more probable if such work is viewed as important and meaningful as opposed to trivial and meaningless. Furthermore, the experience of vigour might be conducive to the experience of growth (specifically, the experience of energy might enable the individual to feel capable of improving or growing as a person).
In light of the above discussion on why engagement might reasonably be expected to be related to performance as well as various well-being indices (both hedonic and eudaimonic), I propose the following second set of hypotheses:

**H2:** The linear combination of core engagement dimensions will predict significant amounts of variance in students’ (a) academic performance, (b) physical ill being, (b) negative affect, (c) positive affect, (d) subjective experience of growth, and (f) subjective experience of meaningfulness in life.

**Incremental Predictive Validity of Engagement over Burnout and Vice-Versa.** There is reason to suspect that these two constructs are not functionally redundant such that (1) engagement provides incremental predictive validity over burnout and that (2) burnout provides incremental predictive validity over engagement. This might seem surprising in light of the perspective that engagement and burnout represent states that are opposites of one another (vigour as the opposite of exhaustion; dedication as the opposite of cynicism/disengagement). In theory, these constructs might very well be redundant (Cole et al., 2012). However, it stands to reason that this might not be the case in practice.

At the moment, the most dominant instruments in the assessment of burnout and engagement are the MBI (Qiao & Schaufeli, 2011) and the UWES (Schaufeli & Bakker, 2004). Even if burnout is conceptually a state opposite to engagement, it does not mean that low scores on the MBI represent high scores on the UWES; they merely indicate a lack of burnout – whether this indicates neutrality or a state of engagement is unclear. Similarly, an individual’s low score on the UWES merely indicates a lack of engagement – it is unclear whether the individual is experiencing burnout or merely a state of neutrality. In consideration of this, it
might be reasonable to expect that the two instruments should have incremental predictive utility over one another.

On the other hand, this proposition must be qualified by the consideration of Cole et al.’s (2012) recent meta-analysis which found that, after controlling for burnout, engagement does not add significantly to the prediction of health complaints and only very weakly to the prediction of job satisfaction (6%) and organizational commitment (6%). Consequently, this dampens our confidence in the ability of engagement to add incremental predictive validity to the prediction of hedonic indices of well-being. Whether or not this also applies to eudaimonic indices of well-being, however, remains to be determined.

**H3:** The linear combination of core engagement dimensions will predict significant amounts of variance (over and beyond that of the core burnout dimensions) for students’ (a) academic performance, (b) subjective experience of growth (c) subjective experience of meaningfulness in life, but not so for students’ (d) physical ill-being, (e) positive affect, or (f) negative affect.

If there is truly non-complete overlap between the phenomena assessed by the MBI and the UWES, then I might also reasonably expect burnout to add incremental predictive validity over engagement. Since Cole et al.’s (2012) meta-analysis does not test for incremental predictive validity of burnout over engagement, however, my predictions are somewhat more generic:

**H4:** The linear combination of core burnout dimensions will predict significant amounts of variance (over and beyond that of the core engagement dimensions) for students’ (a)
academic performance, (b) physical ill being, (b) negative affect, (c) positive affect, (d) subjective experience of growth, and (f) subjective experience of meaningfulness in life.

**Evaluation Dimension: Disengagement/Cynicism and Dedication.** As alluded to previously, many scholars have implicated engagement as the opposite of burnout (e.g., Schaufeli & Bakker, 2004). In light of the multidimensional nature of each construct, one specific contention is that the core dimension of burnout corresponding to cynicism/disengagement is the conceptual opposite of the core dimension of engagement corresponding to dedication. Gonzalez-Roma (2006) provided the first empirical demonstration of this, finding that disengagement/cynicism and dedication are scalable using the non-parametric technique of Mokken scaling. Demerouti et al. (2010) also arrived at a similar contention, although using the more traditional, parametric technique of confirmatory factor analysis, finding that disengagement/cynicism and dedication are in fact opposite poles on an evaluation continuum (which the authors termed, ‘identification.’) In light of this, I propose the following hypothesis:

\[ H5: \text{Disengagement/cynicism and dedication represent opposite poles of an “evaluation” continuum.} \]

**Energy Dimension: Exhaustion and Vigour.** The evidence for the existence of an “energy” continuum is somewhat more ambiguous. While conceptually, it would make sense for exhaustion and vigour to represent opposite ends of a single continuum, empirical evidence is less consistent. While Gozalez-Roma et al. (2006) found that “cynicism-dedication items
constitute a strong identification scale” they noted that “exhaustion-vigor items constitute a weak-to moderate energy scale” (pp. 171 – 172) thereby suggesting that the evidence for the energy continuum is somewhat weaker than the evidence for the evaluative continuum. Similarly, Demerouti et al. (2010) managed to use confirmatory factor analysis to infer the existence of an evaluative dimension spanning cynicism and dedication items but were unable to infer the existence of an energy dimension, finding instead that, “the energy components seem to form two distinguishable yet highly related dimensions” (p. 216).

Consequently, my confidence in expecting the emergence of an energy dimension is somewhat dampened. However, given the paucity of research that has been done to assess this issue, it is still too early to abandon the possibility of an energy dimension underlying the constructs of exhaustion (burnout) and vigour (engagement). To that end, I present the final hypothesis to be tested:

**H6:** Exhaustion and vigour represent opposite poles of an “evaluation” continuum.

**Method**

**Participants**

I recruited 183 undergraduate students enrolled in an introductory psychology course at the University of Western Ontario to serve as participants in the present investigation. Students had the opportunity to voluntarily participate in this study in exchange for course credit. After checking for negligent responding and removing cases wherein individuals blatantly failed to pay attention to the instructions (see data analysis sub-section below), the effective sample size was reduced to 154 cases.
Instruments

Maslach Burnout Inventory – Student Survey (MBI-SS). As stated previously, the various incarnations of the MBI represent the most widely-used tools in the measurement of organizational burnout. For the purpose of the present investigation, I sought to use nine items from the Maslach Burnout Inventory – Student Survey (MBI-SS; Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002) to assess the burnout dimensions of exhaustion (5 items) and cynicism (4 items). One sample item (assessing cynicism) is as follows: “I have become less enthusiastic about my studies.” Respondents were asked to indicate the extent to which they endorsed each item on a scale ranging from 0 (Never) to 6 (Always). Higher scores reflected greater endorsement for the specific dimension under assessment (i.e., exhaustion or cynicism). Schaufeli et al. (2002) found good levels of internal consistency for each subscale. Cronbach’s $\alpha$ ranged from .74 to .80 for the exhaustion subscale and from .79 to .86 for the cynicism subscale.

Utrecht Work Engagement Scale for Students (UWES-S). As stated previously, the UWES represents the most widely used instrument in the scholarly assessment of work engagement. For this present study, I used eight items from the UWES-S (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002) to assess the core engagement dimensions of vigour (four items) and dedication (four items). One sample item (assessing vigour) is as follows: “When I get up in the morning, I feel like going to class.” Respondents were asked to indicate the frequency with which they endorsed each item on a scale ranging from 0 (Never) to 6 (Always/Everyday). Higher scores reflected greater endorsement for the specific dimension under assessment (i.e., vigour or dedication). Schaufeli et al. (2002) found good levels of internal consistency for each subscale. Cronbach’s $\alpha$ was .78 for vigour and .84 for dedication.
**Oldenburg Burnout Inventory (OLBI).** The Oldenburg Burnout Inventory (Demerouti et al., 2010) is a 16-item instrument used in the assessment of burnout. Unlike its predecessor – the MBI – the OLBI differs in that it is used only to assess the two core components of burnout: Exhaustion (eight items) and disengagement (eight items). Also distinguishing the OLBI from the MBI is the presence of bivalent items (i.e., half the items are positively valenced; half are negatively valenced). Consequently, Demerouti et al. (2010) have argued that this instrument can be used to assess four constructs: The two core burnout dimensions of exhaustion and disengagement/cynicism as well as the two opposite analog engagement dimensions of vigour and dedication.

In the present study, I modified the OLBI items to reflect academic work as opposed to non-academic work, for which it was originally intended. One of the resulting sample items is as follows: “There are days when I feel tired before I arrive at school.” Respondents are asked to indicate the extent to which they agree with each statement on a scale ranging from 1 (**Strongly Agree**) to 4 (**Strongly Disagree**). Higher scores reflected greater endorsement for the specific dimension under assessment (e.g., exhaustion). Demerouti et al. (2010) found good internal consistency for the two intended subscales for the work version of this instrument (exhaustion and disengagement) with Cronbach’s $\alpha = .74$ and .79 respectively.

**Academic Performance Index.** For the purpose of this study, I created an index of academic performance comprising five items. Respondents were asked to reflect on five of their most recent courses and to predict their final grade (0-100) for each course. Each predicted grade represented one item. These five predicted grades were averaged to create an overall academic performance score.
Physical Health Questionnaire (PHQ). The PHQ (Schat, Kelloway, & Desmarais, 2005) is a 14-item measure of physical ill-being. Each item is a statement concerning the experience of somatic symptoms. A sample item is as follows: “How often have you experienced headaches?” Individuals were asked to self-report the extent to which they experienced the ailment pertaining to each statement during the last academic semester (i.e., four months) on a scale from 1 (Not at all) to 7 (All of the time). A higher score on this scale reflected greater experience of physical ill-being. Recently, Webb and Brewer (2010) found excellent internal consistency for this instrument with Cronbach’s \( \alpha \) = .83.

Positive and Negative Affect Schedule (PANAS). The PANAS (Watson, Clark, & Tellegen, 1988) is a 20-item measure of positive affect (10 items) and negative affect (10 items). Each item is an adjective that describes feelings or emotions. A sample item is as follows: “Upset.” Individuals were asked to self-report the extent to which they experienced each item in general during their most recent semester on a scale from 1 (Very slightly or not at all) to 5 (Extremely). Higher scores reflect greater endorsement of the construct in question (e.g., higher positive affect scores reflect greater experience of positive affect). Recently, Crawford and Henry (2004) found excellent internal consistency for both the positive and negative affect dimensions of this scale with Cronbach’s \( \alpha \) = .89 and .85 for the positive and negative scales respectively.

The Subjective Experience of Growth (SEG) Scale. The SEG is a 22-item index aimed at assessing individuals’ experience of growth. It is thought to reflect well-being beyond merely the absence of illness and/or negative states. Each item is a statement describing the experience of personal growth (or lack thereof). A sample item is as follows: “My university studies have helped me to improve as a person.” Individuals were asked to self-report the extent to which they
agreed with each statement on a scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree.) Eight items required reverse-coding. Higher scores reflect greater experience of growth.

**The Questionnaire for Eudaimonic Well-Being (QEWB).** The QEWB (Waterman et al., 2010) is a 21-item instrument that is used to assess individuals’ beliefs regarding the extent to which they have found meaning in their life. Like the SEG scale, this instrument was used to assess well-being beyond merely the absence of illness and/or negative states. One sample item is as follows: “I believe I have discovered who I really am.” Individuals were asked to self-report the extent to which they agreed with each statement on a scale ranging from 0 (Strongly Disagree) to 4 (Strongly Agree). Seven items required reverse coding and higher scores are thought to reflect greater experience of eudaimonic well-being. Waterman et al. (2010) found evidence for good internal reliability, (Cronbach’s $\alpha = .85$ in one sample, and .86 in another).

**Procedure**

Participants had the opportunity to sign up for study sessions online via the university’s psychology department research pool website. Students who wished to participate were provided with a link to an external website dedicated to facilitating survey-based research (www.surveymonkey.com). At this point, students were presented with an electronic letter of information and were asked whether or not they (1) read the letter of information and (2) agreed to participate in light of this knowledge. Individuals could only participate if they indicated agreement to participate. Participants were then asked to complete the scales and instruments listed in the previous materials subsection (although participants had the option of not responding). Upon completion of all measures, participants were provided with an electronic debriefing form that explained the purpose of the study. The entire study was conducted online and took less than an hour to complete.
Results

Preliminary Data Analyses

Screening for Negligent Responses. By the end of the data collection phase, I had collected data from a total of 183 students. Before conducting any statistical analyses, however, I first sought to screen the data. Specifically, I sought to identify and remove cases representative of negligent responding since such data points would be meaningless and might obscure my results. To that end, three items were, prior to data-collection, embedded throughout the survey to facilitate in the detection of negligent-responding. One sample detection item was as follows: “Please answer disagree to this question.” Data cases were only considered valid if students correctly complied with all three of these items (i.e., even correctly responding to 2 of the 3 items would result in the data case being thrown out). This resulted in a total of 154 useable surveys.

Factor Structure of the MBI, UWES, and OLBI. I conducted preliminary confirmatory factor analyses comparing 1-factor and 2-factor models for each of my burnout and engagement instruments (the MBI, the UWES, and the OLBI) to assess whether or not these instruments were measuring unidimensional constructs. It should be noted that the MBI and UWES each contained only univalent items whereas the OLBI involved bivalent items. For the OLBI items that required reverse coding, this was done prior to their inclusion in the CFA (thus, all items specified to a given factor were unidirectional).

As can be seen in Table 1, the two-factor model was substantially better than the one-factor model for the MBI, the UWES, and the OLBI. Differences in model chi square were as follows: $\Delta \chi^2 (1) = 167.75, p < .001$ (MBI); $\Delta \chi^2 (1) = 128.38, p < .001$ (UWES); $\Delta \chi^2 (1) = 9.47, p < .01$ (OLBI).
Table 1.
Model Fit Statistics for Preliminary Confirmatory Factor Analyses.

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<td>.721</td>
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<td>.131</td>
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<tr>
<td></td>
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<td>103.01</td>
<td>26</td>
<td>&lt;.001</td>
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<td>.139</td>
<td>.065</td>
</tr>
<tr>
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<td>1. Single Factor</td>
<td>170.30</td>
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<tr>
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<td>.089</td>
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<tr>
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<td>1. Single Factor</td>
<td>214.13</td>
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<td>&lt;.001</td>
<td>.760</td>
<td>.095</td>
<td>.080</td>
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<tr>
<td></td>
<td>2. Two Factor</td>
<td>204.66</td>
<td>89</td>
<td>&lt;.001</td>
<td>.776</td>
<td>.092</td>
<td>.079</td>
</tr>
</tbody>
</table>

N = 154 observations; $\chi^2$ = chi square; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Residual
Beyond merely being better than their one-factor counterparts, the resulting two-factor models demonstrated acceptable fit. While the models appear to be poor-fitting based on the chi-square test (i.e., $p < .05$ indicative of a significant difference between model and sample data) and mediocre based on the RMSEA indices (i.e., RMSEA > .09), it should be noted that smaller sample sizes (as with the case in the present study) tend to inflate the value of both RMSEA and SRMR (Kenny, 2012). Despite this, SRMR values for the two-factor models are acceptable (i.e., <.08) for all three instruments (.065, .028, and .079 for the MBI, UWES, and the OLBI respectively). CFI values were unacceptable for all one-factor models (.721, .803, and .760 for the MBI, UWES, and the OLBI respectively) but were more promising for the two-factor models (.912, .970, and .776). It should be noted, however, that the OLBI seems to have demonstrated the least amount of improvement based on all fit indices considered.

**Internal Consistency Estimates of Reliability.** Next, I sought to conduct internal consistency analyses on all instruments and subscales. Note that consistent with Demerouti et al. (2010), I assessed the internal consistency of the OLBI as a 2-factor scale (i.e., 8 items representing OLBI-Exhaustion and 8 items representing OLBI-Disengagement) as well as the internal consistency of the OLBI as a 4-factor scale wherein the positive valenced items represented OLBI-vigour (4 items) and OLBI-dedication (4 items) whereas the negatively valenced items represented OLBI-exhaustion (4 items) and OLBI-disengagement (4 items). Treatment of the OLBI as a 4-factor scale was necessary to replicate the methodology of Demerouti et al. (2010).

The results of the preliminary reliability analysis can be seen in Table 2. To avoid confusion, the 8 item OLBI subscales are designated OLBI disengagement total and OLBI
<table>
<thead>
<tr>
<th>Subscale</th>
<th>Number of Items</th>
<th>$\alpha$</th>
<th>$N$</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLBI Disengagement Total</td>
<td>8</td>
<td>.68</td>
<td>150</td>
</tr>
<tr>
<td>OLBI Disengagement</td>
<td>4</td>
<td>.58</td>
<td>151</td>
</tr>
<tr>
<td>OLBI Dedication</td>
<td>4</td>
<td>.54</td>
<td>153</td>
</tr>
<tr>
<td>OLBI Exhaustion Total</td>
<td>8</td>
<td>.74</td>
<td>151</td>
</tr>
<tr>
<td>OLBI Exhaustion</td>
<td>4</td>
<td>.66</td>
<td>152</td>
</tr>
<tr>
<td>OLBI Vigour</td>
<td>4</td>
<td>.54</td>
<td>153</td>
</tr>
<tr>
<td>MBI Exhaustion</td>
<td>5</td>
<td>.86</td>
<td>149</td>
</tr>
<tr>
<td>MBI Cynicism</td>
<td>4</td>
<td>.91</td>
<td>151</td>
</tr>
<tr>
<td>UWES Vigour</td>
<td>4</td>
<td>.83</td>
<td>153</td>
</tr>
<tr>
<td>UWES Dedication</td>
<td>4</td>
<td>.92</td>
<td>151</td>
</tr>
<tr>
<td>Academic Performance</td>
<td>5</td>
<td>.85</td>
<td>132</td>
</tr>
<tr>
<td>PHQ (Physical ill being)</td>
<td>14</td>
<td>.84</td>
<td>147</td>
</tr>
<tr>
<td>Subjective Experience of Growth</td>
<td>22</td>
<td>.91</td>
<td>142</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>10</td>
<td>.92</td>
<td>151</td>
</tr>
<tr>
<td>Neg Affect</td>
<td>10</td>
<td>.88</td>
<td>151</td>
</tr>
<tr>
<td>QEWB</td>
<td>21</td>
<td>.80</td>
<td>145</td>
</tr>
</tbody>
</table>

$N$ is based on listwise deletion.
exhaustion total whereas the 4-item OLBI subscales are designated OLBI disengagement, OLBI dedication, OLBI exhaustion, and OLBI vigour.

Note that with the exception of the OLBI-based dimensions, Cronbach’s $\alpha$ is very good (i.e., greater than .80) for all subscales and instruments. Perhaps the subscales of greatest concern were the 4-item OLBI subscales of vigour (.54), dedication (.54) and disengagement (.58). In light of this, I conducted an item-analysis to assess whether improvement of these subscales would be possible.

**Item-Analysis.** I decided to consider the subscales with questionable internal consistency (i.e., Cronbach’s $\alpha < .70$) and conduct a simple item analysis to examine whether internal consistency might be improved by removal of inappropriate items. As can be seen in Table 3, the 4-item OLBI disengagement subscale could not be improved via item-removal. OLBI vigour could have been improved with the removal of one item, “When I engage in school work, I usually feel energized.” However, the improvement would have been very minor (.54 to .56) and, furthermore, I could not justify this action on conceptual grounds.

The subscales OLBI dedication (4 items) and OLBI disengagement total (8 items) were, however, more amenable to improvement. As can be seen in Table 3, Cronbach’s $\alpha$ could have been improved substantially via removal of a single item in each case, “With regards to my current academic direction, this is the only type of content that I could imagine myself studying.” I decided that the content of this item was arguably different from its sister items in that whether or not students can imagine studying alternative topics is not necessarily endorsement of favourable or unfavourable attitude. In light of this, I removed that item from all subsequent analyses. The resulting internal consistency estimates can be seen in Table 3.
Table 3. 
*Results of Item-Analysis for Problematic Subscales*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>N</th>
<th>Initial $\alpha$</th>
<th>Opportunity for Modification</th>
<th>Subsequent $\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLBI Disengagement Total</td>
<td>150</td>
<td>.68</td>
<td>Remove item OLBI_13:</td>
<td>.73</td>
</tr>
<tr>
<td>OLBI Disengagement</td>
<td>151</td>
<td>.58</td>
<td>Cannot be improved</td>
<td>N/A</td>
</tr>
<tr>
<td>OLBI Dedication</td>
<td>153</td>
<td>.54</td>
<td>Remove item OLBI_13</td>
<td>.66</td>
</tr>
<tr>
<td>OLBI Exhaustion</td>
<td>152</td>
<td>.66</td>
<td>Cannot be improved</td>
<td>N/A</td>
</tr>
<tr>
<td>OLBI Vigour</td>
<td>153</td>
<td>.54</td>
<td>Remove OLBI_16_R</td>
<td>.56</td>
</tr>
</tbody>
</table>

*Subscales were considered if initial $\alpha$ values were less than .70.*
At this point, the only suspect subscales were the ad-hoc vigour, exhaustion, disengagement, and dedication subscales derived from the OLBI, as Cronbach’s α for these subscales were in the range of .50 to .70. Thus, subsequent analyses prioritized the MBI and the UWES for the assessment of burnout and engagement dimensions. The 4-factor conceptualization of the OLBI was used only when necessary (i.e., to replicate the CFA analysis of Demerouti et al., 2010).

**Descriptive Statistics and Zero-Order Correlations.** Table 4 displays the means, standard deviations, and zero-order bivariate correlations for all predictor and criterion variables in this study (following the aforementioned item removal). Note that correlations were calculated with missing data removed list-wise resulting in an analysis based on 102 cases.

Most correlations were significant at the $p < .01$ level with some significant only at the $p < .05$ level. Only four pairs of variables were non-significantly related: (1) UWES-vigour, (2) UWES-dedication, and (3) academic performance were non-significantly related to physical ill-being. In addition, (4) eudaimonic well-being was not significantly related to academic performance. All significant correlations were in the expected direction.

**Primary Data Analyses: Hypothesis Testing**

**Predictive Validity of Burnout Dimensions.** Hypothesis 1 was entirely supported: The two core dimensions of burnout (exhaustion and cynicism) were significant predictors of all six criterion variables. I conducted six multiple regression analyses (one for each criterion variable) using only exhaustion and cynicism subscores derived from the MBI as predictor variables. As can be seen in Table 5, the linear combination of these two factors accounted for 15.6% to 33.1% of the variance in my variables of interest.
Table 4.

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>OLBI Disengagement Total</td>
<td>2.47</td>
<td>.42</td>
<td>.73</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2.</td>
<td>OLBI Disengagement</td>
<td>2.61</td>
<td>.47</td>
<td>.92</td>
<td>.58</td>
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</tr>
<tr>
<td>3.</td>
<td>OLBI Dedication</td>
<td>2.73</td>
<td>.47</td>
<td>-.84</td>
<td>-.55</td>
<td>.69</td>
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<tr>
<td>4.</td>
<td>OLBI Exhaustion Total</td>
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<td>.44</td>
<td>.61</td>
<td>.61</td>
<td>-.44</td>
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<td>5.</td>
<td>OLBI Exhaustion</td>
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<td>.91</td>
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<td></td>
</tr>
<tr>
<td>6.</td>
<td>OLBI Vigour</td>
<td>2.73</td>
<td>.47</td>
<td>-.57</td>
<td>-.52</td>
<td>.47</td>
<td>-.89</td>
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<tr>
<td>7.</td>
<td>MBI Exhaustion</td>
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<td>8.</td>
<td>MBI Cynicism</td>
<td>2.58</td>
<td>1.44</td>
<td>.56</td>
<td>.43</td>
<td>-.58</td>
<td>.44</td>
<td>.40</td>
<td>-.41</td>
<td>.55</td>
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<tr>
<td>9.</td>
<td>UWES Vigour</td>
<td>3.10</td>
<td>1.20</td>
<td>-.54</td>
<td>-.47</td>
<td>.49</td>
<td>-.44</td>
<td>-.42</td>
<td>.38</td>
<td>-.55</td>
<td>-.56</td>
<td>.83</td>
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<td>10.</td>
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<td>1.11</td>
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<td>-.39</td>
<td>.63</td>
<td>-.45</td>
<td>-.36</td>
<td>.46</td>
<td>-.45</td>
<td>-.73</td>
<td>.59</td>
<td>.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Academic Performance</td>
<td>76.53</td>
<td>9.09</td>
<td>-.33</td>
<td>-.30</td>
<td>.28</td>
<td>-.43</td>
<td>-.30</td>
<td>.47</td>
<td>-.34</td>
<td>-.41</td>
<td>.28</td>
<td>.34</td>
<td>.85</td>
<td></td>
<td></td>
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<tr>
<td>12.</td>
<td>Physical Ill Being</td>
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<td>.34</td>
<td>.36</td>
<td>-.22</td>
<td>.51</td>
<td>.52</td>
<td>-.40</td>
<td>.47</td>
<td>.21</td>
<td>-.10</td>
<td>-.15</td>
<td>-.14</td>
<td>.84</td>
<td></td>
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</tr>
<tr>
<td>13.</td>
<td>Subjective Exp. Growth</td>
<td>4.92</td>
<td>.79</td>
<td>.44</td>
<td>.31</td>
<td>.48</td>
<td>-.44</td>
<td>-.36</td>
<td>.44</td>
<td>-.43</td>
<td>-.62</td>
<td>.49</td>
<td>.70</td>
<td>.41</td>
<td>.21</td>
<td>.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Positive Affect</td>
<td>3.20</td>
<td>.79</td>
<td>.48</td>
<td>.33</td>
<td>.54</td>
<td>-.42</td>
<td>-.35</td>
<td>.42</td>
<td>-.49</td>
<td>-.53</td>
<td>.61</td>
<td>.68</td>
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<td>.20</td>
<td>.64</td>
<td>.92</td>
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<tr>
<td>15.</td>
<td>Negative Affect</td>
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<td>.45</td>
<td>.46</td>
<td>-.32</td>
<td>.59</td>
<td>.50</td>
<td>-.57</td>
<td>.57</td>
<td>.48</td>
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<td>-.24</td>
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<td>-.34</td>
<td>-.25</td>
<td>.88</td>
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<tr>
<td>16.</td>
<td>Eudemonic Well-Being</td>
<td>2.88</td>
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<td>-.41</td>
<td>-.30</td>
<td>.46</td>
<td>-.41</td>
<td>-.36</td>
<td>.39</td>
<td>-.44</td>
<td>-.50</td>
<td>.36</td>
<td>.55</td>
<td>.17</td>
<td>-.28</td>
<td>.63</td>
<td>.55</td>
<td>-.34</td>
</tr>
</tbody>
</table>

Analyses based off list wise deletion resulting in $N = 102$. All correlations significant at the $p < .05$ (or $p < .01$) level with the exception of those indicated with an asterisk (*). Cronbach’s alpha indicated in the diagonals.
Table 5.
Multiple Regression Analysis: Burnout Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Academic Performance</th>
<th>Physical Ill-Being</th>
<th>Subjective Experience of Growth</th>
<th>Positive Affect</th>
<th>Negative Affect</th>
<th>Eudaimonic Well-being</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>125</td>
<td>141</td>
<td>135</td>
<td>145</td>
<td>146</td>
<td>138</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.156 ***</td>
<td>.197 ***</td>
<td>.331 ***</td>
<td>.344 ***</td>
<td>.309 ***</td>
<td>.295 ***</td>
</tr>
<tr>
<td>MBI Exhaustion</td>
<td>-.135 ns</td>
<td>.463 ***</td>
<td>-.058 ns</td>
<td>-.220 **</td>
<td>.476 ***</td>
<td>-.171 *</td>
</tr>
<tr>
<td>MBI Cynicism</td>
<td>-.303 **</td>
<td>-.039 ns</td>
<td>-.541 ***</td>
<td>-.440 ***</td>
<td>.129 ns</td>
<td>-.431 ***</td>
</tr>
</tbody>
</table>

* $p < .05$; ** $p < .01$, *** $p < .001$. Values in the lower two rows represent standardized regression coefficients ($\beta$ weights).
Predictive Validity of Engagement Dimensions. Hypothesis 2 was mostly supported: The two core dimensions of engagement (vigour and dedication) were significant predictors of five of the six criterion variables (academic performance, subjective experience of growth, positive affect, negative affect, and eudaimonic well-being). As before, I conducted six multiple regression analyses (one for each criterion variable) using only vigour and dedication subscores derived from the UWES as predictor variables. As can be seen in Table 6, the linear combination of these two factors accounted for 10.5% to 47.1% of the variance in my variables of interest, with the exception of physical ill-being in which case the engagement dimensions were non-significant predictors.

Incremental Predictive Validity of Engagement over Burnout. Hypothesis 3 was mostly supported: The two core dimensions of engagement (vigour and dedication) offered additional predictive power for four of the six criterion variables (subjective experience of growth, positive affect, negative affect, and eudaimonic well-being). To test hypothesis 3, I conducted six hierarchical multiple regression analyses (one for each criterion variable) entering burnout dimensions (exhaustion and cynicism) as the first block of predictor variables followed by engagement dimensions (vigour and dedication) as the second block of predictors.

As can be seen in Table 7, the two core engagement dimensions significantly improved the prediction of four of six outcomes, increasing the amount of variance predicted from 3.2% to 21.2% depending on the criterion variable. For academic performance and physical ill-being, however, it would appear that information regarding individuals’ engagement does not offer any additional predictive power beyond that offered by information regarding individuals’ burnout.

It should also be noted that the increase in predictive power – when statistically significant - was smallest for negative affect (3.2% additional variance explained). In contrast,
Table 6. Multiple Regression Analysis: Engagement Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Academic Performance</th>
<th>Physical Ill-Being</th>
<th>Subjective Experience of Growth</th>
<th>Positive Affect</th>
<th>Negative Affect</th>
<th>Eudaimonic Well-being</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>128</td>
<td>144</td>
<td>138</td>
<td>148</td>
<td>147</td>
<td>141</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.105 **</td>
<td>.017 ns</td>
<td>.431***</td>
<td>.470***</td>
<td>.127***</td>
<td>.316 ***</td>
</tr>
<tr>
<td>UWES-Vigour</td>
<td>.09 ns</td>
<td>-.009 ns</td>
<td>.116 ns</td>
<td>.331***</td>
<td>-.050 ns</td>
<td>.049 ns</td>
</tr>
<tr>
<td>UWES-Dedication</td>
<td>.261 *</td>
<td>-.126 ns</td>
<td>.584***</td>
<td>.443***</td>
<td>-.327 **</td>
<td>.533 ***</td>
</tr>
</tbody>
</table>

* $p < .05$; ** $p < .01$, *** $p < .001$. Values in the lower two rows represent standardized regression coefficients ($\beta$ weights).
Table 7. Incremental Predictive Validity of Engagement over Burnout

<table>
<thead>
<tr>
<th></th>
<th>Academic Performance (N = 121)</th>
<th>Physical ill-Being (N = 138)</th>
<th>Subjective Experience of Growth (N = 131)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td>Step 1</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>-.142 ns</td>
<td>-.139 ns</td>
<td>-.039 ns</td>
</tr>
<tr>
<td>Cynicism</td>
<td>-.300 **</td>
<td>-.217 ns</td>
<td>-.043 ns</td>
</tr>
<tr>
<td>Vigour</td>
<td>-.002 ns</td>
<td>.212 *</td>
<td>.092 ns</td>
</tr>
<tr>
<td>Dedication</td>
<td>.119 ns</td>
<td>-.114 ns</td>
<td>.463 ***</td>
</tr>
<tr>
<td></td>
<td>R²</td>
<td></td>
<td>R²</td>
</tr>
<tr>
<td></td>
<td>.157 ***</td>
<td>.164 ***</td>
<td>.196 ***</td>
</tr>
<tr>
<td>Δ R²</td>
<td>.007 ns</td>
<td>.026 ns</td>
<td>.149 ***</td>
</tr>
</tbody>
</table>

|                  | Positive Affect (N = 142)     | Negative Affect (N = 142)     | Eudaimonic Well-Being (N = 134)           |
|                  | Step 1                        | Step 2                        | Step 1                                   | Step 2                        | Step 1                        | Step 2                        |
| Exhaustion       | -.216 **                      | -.123 ns                      | -.138 ns                                 | -.162 ns                      |
| Cynicism         | -.450 ***                     | -.031 ns                      | .471 ***                                 | .529 ***                      | -.453 ***                     | -.139 ns                      |
| Vigour           | .252 **                       | .188 *                        | -.066 ns                                 |                               |
| Dedication       | .488 ***                      | -.217 *                       | .471 ***                                 |                               |
|                  | R²                            |                               | R²                                        |                               | R²                            |                               |
|                  | .350 ***                      | .562 ***                      | .299 ***                                 | .331 ***                      | .292 ***                      | .392 ***                      |
| Δ R²             | .212 ***                      | .032 *                        | .101 ***                                 |                               |                               |                               |

* p < .05; ** p < .01, *** p <.001. All regression coefficients are standardized.
the increase in predictive power was much more substantial for the more “positive” outcomes of eudaimonic well being (additional 10.1% variance explained), subjective experience of growth (additional 14.9% variance explained), and most of all positive affect (additional 21.2% additional variance explained).

**Incremental Predictive Validity of Burnout over Engagement.** Hypothesis 4 was mostly supported: The two core dimensions of burnout (exhaustion and cynicism) offered additional predictive power for four of the six criterion variables (academic performance, eudaimonic well-being, physical ill-being, and negative affect). To test hypothesis 4, I conducted six hierarchical multiple regression analyses (one for each criterion variable) entering engagement dimensions (vigour and dedication) as the first block of predictor variables followed by burnout dimensions (exhaustion and cynicism) as the second block of predictors.

As can be seen in Table 8, the two core burnout dimensions significantly improved the prediction of four of six outcomes, increasing the amount of variance predicted from 3.6% to 21.2% depending on the criterion variable. For the subjective experience of growth and positive affect, however, it would appear that information regarding individuals’ burnout does not offer any additional predictive power beyond that offered by information regarding individuals’ engagement.

It should also be noted that the increase in predictive power – when statistically significant - was smallest for eudaimonic well-being and academic performance (3.6% and 4.6% additional variance explained). In contrast, the increase in predictive power was much more substantial for the more “negative” outcomes of physical ill-being (additional 19.8% variance explained) and negative affect (additional 21.2% variance explained).
Table 8. Incremental Validity of Burnout over Engagement

<table>
<thead>
<tr>
<th></th>
<th>Academic Performance</th>
<th>Physical Ill-Being</th>
<th>Subjective Experience of Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 121)</td>
<td>(N = 138)</td>
<td>(N=131)</td>
</tr>
<tr>
<td>Step 1</td>
<td>Step 2</td>
<td>Step 1</td>
<td>Step 2</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>-.139 ns</td>
<td>.538 ***</td>
<td>-.016 ns</td>
</tr>
<tr>
<td>Cynicism</td>
<td>-.217 ns</td>
<td>-.052 ns</td>
<td>-.191 ns</td>
</tr>
<tr>
<td>Vigour</td>
<td>.104 ns</td>
<td>-.002 ns</td>
<td>-.027 ns</td>
</tr>
<tr>
<td>Dedication</td>
<td>.273 *</td>
<td>.119 ns</td>
<td>-.139 ns</td>
</tr>
<tr>
<td>R²</td>
<td>.118**</td>
<td>.164***</td>
<td>.024 NS</td>
</tr>
<tr>
<td>∆R²</td>
<td>.046*</td>
<td>.198 ***</td>
<td>.02 ns</td>
</tr>
</tbody>
</table>

|                    | Positive Affect      | Negative Affect    | Eudaimonic Well-Being           |
|                    | (N = 142)            | (N=142)            | (N=134)                         |
|                    | Step 1               | Step 2             | Step 1                          | Step 2               | Step 1               | Step 2               |
| Exhaustion         | -.123                | .529 ***           | -.162 ns                        |
| Cynicism           | -.031                | .046 ns            | -.139 ns                        |
| Vigour             | .315***              | .252**             | -.063 ns                        | .188 *               | .039 ns              | -.066 ns             |
| Dedication         | .520***              | .488***            | -.306 **                        | -.217*               | .574 ***             | .471 ***             |
| R²                 | .549***              | .562               | .119***                         | .331                 | .356***              | .392***              |
| ∆R²                | .013 ns              | .212***            | .036*                           |

* p < .05; ** p < .01, *** p < .001. All regression coefficients are standardized.
Inferring an Evaluation Dimension. I failed to find support for hypothesis 5. In an attempt to replicate the results of Demerouti et al. (2010), I tested a series of confirmatory factor analysis models (see Figure 2) to assess whether the four subscale factors derived from MBI-cynicism, UWES-dedication, OLBI-disengagement, and OLBI-dedication might reflect the existence of an “evaluation” continuum. In each model, the subscales were treated as latent factors and individual scale items were treated as indicator variables. Note that despite the poor internal consistency of the 3-item OLBI-disengagement (α = .58) and 4-item OLBI-dedication (α = .69) subscales, their inclusion was necessary for the model testing needed to thoroughly replicate Demerouti et al. (2010).

The four models tested by Demerouti et al. (2010) can be seen in Figure 2. In Model 1, the four subscales were specified as four latent factors that were allowed to covary. In Model 2, the four subscales were specified as being caused by a second-order latent factor named, “evaluation.” In Model 3, the latent factors of MBI-cynicism and OLBI-disengagement were specified to load onto a second-order factor named, “distancing” (consistent with Demerouti et al., 2010) whereas the latent factors of UWES-dedication and OLBI-dedication were specified to load onto a second order factor named, “dedication.” These two second-order latent factors were allowed to covary. Model 4 was identical to Model 3 with the added parameter wherein the correlation between distancing and dedication was fixed to be equal to -1.00. Since Model 4 is statistically equivalent to Model 2 (a fixed correlation between two latent factors with a magnitude of 1.00 implies unity), I decided it would be redundant to include both models. Consequently, I only tested Models 1 – 3.

As can be seen in Table 9, only Model 1 converged without any problems. Model fit might be considered poor based on the chi square test ($p < .05$), less than mediocre based on
Figure 2. Four hierarchical models representing the structure of various Evaluation-oriented dimensions of the MBI, UWES, and OLBI. Note that Models 2 and 4 are statistically equivalent.
### Table 9.
Model Fit Statistics for Focal Confirmatory Factor Analyses

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>RMSEA</th>
<th>SRMR</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaluation Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Four first-order factors</td>
<td>197.62</td>
<td>84</td>
<td>&lt;.001</td>
<td>.094</td>
<td>.050</td>
<td>.913</td>
</tr>
<tr>
<td>2. One second-order factor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. Two second-order factors</td>
<td>198.11</td>
<td>85</td>
<td>&lt;.001</td>
<td>.093</td>
<td>.051</td>
<td>.914</td>
</tr>
<tr>
<td><strong>Energy Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Four first-order factors</td>
<td>218.08</td>
<td>113</td>
<td>&lt;.001</td>
<td>.078</td>
<td>.072</td>
<td>.879</td>
</tr>
<tr>
<td>2. One second-order factor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. Two second-order factors</td>
<td>218.34</td>
<td>114</td>
<td>&lt;.001</td>
<td>.077</td>
<td>.072</td>
<td>.880</td>
</tr>
</tbody>
</table>

$N = 154$; $\chi^2$ = chi square; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Residual; CFI = Comparative Fit Index.

*Model 2 failed to converge for both Evaluation and Energy based CFAs. Model 3 presented with a non-positive definite covariance matrix issue in each CFA analysis.*
RMSEA (exceeding .08), and unacceptable by modern/stricter standards of CFI (less than .95; Kline, 2011) but acceptable based on the SRMR (values less than .08) (Kenny, 2012) and older/more lenient standards of CFI (greater than .90). In consideration of the smaller sample size which inflates both RMSEA and SRMR (Kenny, 2012), it might be argued that Model 1 demonstrates acceptable fit, though the chi square test would suggest otherwise.

Models 2, however, failed to converge while Model 3 converged but with a non-positive defined matrix error. This was likely due to the magnitude of the estimated correlation between the latent factors of distancing and dedication exceeding 1.00. A chi square difference test demonstrates that Model 3 does not fit the data any better or worse than Model 1.

Consequently, I was not able to provide evidence for the existence of a global evaluation factor (Model 2). I was also unable able to provide satisfactory evidence for the existence of distancing and dedication as separate higher order factors (Model 3). Parameter estimates for Model 1 can be seen in Table 10.

**Inferring an Energy Dimension.** I failed to find support for hypothesis 6. Once again, I tested a series of confirmatory factor analysis models (see Figure 3) to assess whether the four subscales factors derived from MBI-exhaustion, UWES-vigour, OLBI-exhaustion, and OLBI-vigour might reflect the existence of an “energy” continuum. In each model, the subscales were treated as latent factors and individual scale items were treated as indicator variables. Once again, note that despite the poor internal consistency of the 4-item OLBI-exhaustion (α = .66) and 4-item OLBI-Vigour (α = .54) subscales, their inclusion was necessary for the model testing needed to thoroughly replicate Demerouti et al. (2010).

All four models tested by Demerouti et al. (2010) can be seen in Figure 3. As before, given the statistical equivalence of Models 2 and 4, I have only tested Models 1 – 3. In Model 1,
Table 10.
Estimates of factor loadings and residual variances for Model 1: Evaluation items.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Factor Loadings</th>
<th>Measurement Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstandardized</td>
<td>SE</td>
</tr>
<tr>
<td></td>
<td>MBI Cynicism</td>
<td></td>
</tr>
<tr>
<td>MBI 6</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>MBI 7</td>
<td>1.013</td>
<td>0.055</td>
</tr>
<tr>
<td>MBI 8</td>
<td>0.841</td>
<td>0.071</td>
</tr>
<tr>
<td>MBI 9</td>
<td>0.822</td>
<td>0.069</td>
</tr>
<tr>
<td></td>
<td>UWES Dedication</td>
<td></td>
</tr>
<tr>
<td>UWES 9</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>UWES 10</td>
<td>1.048</td>
<td>0.064</td>
</tr>
<tr>
<td>UWES 11</td>
<td>0.967</td>
<td>0.076</td>
</tr>
<tr>
<td>UWES 12</td>
<td>1.010</td>
<td>0.083</td>
</tr>
<tr>
<td></td>
<td>OLBI Dedication</td>
<td></td>
</tr>
<tr>
<td>OLBI 1 R</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>OLBI 7 R</td>
<td>0.918</td>
<td>0.157</td>
</tr>
<tr>
<td>OLBI 15 R</td>
<td>1.031</td>
<td>0.171</td>
</tr>
<tr>
<td></td>
<td>OLBI Distancing</td>
<td></td>
</tr>
<tr>
<td>OLBI 3 R</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>OLBI 6 R</td>
<td>0.425</td>
<td>0.122</td>
</tr>
<tr>
<td>OLBI 9 R</td>
<td>0.565</td>
<td>0.110</td>
</tr>
<tr>
<td>OLBI 11 R</td>
<td>0.718</td>
<td>0.151</td>
</tr>
</tbody>
</table>

All factor loadings significant at $p < .001$. 
Figure 3. Four hierarchical models representing the structure of various Energy-oriented dimensions of the MBI, UWES, and OLBI. Note that Models 2 and 4 are statistically equivalent.
the four subscales were specified as four latent factors that were allowed to covary. In Model 2, the four subscales were specified as being caused by a second-order latent factor named, “energy.” In Model 3, the latent factors of MBI-exhaustion and OLBI-exhaustion were specified to load onto a second-order factor named, “exhaustion” (consistent with Demerouti et al., 2010) whereas the latent factors of UWES-vigour and OLBI-vigour were specified to load onto a second-order factor named, “vigour.” These two second-order latent factors were allowed to coary.

The results of the model analyses parallel those reported previously: As can be seen in Table 9, only Model 1 converged without any problems. Again, model fit might be regarded as poor based on the chi square test ($p < .05$) and CFI (.88) based rules of thumb. However, both RMSEA and SRMR values were less than .08 suggesting good fit (Kenny, 2012).

Model 2 once more failed to converge while Model 3 converged but with a non-positive defined matrix error. Again, it seems likely that this is due to the magnitude of the estimated correlation between the latent factors of exhaustion and vigour exceeding 1.00. Again, a chi square difference test seems to indicate that Model 3 does not fit the data any better or worse than model 1.

Consequently, I was not able to provide evidence for the existence of either a global energy factor (Model 2). Nor was I able to provide satisfactory evidence for the existence of exhaustion and vigour as separate higher order factors (Model 3). Parameter estimates for Model 1 can be seen in Table 11.
Table 11.

Estimates of factor loadings and residual variances for Model 1: Energy items.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Factor Loadings</th>
<th>Measurement Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstandardized</td>
<td>SE</td>
</tr>
<tr>
<td><strong>MBI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaustion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBI 1</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>MBI 2</td>
<td>1.346</td>
<td>0.167</td>
</tr>
<tr>
<td>MBI 3</td>
<td>1.402</td>
<td>0.178</td>
</tr>
<tr>
<td>MBI 4</td>
<td>1.245</td>
<td>0.175</td>
</tr>
<tr>
<td>MBI 5</td>
<td>-0.334</td>
<td>13.486</td>
</tr>
<tr>
<td><strong>UWES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vigour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UWES 1</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>UWES 2</td>
<td>1.016</td>
<td>0.111</td>
</tr>
<tr>
<td>UWES 3</td>
<td>0.966</td>
<td>0.133</td>
</tr>
<tr>
<td>UWES 4</td>
<td>1.015</td>
<td>0.113</td>
</tr>
<tr>
<td><strong>OLBI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaustion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLBI 2R</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>OLBI 4R</td>
<td>1.748</td>
<td>0.411</td>
</tr>
<tr>
<td>OLBI 8R</td>
<td>1.879</td>
<td>0.397</td>
</tr>
<tr>
<td>OLBI 12R</td>
<td>2.126</td>
<td>0.444</td>
</tr>
<tr>
<td><strong>Vigour</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLBI 5R</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>OLBI 10R</td>
<td>1.082</td>
<td>0.211</td>
</tr>
<tr>
<td>OLBI 14R</td>
<td>0.803</td>
<td>0.207</td>
</tr>
<tr>
<td>OLBI 16R</td>
<td>0.633</td>
<td>0.220</td>
</tr>
</tbody>
</table>

With the exception of item MBI 5, all factor loadings significant at $p < .001$. 
Discussion

Summary of Results and Implications

Beyond merely examining the utility of burnout and engagement in an academic context, the primary purposes of this study were twofold: First, I sought to address the redundancy and independence of the constructs burnout and engagement with regards to performance and well-being outcomes. Second, I sought to assess whether or not the core dimensions of burnout (exhaustion and cynicism/disengagement) and the core dimensions of engagement (vigour and dedication) might reflect two underlying continua (energy and evaluation). To that end, I proposed six sets of hypotheses. While I found support for the contention that engagement is not redundant with burnout, I did not find support for the energy and evaluation continua. In the following section, I review the results and discuss their theoretical and practical implications.

Hypothesis Set 1: The Predictive Utility of Burnout. The linear combination of the two core dimensions of burnout (exhaustion and cynicism) as assessed by the MBI predicted significant amounts of variance (varying between 15.6 and 34.4 percent) for each criterion variable assessed. In many regards, these results should not be surprising given that burnout has previously been demonstrated to be associated with performance and well-being. However, previous studies have tended to characterize well-being as merely the absence of illness, neglecting the effect of burnout on indices of eudaimonic well-being.

In the present study, I attempted to address this limitation by including two measures of eudaimonic well-being: The Subjective Experience of Growth (SEG) Scale and the Questionnaire for Eudaimonic Well-Being (QEWB). By demonstrating that burnout is a substantial predictor of SEG and QEWB scores (33.1% and 29.5% of observed variance, respectively), this study justifies the expansion of burnout’s nomological network to include...
indices of eudaimonic well-being. As a consequence, the results of this study bolster practitioner confidence in the utility of burnout in predicting various outcomes - not only does it predict more traditional indices of well-being (e.g., negative affect, physical ill-being) but more contemporary ones (e.g., the experience of meaningfulness) as well. Furthermore, I bolster support for the use of the MBI outside of a professional context.

**Hypothesis Set 2: The Predictive Utility of Engagement.** The linear combination of the two core dimensions of engagement (vigour and dedication) as assessed by the UWES predicted significant amounts of variance (varying between 10.5 and 47.0 percent) for each criterion variable assessed, with the exception of physical-ill being. Once again, these results should not be surprising: Despite the relative youth of the engagement construct, it has been demonstrated in the past to be positively related to performance (Balducci et al., 2010; Schaufeli et al., 2002; Salanova et al., 2010) and well-being outcomes (Hallberg & Schaufeli, 2006). As with burnout, however, previous studies have tended to characterize well-being as merely the absence of illness, neglecting the effect of burnout on indices of eudaimonic well-being.

As noted previously, these results have both theoretical and practical implications owing to the inclusion of both hedonic and eudaimonic indices of well-being. Once again, there is support for expanding the nomological network for the engagement construct to include eudaimonic indices of well-being given that the linear combination of dedication and vigour explain substantial amounts of variance for SEG (43.1%) and QEWB (31.6%) scores. Furthermore, I once more bolster practitioner confidence in the utility and informational value of the UWES instrument in predicting outcomes of interest pertaining to performance and well-being. As before, there is also support for the use of the UWES in non-organizational contexts.
Hypothesis Set 3: Incremental Validity of Engagement over Burnout. While the first two sets of hypotheses were proposed to assess the utility of the MBI and the UWES in isolation, the third set of hypotheses sought to address Cole et al.’s (2012) concern that burnout and engagement might be redundant constructs. The present study suggests that such concerns might be needlessly pessimistic. The two core dimensions of engagement (vigour and dedication) explained significant amounts of variance over and beyond that explained by the two core dimensions of burnout (exhaustion and cynicism) for four of the six criterion variables assessed: Positive affect (21.2% additional variance explained), subjective experience of growth (14.9% additional variance explained), eudaimonic well-being (10.1% additional variance explained), and negative affect (3.2% additional variance explained).

The nature of these results are at odds with Cole et al.’s (2012) recent meta-analysis which suggested that engagement added very little to the prediction of employee outcomes after controlling for burnout. Cole et al. (2012) found that after controlling for burnout, engagement only predicted an additional 1% of the variance for health complaints (a non-significant improvement in prediction), an additional 6% of the variance for job satisfaction, and 6% of the variance for organizational commitment.

It is not difficult to reconcile these differences: The conflicting nature between my results and those found by Cole et al. (2012) may be more apparent than actual. Note that in the present study, incremental utility was greatest for positive states of well-being (e.g., subjective experience of growth). In contrast, I found that engagement dimensions had non-existent or minimal incremental utility with regards to performance (non-significant) and traditional indices of well-being such as physical ill-being (non-significant) and negative affect (3.2% additional variance explained). One might speculate that had Cole et al. (2012) included eudaimonic well-
being as an additional criterion variable, they too might have found evidence of the utility of engagement over and beyond burnout.

As before, there are both theoretical and practical implications to the pattern of engagement’s incremental predictive validity over burnout. First and foremost, engagement does not appear to be functionally redundant after controlling for burnout, at least not for certain outcomes. This bolsters my confidence in the conceptual distinction between these two constructs. Second of all, (though not the objective of this study) I find empirical support for the distinctiveness between the traditional perspective of well-being as absence of illness and the more contemporary perspective of well-being as a positive sense of improvement and meaningfulness. It would appear that engagement offers notable additional predictive value over and above burnout, but primarily when the outcomes pertain to eudaimonic well-being.

The UWES, then, may have utility even if the MBI is already in use. However, this depends on what the practitioner is interested in. If the focus is solely on performance, both the present study and the Cole et al. (2012) meta-analysis would suggest that the MBI alone is sufficient. If the focus is on optimized and positive states of well-being, however, the UWES may provide insight beyond that of the MBI alone.

**Hypothesis Set 4: Incremental Validity of Burnout over Engagement.** While engagement adds predictive validity to burnout, this is not necessarily equivalent to being indicative of engagement being “more useful” per se than burnout. In assessing the fourth set of hypotheses outlined in this study, I found evidence suggesting that the core dimensions of burnout had significant incremental predictive validity over and beyond engagement for four of the six criterion variables assessed: Negative affect (21.2% additional variance explained),
physical ill-being (19.8% additional variance explained), academic performance (4.6% additional variance explained), and eudaimonic well-being (3.6% additional variance explained).

Consistent with the results of the third set of hypotheses tested in this study, I find evidence for the conceptual distinction between engagement and burnout. Just as engagement is not functionally redundant after controlling for burnout, it is noted that burnout is not functionally redundant after controlling for engagement. It is interesting to note that the amount of added predictive utility is greatest when the outcome variable pertains to more negative states of well-being such as physical ill-being and negative affect (approximately an additional 20% predicted variance in each case). Added utility was more minimal with regards to eudaimonic well-being (3.6%) and academic performance (4.6%) and non-existent for subjective experience of growth and positive affect.

Practitioners may benefit from the awareness that there may still be utility in using the MBI in addition to the UWES depending on what the objective of data collection is. While the MBI does not offer any substantial additional insight with regards to positive states of well-being, it does appear to substantially increase the prediction of psychosomatic symptoms and negative affectivity. The present study also suggests a statistically significant (but arguably small) increase in the prediction of performance; whether or not this improvement in prediction justifies the expenditure incurred by using an additional scale, however, is up to the discretion of management.

**Hypothesis Sets 5 and 6: Inferring Evaluation and Energy Dimensions.** Evidence for the functional non-redundancy of engagement and burnout does not omit the possibility of a more optimized way of conceptualizing the dimensions constituting engagement and burnout. To that end, hypothesis sets 5 and 6 were proposed to test Gonzalez-Roma et al.’s (2006) assertions
that burnout and engagement dimensions reflect energy and evaluation continua. Specifically, I sought to replicate the findings of Demerouti et al. (2010) and assess a series of CFA models to:

(1) assess whether or not the four evaluative subscales of MBI-cynicism, UWES-dedication, OLBI-disengagement, and OLBI-dedication might reflect an underlying evaluation continuum and (2) assess whether or not the four “energy-oriented” subscales of MBI-exhaustion, UWES-vigour, OLBI-exhaustion, OLBI-vigour might reflect an underlying energy continuum.

I failed to find evidence in support of an evaluation continuum since only one model (treating each of the four “evaluative” subscales as first-order latent factors) converged. Subsequent model testing resulted in either a failure for the software program to converge or non-positive definite errors. Similarly, I failed to find evidence in support of an energy continuum: Once again, only one model (specifying each of the four “energy-oriented” subscales as first-order latent factors) converged with subsequent models failing to converge with error.

These results are not consistent with previous investigations of such continua. The inability to find evidence for either an evaluation or an energy continuum is at odds with the findings of Gonzalez-Roma et al. (2006) who were among the first to provide empirical evidence for both scales (albeit using the non-parametric technique of Mokken Scaling). While the inability to find evidence in support of an energy continuum is consistent with the findings of Demerouti et al. (2010), it should be noted that the aforementioned authors at least did not run into issues with model convergence. Furthermore, the present inability to find support for the existence of an evaluation continuum is completely inconsistent with the findings of Demerouti et al. (2010).

There are several possible reasons for the discrepancy between the present results and those obtained by Demerouti et al. (2010). One explanation might pertain to sample size. Various
informal rules of thumb exist in regarding how many observations are necessary for the application of modeling techniques. Some suggest a target minimum of at least 200 observations (Kenny, 2012) while other suggest 5 observations for every estimated parameter (Bentler & Chou, 1987, as cited by Kenny, 2012). For comparison, Model 1 of my CFAs aimed towards Evaluation would have required $5 \times 36 = 180$ observations to satisfy that aforementioned rule of thumb. Thus, the number of observations in the present study ($N = 154$) was quite possibly inadequate. In comparison, Demerouti et al. (2010) specified the same models but tested with $N = 528$ observations.

A second possible reason for the discrepancy in results might simply be due to the differences in the nature of the samples tested: Demerouti et al. (2010) found evidence for this evaluation continuum based on a sample of South African employees in the construction industry whereas the sample in the present study is based on a sample of Canadian undergraduates asked to evaluate their academic work. A third related explanation might pertain to the use of modified OLBI items: While I used previously published versions of the UWES and the MBI that were intentionally designed for students/academic purposes, the OLBI items were modified relatively casually in the absence of any of the rigorous testing characteristic of proper scale construction.

**Limitations**

A number of limitations are to be addressed. The first immediate limitation to be noted is the cross sectional nature of the design. As a consequence, I cannot make strong arguments regarding causality. A second limitation pertains to sample size. While I had adequate data to confidently arrive at results for my first four sets of hypotheses, the number of observations ($N = 154$) available for my confirmatory factor analyses left much to be desired – it is somewhat ambiguous whether model failure is indicative of poorly specified parameters (i.e., a bad model)
or a lack of observations. A third limitation pertains to the nature of the sample involved. The use of a non-employee sample might be regarded as double-edged: On the one hand, my confidence in the ability of these results to generalize to actual employees in actual organizations might be undermined by the use of a student sample. On the other hand, replication across diverse samples strengthens my confidence in the universal nature of the effects in question.

**Future Studies**

In this section, I outline various future directions that may prove fruitful. First and foremost, an investigation involving multiple diverse samples (e.g., from different organizations or different types of work) would be useful for establishing that the effects observed herein are general and not specific to the student demographic used in the present study. Second, a longitudinal design with meaningfully-chosen time points (e.g., beginning with recent hires) should help to establish the direction of causality (i.e., do indices of eudaimonic well-being follow a sense of engagement? Or do they cause it?). Third, it would be insightful for future attempts at replicating the findings of Demerouti et al. (2010) to have a larger sample size so as to reduce ambiguity regarding whether model convergence failures are due to a lack of power or the presence of an inaccurate model.

In addition to merely addressing limitations (e.g., sample diversity, causal ambiguity, sample size) of the present study, it might be advantageous to test the ideas herein using an alternative approach, thereby providing multiple avenues of evidence of the same phenomenon. In the present study, I was unable to find support for the existence of an Evaluation and Energy continua due to a failure for several of my CFA models to converge. At present, I cannot rule out the possibility that this was (1) truly indicative of inaccurate models, (2) merely indicative of a
lack of statistical power, (3) the unfortunate result of the inadequacy of my modified OLBI items or (4) some combination of the above.

There is another way to test the evaluation-energy hypothesis. If burnout and engagement are actually “better” (i.e., more optimally) conceptualized as different amalgamations of two continua (evaluation and energy), future research might test this by actually constructing an instrument aimed specifically at assessing evaluation and energy as opposed to using ad-hoc indices (i.e., items from burnout and engagement instruments) of these theorized continua.

If (1) burnout cannot provide added incremental predictive validity over and beyond that of the energy and evaluation subscales and (2) engagement cannot provide added incremental predictive validity over and beyond that of the energy and evaluation subscales, this would be evidence for the utility of replacing these two instruments with one that is arguably superior in terms of reduced content overlap and predictive ability. The benefits for organizations would be obvious: First, from a purely practical and financial perspective, it would be cheaper and easier to administer one test (an energy-evaluation instrument) rather than two (MBI and UWES). Second, even if organizations were already planning on using only one instrument, it would make sense to use the one that provides the most information – in this case the energy-evaluation instrument.

**Conclusion**

This investigation had two primary purposes: The first was to address concerns over the redundancy of a relatively young construct, engagement, with regards to a similar construct burnout. The second was to examine whether the core dimensions of burnout and engagement reflect two hypothetical continua designated, “evaluation” and “energy.” With regards to the first objective, the results of the present study would suggest that burnout and engagement are not
functionally redundant: Engagement adds incremental predictive validity to burnout for certain outcomes (especially those pertaining to positive states of well-being) and vice versa – burnout adds incremental predictive validity to engagement (especially those outcomes pertaining to negative states of well-being.) The results pertaining to the second objective, however, were more ambiguous in light of model convergence issues. I was unable to find support for the existence of these theorized continua but I cannot rule out the possibility that this was due to limitations in study design.

In addition to attempts at replication based off more diverse and expansive samples that go beyond a cross-sectional design, subsequent research might benefit from the rigorous and psychometrically sound construction of evaluation and energy scales. Note that the present study essentially relied on inferring such constructs based on items taken from other instruments (i.e., the MBI, UWES, and OLBI). Consider, however, an instrument created with the specific intent to assess these constructs of evaluation and energy. If either burnout (or engagement) can add incremental predictive validity beyond that provided by these energy and evaluation subscales, it would provide very strong evidence against the evaluation-energy model of burnout and engagement.

If, however, neither burnout nor engagement instruments can provide incremental predictive validity, it would suggest that the latter two instruments may be functionally obsolete: Engagement might simply be characterized as a state of high energy and positive evaluation while burnout might simply be characterized as a state of low energy and negative evaluation. With regards to parsimony, it is simpler to deal with one instrument (and two subscales) rather than two instruments (and four subscales). Regardless of the specific outcome, such
investigations would enrich and further my collective understanding on the true relation between burnout and engagement.
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http://dx.doi.org/10.1177/0013164410391579
Appendix A

Maslach Burnout Inventory – Student Survey

(Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002)

Instructions: Please indicate the frequency with which you have endorsed each statement during this semester.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Almost Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

1. I feel emotionally drained by my studies.
2. I feel used up at the end of a day at university
3. I feel tired when I get up in the morning and I have to face another day at the university
4. Studying or attending a class is really a strain for me
5. I feel burned out from my studies
6. I have become less interested in my studies since my enrollment at the university
7. I have become less enthusiastic about my studies
8. I have become more cynical about the potential usefulness of my studies
9. I doubt the significance of my studies.
Appendix B

Utrecht Work Engagement Scale for Students (UWES-S)

(Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002)

**Instructions:** The following statements are about how you feel at school. Please reach each statement carefully and decide if you ever feel this way about your academic work. If you have never had this feeling, cross the “0” (zero) in the space after the statement. If you have had this feeling, indicate how often you felt it by crossing the number (from 1 to 6) that best describes how frequently you feel that way. Some of these items may seem very similar. Regardless, please take your time and answer as best as you can to each statement.

<table>
<thead>
<tr>
<th>Never</th>
<th>Almost Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>A few times a year or less</td>
<td>Once a month or less</td>
<td>A few times a month</td>
<td>Once a Week</td>
<td>A few times a week</td>
<td>Everyday</td>
</tr>
</tbody>
</table>

1. When I get up in the morning, I feel like going to class
2. When I’m doing my work as a student, I feel bursting with energy
3. I can continue studying for very long periods of time.
4. I feel strong and vigorous when I’m studying or going to class.
5. My studies inspire me.
6. I am enthusiastic about my studies
7. I am proud of my studies
8. I find my studies full of meaning and purpose

Items 1 – 4 correspond to the vigour subscale; items 5 – 8 correspond to Dedication. Items are derived from the UWES-17 Student Survey.
### Appendix C

**Oldenburg Burnout Inventory**

(Demerouti, Mostert, & Bakker, 2010)

**Instructions:** Below are a series of statements with which you may agree or disagree. Using the scale, please indicate the degree of your agreement by selecting the number that corresponds with each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I always find new and interesting aspects in my school work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. There are days when I feel tired before I arrive at school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. It happens more and more often that I talk about my school work in a negative way</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. After class, I tend to need more time than in the past in order to relax and feel better</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I can tolerate the pressure of my classes very well</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Lately, I tend to think less at school and do my school work almost mechanically</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I find my school work to be a positive challenge.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. When I am studying or doing school work, I often feel emotionally drained.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Over time, one can become disconnected from this type of academic activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. After class/school work, I have enough energy for my leisure activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Sometimes, I feel sickened by my academic tasks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. After my classes/school work, I usually feel worn out and weary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. With regards to my current academic direction, this is the only type of content that I could imagine myself studying.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Usually, I can manage the amount of my school work well.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I feel more and more engaged in my school work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. When I engage in school work, I usually feel energized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Disengagement items are 1, 3(R), 6(R), 7, 9(R), 11(R), 13, 15. Exhaustion items are 2(R), 4(R), 5, 8(R), 10, 12(R), 14, 16. Items marked with (R) indicate reverse-coding. Note that these items have been adapted to reflect academic school work.
**Appendix D**

**Academic Performance Index**

**Instructions**

Please indicate your numerical grade on up to five of your most recent courses (i.e., course grades from your previous semester). Please also indicate whether this grade reflects a final or a midterm grade. If you have provided a mid-term grade, please also indicate your predicted final grade.

<table>
<thead>
<tr>
<th>Course</th>
<th>Grade (0 – 100)</th>
<th>Midterm or Final?</th>
<th>Predicted Final (0 – 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

Physical Health Questionnaire

(Schat, Kelloway, & Desmarais, 2005)

Instructions: The following items focus on how you have been feeling physically during the past semester. Please respond by circling the appropriate number.

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Rarely</th>
<th>Once in a while</th>
<th>Some of the time</th>
<th>Fairly Often</th>
<th>Often</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Over the past semester…
1. How often have you had difficulty getting to sleep at night?
2. How often have you woken up during the night?
3. How often have you had nightmares or disturbing dreams?
4. How often has your sleep been peaceful and undisturbed?*
5. How often have you experienced headaches?
6. How often did you get a headache when there was a lot of pressure on you to get things done?
7. How often did you get a headache when you were frustrated because things were not going the way they should have or when you were annoyed at someone?
8. How often have you suffered from an upset stomach (indigestion)?
9. How often did you have to watch that you ate carefully to avoid stomach upsets?
10. How often did you feel nauseated (“sick to your stomach”)?
11. How often were you constipated or did you suffer from diarrhea?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 times</td>
<td>1-2 times</td>
<td>3 times</td>
<td>4 times</td>
<td>5 times</td>
<td>6 times</td>
<td>7+ times</td>
</tr>
</tbody>
</table>

12. How many times have you had minor colds (that made you feel uncomfortable but didn’t keep you sick in bed or make you miss school)?
13. How many times have you had respiratory infections more severe than minor colds that “laid you low” (such as bronchitis, sinusitis, etc.)?

<table>
<thead>
<tr>
<th>1 Day</th>
<th>2 Days</th>
<th>3 Days</th>
<th>4 Days</th>
<th>5 Days</th>
<th>6 Days</th>
<th>7+ Days</th>
</tr>
</thead>
</table>

14. When you had a bad cold or flu, how long did it typically last?

* Indicates the item requires reverse coding.
Appendix F

The Positive And Negative Affect Schedule (PANAS)

Watson, Clark, and Tellegen (1988)

Instructions: This scale consists of a number of words that describe different feelings and emotions. Read each item and indicate to what extent you felt this way in general during THIS SEMESTER.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very slightly or not at all</td>
<td>A little</td>
<td>Moderately</td>
<td>Quite a bit</td>
<td>Extremely</td>
</tr>
</tbody>
</table>

1. Interested
2. Distressed
3. Excited
4. Upset
5. Strong
6. Guilty
7. Scared
8. Hostile
9. Enthusiastic
10. Proud
11. Irritable
12. Alert
13. Ashamed
14. Inspired
15. Nervous
16. Determined
17. Attentive
18. Jittery
19. Active
20. Afraid

Items assessing Positive Affect: 1, 3, 5, 9, 10, 12, 14, 16, 17, 19
Items assessing Negative Affect: 2, 4, 6, 7, 8, 11, 13, 15, 18, 20
Appendix G

The Subjective Experience of Growth

Instructions: Using the scale provided, click on the most applicable circle for each statement to indicate your level of agreement.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Slightly Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Slightly Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

My university studies…

1. … have helped me to identify my strengths.
2. … have taught me to face challenges.
3. … have allowed me to further develop my strengths.
4. … have allowed me to continue learning more about myself.
5. … have offered limited opportunities to learn about my interests*
6. … have taught me to cope more effectively with stress.
7. … have helped me to improve as a person.
8. … have made it difficult to fulfill my aspirations.*
9. … have helped me realize what I am passionate about.
10. … provided little challenge to my coping abilities.*
11. … helped me learn what interests me
12. … have helped me to mature.
13. … provide few chances to pursue my passions.*
14. … have undermined my sense of ability to cope with challenges.*
15. … have helped me develop my career goals.
16. … help me become the person I want to be.
17. … have made it difficult for me to realize what I am passionate about.*
18. … help me move towards realizing my career goals
19. … have done little to help me improve as a person.*
20. … allow me to pursue my passions
21. … have helped me develop strategies to deal with difficult situations.
22. … have prevented me from becoming the person I want to be.*

Items marked with an asterisk (*) require reverse coding.
Appendix H

The Questionnaire for Eudaimonic Well-Being

(Waterman et al., 2010)

**Instructions:** This questionnaire contains a series of statements that refer to how you may feel things have been going in your life. Read each statement and decide the extent to which you agree or disagree with it. Try to respond to each statement according to your own feelings about how things are actually going, rather than how you might with them to be.

Please use the following scale when responding to each statement.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td></td>
<td></td>
<td></td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

1. I find I get intensely involved in many of the things I do each day
2. I believe I have discovered who I really am
3. I think it would be ideal if things came easily to me in my life (R)
4. my life is centered around a set of core beliefs that give meaning to my life
5. It is more important that I really enjoy what I do than that other people are impressed by it
6. I believe I know what my best potentials are and I try to develop them whenever possible.
7. Other people usually know better what would be good for me to do than I know myself. (R)
8. I feel best when I’m doing something worth investing a great of effort in.
9. I can say that I have found my purpose in life.
10. If I did not find what I was doing reward for me, I do not think I could continue doing it
11. As yet, I’ve not figured out what to do with my life (R)
12. I can’t understand why some people want to work so hard on the things that they do. (R)
13. I believe it is important to know how what I’m doing fits with purposes worth pursuing
14. I usually know what I should do because some actions just feel right to me.
15. When I engage in activities that involve my best potentials, I have this sense of really being alive.
16. I am confused about what my talents really are (R)
17. I find a lot of the things I do are personally expressive for me.
18. It is important to me that I feel fulfilled by the activities that I engage in.
19. if something is really difficult, it probably isn’t worth doing (R)
20. I find it hard to get really invested in the things that I do. (R)
21. I believe I know what I was meant to do in life.

Items marked (R) require reverse coding.
Appendix I

Electronic Letter of Information

A Survey of Student Attitudes and Well-Being

1. Letter of information

Project Title: A Survey of Student Attitudes and Well-Being

Research Investigators:
Joe Choi (Graduate Student)
E-mail: 

Dr. John Meyer (Professor)
Office: SLC 8411

In this study, we are interested in how your academic performance (as well as your physical and psychological well-being) might be related to your academic attitudes. For this study you will be asked to answer a number of questions regarding your attitudes towards your academic studies as well as your physical and psychological health. Please answer as honestly as possible. The study may take between 50 – 60 minutes. You will receive 1.0 course credit as compensation for your participation.

There are no known risks to participating in this study. Participation in this study is strictly voluntary and therefore you may discontinue participation at any time or refuse to answer any questions that make you feel uncomfortable without loss of promised research credit.

All information gathered in this study is kept confidential and is used for research purposes only. Analyses of the data will be conducted on group responses and not individual responses. Once the study is completed, the data are kept securely stored. You will receive written feedback concerning the purposes of the study at the end of the study and will have the opportunity to ask any questions at that time.

If you have questions about this research, and/or if you want to obtain copies of the results of this research upon its completion, please contact Joe Choi (Graduate Student) at the following email address: 

If you have any questions about the conduct of this study or your rights as a research participant you may contact the Director, Office of Research Ethics, The University of Western Ontario;
Appendix J

Electronic Consent Form

<table>
<thead>
<tr>
<th>A Survey of Student Attitudes and Well-Being</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have read the Letter of Information and I understand the nature of the study. I agree to participate.</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

*SurveyMonkey*

Check out our [FREE TRIAL] and create your own survey!
## Appendix K

### Departmental Ethics Approval Documentation

<table>
<thead>
<tr>
<th>Review Number</th>
<th>13 03 22</th>
<th>Approval Date</th>
<th>13 03 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator</td>
<td>John Major/Joe Chat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protocol Title</td>
<td>A survey of student attitudes and well-being</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sponsor</td>
<td>n/a</td>
<td></td>
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</tr>
</tbody>
</table>

Use of Human Subjects - Ethics Approval Notice

This is to notify you that The University of Western Ontario Department of Psychology Research Ethics Board (PREB) has granted expedited ethics approval to the above named research study on the date noted above.

The PREB is a sub-REB of The University of Western Ontario’s Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario. (See Office of Research Ethics web site: http://www.uwo.ca/research/ethics/)

This approval shall remain valid until and date noted above assuming timely and acceptable responses to the University’s periodic requests for surveillance and monitoring information.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the PREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of research assistant, telephone number etc). Subjects must receive a copy of the information/consent documentation.

Investigators must promptly also report to the PREB:

a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;

b) all adverse and unexpected experiences or events that are both serious and unexpected;

c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to the PREB for approval.

Members of the PREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

Clove Seigman, Ph.D.
Chair, Psychology Expedited Research Ethics Board (PREB)

The other members of the 2012-2013 PREB are: Mike Atkinson (Introductory Psychology Coordinator), Rick Goffin, Riley Hinson, Albert Katz (Department Chair), Steve Lupker, and Adam Piraino (Graduate Student Representative)

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CC: UWO Office of Research Ethics

*This is an official document. Please retain the original in your files*
Curriculum Vitae

Name: Joe Choi

Post-secondary Education and Degrees: Queen’s University
Kingston, Ontario, Canada
2007 – 2011 B.Sc. (Honours)

Honours and Awards: Douglas Jackson Memorial Entrance Award
Masters Scholarship
2011-2012

Related Work Experience
Teaching Assistant
The University of Western Ontario
2011-Present

Research Assistant
The University of Western Ontario
2011-Present

Research Assistant
Queen’s University
2009-2011

Publications: