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Psychological needs, engagement, and work intentions
A Bayesian multi-measurement mediation approach and implications for HRD

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Abstract

Purpose – The purpose of this study was to empirically examine the utility of self-determination theory (SDT) within the engagement–performance linkage.

Design/methodology/approach – Bayesian multi-measurement mediation modeling was used to estimate the relation between SDT, engagement and a proxy measure of performance (e.g. work intentions) (N = 1,586). To best capture the phenomenon of engagement, two measures of engagement (i.e. the Utrecht Work Engagement Scale-9 [UWES-9] and the Job Engagement Scale [JES]) and one measure of harmonious and obsessive passion (HOPS) were utilized. The HOPS was split into separate scales (harmonious and obsessive passion). SDT was operationalized through the Basic Psychological Needs at Work Scale (BPNS). Performance was operationalized through a latent proxy of work intentions.

Findings – Results demonstrated that the association between SDT and engagement were positive. Indirect effects between SDT and work intentions were significant for only two of the four measures of engagement (i.e. the UWES and Harmonious Passion). Hypotheses were partially supported.

Practical implications – SDT operated as an appropriate framework for capturing the underlying psychological structures of engagement for each of the four measures. In some cases, engagement did not mediate the relation between SDT and performance as expected, highlighting the contextual nature of engagement in both application and measurement.

Originality/value – This is one of the first studies to explicitly link a broad well-established psychological theory to engagement. This connection allows researchers to explain the latent processes of engagement that underpin the observed relationships of engagement in practice. Moreover, this is one of only a handful of studies that has used a multi-measurement approach in exploring the engagement–performance linkage and one of the only studies to use Bayesian methodology.

Keywords Passion, Employee engagement, Self-determination theory, Bayesian, Job engagement, UWES

Paper type Research paper

Introduction

Human resource and learning professionals have touted the construct of engagement as a strategy to increase organizational performance (Corporate Leadership Council, 2006; *Gallup Management Journal,* 2005). Moreover, practitioners continue to make assertions about the linkages between high levels of engagement, productivity, profitability, employee retention and customer service (Harter *et al.*, 2002, 2003; Wellins *et al.*, 2005). Conversations about the engagement–performance linkage are bourgeoning.

To understand the relation between engagement and performance, previous synopses of academic literature (Macey and Schneider, 2008; Shuck and Wollard, 2010; Shuck, 2011; Zigarmi *et al.*, 2009) have noted a plurality of models and theories connected to the topic of engagement such as the job demands–resources model (JD-R, Bakker and Demerouti, 2008), the conservation of resources theory (COR, Hobfoll, 1989) and/or the job characteristic theory (JCT, Hackman and Oldham, 1980) – all of which assist scholars and practitioners in describing the emergence of engagement in practice. Still, there are those authors that call for a deeper understanding of the observed engagement phenomena (Albrecht, 2010, Macey and Schneider, 2008; Shuck and Wollard, 2010; Shuck *et al.*, 2013). Often, proposed theories and models are poorly linked to broad well-established psychological theories. This is unfortunate as established theories allow researchers to explain latent processes that underpin observed relationships – such as those portrayed between the psychological state of engagement and the observed state of performance (Albrecht, 2010; Meyer *et al.*, 2010; Shuck *et al.*, 2013).

In connection, several scholars (Macey and Schneider, 2008; Meyer *et al.*, 2010; Parker *et al.*, 2010) have emphasized the need to understand the construct of engagement through enhanced research pertaining to long-standing theories of motivation. Specifically, Meyer *et al.* (2010, pp. 65-66) proposed a theoretical model using the emerging psychological theory of self-determination (SDT) that "addresses the mechanisms underlying employee engagement in […] work activities and helps to make connections between state engagement and its antecedents and consequences". Little work, however, has explored the SDT framework, especially in the areas of human resource development (HRD) and learning as a means to examine the construct of engagement. As such, the purpose of our study was to empirically examine the utility of SDT within the engagement–performance linkage. Our intent was to highlight those underlying mechanisms that influenced the latent formation of engagement and to better understand the application of engagement to performance. In the following, we present an overview of the present study variables, explanation of our methods, results and discussion of findings including implications for theory and practice in HRD. Finally, study limitations and future research considerations are detailed.

Conceptual framework

The relations between the variables of interest in our work are best understood through the application of SDT (BPNS; Deci and Ryan, 1985, 2002), the Shuck *et al.* (2014a) framework of engagement and social cognitive theory (Bandura, 1986). To contextualize this study within the domain of performance, we further considered a latent variable of work intention as a proxy outcome indicator of performance to best capture the performance linkage we sought to more fully explore.

Self determination theory
SDT is regarded as a general framework of motivation that bridges the traditional
theoretical divide between the dichotomous focus toward extrinsic and intrinsic
motivation (Deci and Ryan, 1985). Congruent with cognitive evaluative theory (CET;
Deci and Ryan, 1985), SDT promotes the premise that an individual is understood as
both volitional and an agent of their own future by acting on behalf of their
psychological needs. Behaviors are chosen based on reasonable expectations for future
outcomes, which primarily serve an individual's basic psychological needs (Deci and
Ryan, 1985, 2002). SDT is focused toward the specific innate psychological needs of
competence, autonomy and relatedness (Ryan and Deci, 2000). Competence is defined as
the degree to which a person feels they possess the needed knowledge, skills and
resources to meet environmental challenges and requirements (Meyer *et al.*, 2010).
Autonomy is the degree to which a person believes their actions and activities reflect
core values, and that involvement is freely chosen (Meyer *et al.*, 2010). Relatedness
concerns the degree to which a person feels "unconditionally valued and appreciated by
others" (Meyer *et al.*, 2010, p. 65), as well as feeling connected to something greater than
themselves (Deci and Ryan, 2002).

As a motivational theory, SDT is primarily concerned with forward influence,
independent choice and the degree to which behavior is self-regulated, self-determined
and self-motivated (Deci and Ryan, 2000). Optimal human motivation is believed to
originate from internal organismic needs required for growth and integration rather
than on just the physiological drives of pleasure and pain. Within the context of
engagement, the basic psychological needs of competence, autonomy and relatedness
remain critical for understanding the influencing factors for behavior at work. Within
the SDT framework, psychological needs are described as those nutriments essential for
optimal well-being (Gagne and Deci, 2005). Thus, competence, autonomy and
relatedness serve as vital needs, in that they promote a sense of individual well-being.
As Gagné and Deci (2005, p. 337) suggested:

> SDT research focuses not on the consequences of the strength of those needs for different
> individuals, but rather on the consequences of the extent to which individuals are able to
> satisfy the needs within social environments.

The psychological construct of engagement
Application and research around engagement has developed in complexity since its
early origins. Subsequently, various streams of distinct research are evidenced in the
literature (e.g. the needs satisfying approach and satisfaction–engagement approach;
see, for example, Shuck, 2011; Shuck and Wollard, 2010). Each unique research stream
comes loaded with assumptions, definition and measurement preferences regarding the
formation of engagement and what engagement means in practice. Additionally,
controversies concerning concept overlap and instrumentation deficiencies have been
noted (Christian *et al.*, 2011; Cole *et al.*, 2012; Shuck *et al.*, 2013). The construct of
engagement when applied to performance has been both heralded as indispensable to
success (Macey and Schneider, 2008; Ployhart, 2012) and condemned as a slippery
notion (Newman *et al.*, 2011).

Choosing any one school of thought limits measurement, definition and application.
We hoped to explore the broad construct of engagement by limiting construct

distinction to measurement precision rather than theoretical debate. Notwithstanding, to best cut across the many streams of engagement research, we drew our definition of engagement from Shuck *et al.* (2014a) who inclusively defined engagement as a positive, active psychological state. In their work, Shuck *et al.* (2014a) noted early frameworks of engagement (Kahn, 1990) alongside more contemporary models (Soane *et al.*, 2012) and the inferred active (vs static or stationary), psychological (vs observed) and state-based (vs purely trait-based) nature of the engagement construct. Drawing from Parker and Griffin (2011), Shuck *et al.* (2014a) suggested that exploratory theoretical structures of engagement must be disentangled from popular measures and labels – a step we hoped to take in this research. Traditionally, however, measures of engagement have been convoluted, severely entangling their latent nature and making comparisons across streams a severe challenge. Further, we noted that a handful of researchers had suggested that cognition and emotion makeup the general focal point of engagement in actual practice (Xanthopoulou *et al.*, 2012), highlighting variances between two of the principal streams of engagement research, work engagement and employee engagement (Purcell, 2013). Despite distinction, scholars have reliably supported the view that the experience of engagement contains both cognitive and emotive elements and that these elements are commonly linked to expressions of higher levels performance (Shuck *et al.*, 2014b).

In addition to research around work engagement and employee engagement and well-connected to the notion of cognition and emotion, an employee work passion appraisal model (EWPA) was recently introduced as a parallel analogous framework to the overarching notion of engagement. That is, some scholars have operationalized passion as engagement and vice versa (Roberts and Zigarmi, 2014). Conceptually linked to the latent structure of engagement, the EWPA was presented to rectify the relationships between cognition, affect, an implicit sense of well-being and resultant intentionality in the formation of engagement as a model for practice (Roberts and Zigarmi, 2014; Zigarmi *et al.*, 2014). Unfortunately, the EWPA model has been inadequately integrated into the overarching engagement literature, despite similarly overlapping theoretical structures and empirical evidence of a potential linkage (Zigarmi *et al.*, 2009, 2011). A prudent step forward would be concurrent exploration of the EWPA alongside principle streams of well-established measures of both work and employee engagement.

In summary, within the literature on engagement, there exist nuanced and differentiated operationalizations of the experience of engagement to include work engagement, employee engagement and, more recently, work passion. Despite work within each of the three streams, no one study has considered each operationalization concurrently under a unified theoretical umbrella of engagement alongside a well-established psychological theory such as SDT. While we note conceptual distinction, exploring the concurrent expression of engagement through these three distinct operationalizations requires neutrality. Thus, for the purposes of this specific research, we have chosen to define engagement inclusively and broadly and to remain impartial to any one stream. Instead, to best disentangle measures from theoretical structures and labels, we have chosen to allow a distinction to emerge through measurement. Demonstrated measurement distinction could contribute deep insight into developing nomological understanding and theory building around the actual practice of engagement. As such, we use the term engagement to be inclusive of all three

streams (work, employee and passion), yet noting the potential for each stream to be unique and distinct when explored through measurement (see Methods for complete details).

Connected, there are several overlaps with SDT and the way we have chosen to inclusively operationalize engagement as a positive active psychological state. For example, Meyer *et al.* (2010) suggested that the self-determination component of SDT shared conceptual space with Macey and Schneider's (2008) operationalization of state engagement and Kahn's (1990) belief about the self-involvement component of work of personal engagement. Moreover, an individual's learning processes grounded in the context of experience (e.g. cognitive evaluation theory and the appraisal process) has distinct connections with the social cognitive appraisal model offered by Zigarmi *et al.* (2009, 2011) and alluded to by Shuck *et al.* (2011). Further, SDT shares common strands of logic with Christian *et al.* (2011) and the connection they point to with Kahn's original conceptualization of the engagement phenomenon.

SDT further provides insight to the choices an employee could make, based on the environmental context yet falls short of examining why and how choices are made (process vs variance; Mohr, 1982); for example, we wonder how does the individual arrive at behavior and what explanations can be offered to understand the arrival? This connects broadly to the interest researchers have with the engagement–performance linkage. If engagement is related to SDT (as suggested by Meyer *et al.*, 2010), can the concept of engagement elucidate the connection between competence, autonomy and relatedness and their relation to performance? Further empirical examination of SDT and engagement has the potential to provide a unique understanding of engagement and its application to the workplace well-beyond conceptual applications of theory. Moreover, exploration of engagement and its various tenets could provide further context for understanding behavior from an HRD perspective and connect to points of practical influence that spur future research opportunities and practical application; a significant potential outcome of this multi-faceted research. Empirical linkages between SDT and engagement are woefully underdeveloped, although frequently referenced and concurrent research exploring each of the identified unique streams of engagement is non-existent. As a means for exploring these potentially fruitful connections, we proposed exploring the following hypothesis:

H1. The tenants of SDT will share a positive statistically significant relation with the construct of engagement.

Work intentions
Models such as the Theory of Reasoned Action (Fishbein and Ajzen, 1975), the Theory of Planned Behavior (Ajzen, 1985) and the recently propositioned Theory of Purposeful Work Behavior (Barrick *et al.*, 2013) have evolved specifically to explain the relationship between intention and behavior. Over the past three decades, the concept of intention has been frequently researched and prominently published in the sociological and psychological literature (Gollwitzer and Sheeran, 2006). Resultantly, a number of meta-studies have shown strong correlations between intention and observed behavior (Armitage and Connor, 2001; Sheeran *et al.*, 2005). Research has further demonstrated the power of intentions as predictors of behavior over and above the concepts of organizational commitment and/or job satisfaction (Griffeth *et al.*, 2000; Tett and Meyer, 1993).

Generally speaking, there are two forms of intention: goal intention and means intention. For this study, we defined intention as a mental representation of a desired future or desired behavior to attain that future (Zigarmi and Nimon, 2011). Intentions through this lens were understood as a path or plan for purposeful action that rose from an individual's appraisal of their current in-the-moment experience (Bagozzi, 1992; Sheeran *et al.*, 2005). Zigarmi and Nimon (2011) presented rationale for the importance and conceptual basis for five employee work intentions using empirical evidence found in the literature over the past 40 years. Their work correlated five unique intentions to various dependent variables including attrition (Podsakoff *et al.*, 2007: Steel and Ovalle, 1984; Tett and Meyer, 1993), organizational citizenship (Colquitt *et al.*, 2001; LePine *et al.*, 2002: Organ and Ryan, 1995), performance (Gollwitzer and Sheeran, 2006; Locke, 1996), discretionary effort (Dubinsky and Skinner, 2002; McPherson, 2007; Organ, 1997) and endorsement (Anderson and Bateman, 1997; Moorman and Blakely, 1995).

Because intentions represented an individual employee's future intent toward a specific target such as those actions connected to performance, we used work intentions as a latent proxy to empirically demonstrate the engagement–performance linkage. We proposed the following hypothesis:

H2. Engagement will share a statistically significant relation with the work intentions.

In addition to poor understanding of the engagement–performance linkage, little work has explored the relation between SDT, engagement and performance in combination. Because we expected engagement to manifest as the forward influence behind independent choice and the degree to which behavior is self-regulated, self-determined and self-motivated (i.e. degree of competence, relatedness and autonomy) we proposed the following hypotheses and sub-hypothesis[1]:

H3. Engagement will mediate the relation between SDT and work intentions.

H3a. Work engagement will mediate the relation between SDT and work intentions.

H3b. Employee engagement will mediate the relation between SDT and work intentions.

H3c. Work passion will mediate the relation between SDT and work intentions.

In review, this study's conceptual framework linked Deci and Ryan's (1985, 2002) notion of SDT and Shuck *et al.* (2014a) framework of engagement alongside work intention as a proxy indicator of the engagement–performance linkage. Details about measurement disentanglement, relations and distinct findings are explored in the following sections.

Methods
The following section includes a discussion of the participants, procedures and research measures.

Participants and procedure
Participants in this study included 1,586 client respondents of a national management and training consulting company (58 per cent female). The prominent age groups were born between 1942 and 1960 (54.6 per cent), followed by those born between1961 and 1981 (41 per cent). Most participants (76 per cent) indicated serving in a supervisory or

managerial capacity and most had been with their current organization two years or longer (83.7 per cent). To participate in the study, participants were contacted with a unique link to an online survey that included the study's measures. Participants were offered a free report on the data analysis for their involvement in the study.

Measures

The survey battery included separate sections for each measure. Instruments were scored and reported separately.

Self-determination theory. SDT was measured using the 12-item; three subscale Basic Psychological Needs at Work Scale (BPNS; Brien *et al.*, 2012). The BPNS was designed to measure a participant's need for autonomy, competence and relatedness (Deci and Ryan, 2000). A 6-point Likert-scale, ranging from 1 (strongly disagree) to 6 (strongly agree), was used. Examples of each subscale included items such as, "My work allows me to make decisions" (autonomy), "I feel competent at work" (competence) and "When I'm with people from my work environment, I feel understood" (relatedness). Coefficient alphas for each scale were within acceptable levels for this study (i.e. 0.84-0.90).

Engagement. To best understand the latent structures of the engagement construct, we used a multi-measure approach to capture the broad theoretical structure, yet provide the ability to make distinctions across unique streams when appropriate. Thus, we utilized three measures of engagement. The three measures were chosen because they had been demonstrated in the literature to correspond to an identified stream of engagement highlighted in our conceptual framework (i.e. work engagement, employee engagement or work passion; Shuck, 2011; Zigarmi *et al.*, 2011). The measures used were the Job Engagement Scale (JES; Rich *et al.*, 2010), the Utrecht Work Engagement Scale-9 (UWES-9; Schaufeli *et al.*, 2006) and the HOPS (Vallerand *et al.*, 2003). Further, as suggested by our inclusive definition, we believed that any one measure of engagement should ideally gauge the phenomenon equally across theoretical structures with some degree of psychometric parallel structure. Using a multi-measure approach would allow for the disentanglement of measures from theoretical structures and labels and provide the ability to identify potentially depressed latent nuances, should such wrinkle sexist. This supposition was in line with current theory (Shuck *et al.*, 2014b).

UWES-9. Representing work engagement, the UWES-9 was a three-factor scale (vigor, dedication and absorption) with separate scales for each factor. Internal consistency reliability estimates for each subscale in the current study was as follows: vigor, $\alpha = 0.91$ (three items); dedication, $\alpha = 0.91$ (three items); absorption, $\alpha = 0.83$ (three items). Reliability estimates for the combined scale was $\alpha = 0.92$. Higher total scores across each subscale and the combined scale represented higher degrees of reported engagement. A sample item of the UWES-9 is, "When I get up the morning, I feel like going to work".

Job engagement scale. Representing employee engagement, the JES is a three-factor scale (cognitive, emotional, and physical engagement) with separate scales for each factor. Internal consistency reliability estimates for each subscale in the current study was as follows: cognitive engagement, $\alpha = 0.96$ (6 items); emotional engagement, $\alpha = 0.96$ (6 items); physical engagement, $\alpha = 0.94$ (6 items). Reliability estimates for the combined scale was $\alpha = 0.97$. Higher total scores across each subscale and the combined scale represented higher degrees of reported engagement. A sample item of the JES is, "I work with intensity on my job".

Harmonious and obsessive passion. Representing work passion, the EWPA was measured using the HOPS (Vallerand *et al.*, 2003). The HOPS was a two-factor scale (harmonious passion and obsessive passion) with separate scales for each factor. Unlike the two previous measures of engagement, the HOPS measured both the positive, active psychological state (harmonious) and the darker more neurotic side (obsession) of engagement. These two dimensions were established as unique, divergent domains (harmonious passion and obsessive passion) and should be scored and interpreted independently. Thus, we had two scales of work passion–harmonious passion and obsessive passion in addition to the UWES-9 (Schaufeli *et al.*, 2006) and JES (Rich *et al.*, 2010). Following the precedent set by other researchers (Ho *et al.*, 2011), items in the HOPS were slightly reworded to refer to a participant's job circumstances such as "*this job* allows me to live memorable experiences" (italics added for emphasis). Internal consistency reliability estimates for each subscale in the current study was as follows: harmonious, $\alpha = 0.71$ (seven items) and obsessive, $\alpha = 0.91$ (seven items). Reliability estimates for the combined scale was $\alpha = 0.92$. Higher total scores across each subscale and the combined scale represented higher degrees of reported harmonious or obsessive passion, respectively. A sample item of the harmonious scale is, "When I get up the morning, I feel like going to work." A sample item of the obsessive passion scale is, "I cannot live without this job".

Work intention. Work intentions were measured using three of the five work intention scales utilized by Zigarmi *et al.* (2012). The three scales used in this study were intent to endorse (e.g. "I intend to speak out to protect the reputation of this organization"), intent to use discretionary effort (e.g. "I intend to spend my discretionary time finding information that will help this company") and intent to stay (e.g. "I intend to continue to work here because I believe it is the best decision for me"). These scales were chosen due to their proximal nature to the concept of performance. Internal consistency reliability estimates for each subscale in the current study was as follows: intent to endorse, $\alpha = 0.96$ (5 items) intent to use discretionary effort, $\alpha = 0.88$ (5 items), and intent to stay $\alpha = 0.87$ (5 items).

Results

In this study, Bayesian estimation was utilized. While full exploration of Bayesian estimation is beyond the scope of this article (Hamaker and Klugkist, 2011; Muthen *et al.*, 2012), in the following, we provide a brief overview.

Bayesian approaches differ in philosophy and estimation from frequentist (or conventional) statistical approaches. The latter is typically based on null hypothesis significance testing (NHST), wherein the null hypothesis is believed to be tested. In contrast, Bayesian approaches seek to reduce the uncertainty in a given model by combining prior knowledge with current data [i.e. P (theory | data)]. Prior knowledge is referred to as a prior distribution, which represents previous findings, such as the associations between engagement and intention outcomes commonly found in the research literature. Yet, a more conservative approach or within situations when there is less previous knowledge to inform the model, the prior distribution is not defined and reflects more uncertainty (Dienes, 2011). The results from Bayesian models are described in terms of the posterior distribution, which is defined by the range of uncertainty in the model after accounting for prior distribution and the current data (Hamaker and Klugkist, 2011). For example, larger posterior distributions can be

interpreted to mean that there is more uncertainty in the results. Additionally, credible intervals are utilized in Bayesian models to describe the range of the posterior distribution. For example:

[…] a 95 per cent credible interval means that there is a 95 per cent chance that the credible interval contains the true value of the parameter on the basis of the observed data (Yuan and MacKinnon, 2009, p. 304).

In contrast, confidence intervals (e.g. 95 per cent confidence interval) provide a range of plausible scores if the same study was repeated multiple times with samples from the target population (which is a process seldom completed in reality; Yuan and MacKinnon, 2009). Bayesian models are also not based on normality assumptions or asymptotic results, which allows for more flexibility in the data (Hamaker and Klugkist, 2011).

To address our three main hypotheses, we used multiple mediation modeling using Bayesian estimation. Multiple mediation models test indirect effects for multiple variables at the same time; thus, accounting for potential shared variance among the mediators (Preacher et al., 2007). Specifically, we hypothesized that the association between SDT and the intentions would be mediated by engagement (i.e. UWES-9, JES, Harmonious and Obsession). SDT was modeled as a latent variable composed of autonomy, competency, and relatedness (i.e. BPNS). Intentions were also modeled as a latent variable composed of intention to remain, intent to endorse and intent to use discretionary efforts (Figure 1).

An overview of the means, standard deviations and bivariate correlations are provided in Table I. The relations are as expected and in line with prior research. Table II displays the unstandardized associations for the multiple mediation models. The latent variables, BPNS and Intentions were appropriately modeled. Specifically, the standardized loadings for BPNS were significant for autonomy ($\beta = 0.72$), competence ($\beta = 0.71$) and relatedness ($\beta = 0.68$). For intentions, the standardized loadings were significant for intent to use discretionary effort ($\beta = 0.68$), intent to endorse ($\beta = 0.89$) and intent to remain ($\beta = 0.78$).

Results demonstrated that the association between BPNS and all four of the engagement scales were positive, suggesting that as individuals rated BPNS higher (e.g. SDT), engagement scores were also higher (βs ranged from 0.43 to 0.92), supporting our first broad hypothesis. The association between each of the four engagement scales and intentions demonstrated significant positive associations for UWES ($\beta = 0.46$) and Harmony ($\beta = 0.32$), but not the JES ($\beta = 0.02$) and Obsession ($\beta = 0.1$), providing only
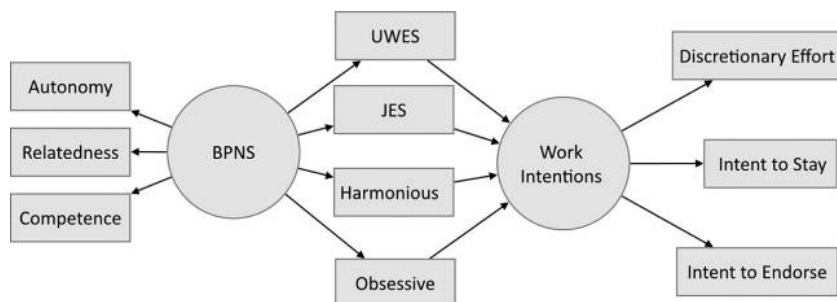

Figure 1.
Hypothesized association between SDT, engagement, and work intention[2]

Variables	1	2	3	4	5	6	7	8	9	10
1. UWES	–									
2. RICH	0.81	–								
3. Harmonious	0.81	0.70	–							
4. Obsessive	0.42	0.31	0.46	–						
5. Autonomy	0.61	0.57	0.62	0.25	–					
6. Competence	0.63	0.60	0.56	0.18	0.72	–				
7. Relatedness	0.59	0.50	0.62	0.32	0.64	0.56	–			
8. DE	0.61	0.54	0.52	0.27	0.44	0.41	0.41	–		
9. Endorse	0.64	0.56	0.62	0.27	0.54	0.47	0.53	0.64	–	
10. Remain	0.59	0.49	0.61	0.37	0.50	0.42	0.51	0.48	0.70	–
Mean (SD)	39.27 (9.06)	75.98 (12.40)	36.17 (9.04)	19.78 (9.56)	16.70 (3.15)	17.38 (2.51)	14.85 (3.46)	20.32 (5.59)	22.33 (6.50)	17.00 (6.50)

Notes: All correlations are significant at $p < 0.001$; SD = Standard deviation; $N = 1586$

Table I.
Bivariate correlations
among key variables

	b	95% CI
Direct effects		
BPNS-rich	4.59*	4.31, 4.86
BPNS-UWES	3.67*	3.47, 3.88
BPNS-harmonious	3.44*	3.24, 3.65
BPNS-obsession	1.84*	1.64, 2.06
Rich-intention	0.01	−0.02, 0.03
UWES-intention	0.19*	0.15, 0.22
Harmony-intention	0.13*	0.10, 0.16
Obsession-intention	0.004	−0.01, 0.02
Indirect effects		
Rich	0.03	−0.07, 0.13
UWES	0.68*	0.55, 0.83
Harmony	0.44*	0.36, 0.54
Obsession	0.01	−0.03, 0.04
Latent variables		
BPNS-autonomy	1.00	–
BPNS-competence	0.79*	0.74, 0.85
BPNS-related	1.05*	0.98, 1.12
Intentions-DE	1.00	–
Intentions-endorse	1.54*	1.43, 1.70
Intentions-remain	1.35*	1.24, 1.50

Table II.
Summary of multiple mediation model: unstandardized effects

Notes: *$p < 0.001$; CI = Credible interval

partial support for *H2*. Consistently, the indirect effects were significant for the UWES and Harmony scales, but not the JES or Obsession (Table I). Accordingly, *H3* was only partially supported.

Discussion
In light of our findings, there are several points of discussion and implications for both theory and practice.

Implications for theory
One of the main purposes and contributions of our research was to highlight the underlying mechanisms that influenced the latent formation of engagement. Previous research had resulted in an under-exploration of the connections between SDT and engagement, as we have detailed. Findings from our work however suggested that looking at a person's basic psychological needs (theoretically operationalized through SDT; Deci and Ryan, 2002) was an appropriate framework for capturing some of the underlying psychological structures of engagement. Using three unique scales (with four measurement operationalizations), engagement indicated direct significant relations with SDT in each case. In summary, our work suggested that as employees experienced higher levels of autonomy, relatedness and competence, they also reported experiencing higher levels of engagement. Our findings paralleled historical engagement literature as conceptualized by Kahn (1990) and further promoted by

contemporary researchers (Rich *et al.*, 2010; Meyer and Gagne, 2008; Airila *et al.*, 2014) and so often linked with engagement antecedents (Saks, 2006; Saks and Gruman, 2014; Wollard and Shuck, 2011). The multi-method Bayesian modeling approach we took provided a new lens from which to view these findings and further supported the relation between SDT – a broad well-established psychological theory – and engagement (work engagement, employee engagement and work passion).

Further, psychological needs operationalized under the SDT framework (Deci and Ryan, 2002) highlighted the volitional nature of the employee as an agent of their own future intention through each of measurement operationalizations. Results emphasized the potency of psychological needs in driving engagement, positioning employees as agents of their own future dependent on how they perceive their environment extending. This finding extends the bounds of both emergent SDT (Deci and Ryan, 2002; Gagne and Deci, 2005; Meyer and Gagne, 2008) and engagement literature (Kahn, 2010; Saks and Gruman, 2014; Sarti, 2014) and contributes to both. Engagement, for example, is understood to be an individual level variable (Parker and Griffin, 2011; Purcell, 2013) influenced by how employees experience their surrounding work environment. Our work highlights the connection of autonomy, relatedness and competence as salient indicators of how an employee experiences their surrounding environment.

As a third implication and contribution to existing theory, findings provide support for the EWPA – and its distinction – particularly between the latent relations of cognition and affect in ways that lead to a heightened sense of engagement. Passion and engagement may be related constructs nomologically, but our results indicate they may operate differently. Prior to this study, research had yet to explore such a relation using a multi-measurement approach. Our work has provided evidence of measurement distinction, a promising contribution to theory and further evidence of nomological overlap. This is a positive and noteworthy implication for theory as EWPA may be the upper echelon of the engagement experience, which leads to our third implication.

Our finding that the operationalization of engagement was not associated with the intentions variable across each of the four measures was a relief – and, perhaps, the most significant implication of our work for theory in HRD. So often, engagement has been positioned as the answer to all problems performance related. But, as our results indicate, this may not always be the case – or at least, there may be other interpretations that require further investigation. With little exception (Shuck *et al.*, 2011), few studies have provided any empirical evidence of engagement where the construct was not linked so positively to some outcome measure of performance. Our study is one of only a handful that shows a null relation between any measure of engagement and some indicator of performance. There is some paradise in this finding as it opens up the engagement construct to be more than just a proxy to performance – but rather, more likely an experienced and complex psychological phenomenon, uniquely and individually experienced within the context of an employee's experience – a woefully understudied positioning of engagement (Purcell, 2013). In their conceptual argument, Parker and Griffin (2011, p. 64) posited, "engagement does not always lead to high performance, nor does high performance always indicates engagement". They go on to suggest that context should influence how well an individual performs and how they express their engagement. We agree with Parker and Griffin (2011) as our findings empirically parallel their ideology. Context, operationalized theoretically in our study as SDT, was shown to influence levels of engagement, which influenced intention

behavior. To be clear, in our work, each measure of engagement was related to performance (Table I). Moreover, when the four measures were entered into predictive models independently, each was associated with the latent variable of intention. Notwithstanding, when entered simultaneously, only two of the four measures were significant – the UWES (Schaufeli et al., 2006) and the Harmonious Passion Scale (Vallerand et al., 2003). In short, the UWES and Harmonious Passion Scale accounted for larger shares of the variance in the dependent outcome variable then the JES or the Obsessive Passion Scale. We offer two explanations for this.

First, theoretically, it is possible that the construct of affect is the unaccounted for common denominator (and could be unknowingly present in both the UWES and Harmonious Passion measures) and the most predictive source of the engagement – performance linkage. That is, the more strongly an employee connects emotionally to their work the better they perform. We base this explanation in research where scholars have noted that the affective domain of engagement is salient in predicting intentions and that the Passion and UWES scales, respectively, tend to psychometrically overestimate, and thus be more sensitive to, affectively leaning scale items (the JES; Rich et al., 2010; Nimon et al., 2014; Shuck et al., 2013). That is, the Passion and UWES scales tend to use affectively worded questions and, thus, are more sensitive to affect in ways the other two scales we used may not be. While we note the importance of the cognitive and behavioral domains of engagement, our findings provide at least an initial basis of empirical support for further exploring the influence of affect within the engagement construct.

A second alternate explanation might suggest that some types of engagement mediate other types of engagement or that they measure varying levels of the engagement experience. That would imply some distinctiveness between and across various measures of engagement. For example, it is possible that the Harmonious passion and UWES scales are measuring something qualitatively different from the JES and Obsessive passion scales or that the JES and/or Obsessive passion scales might actually mediate, or be mediated by, the relations between the Passion and UWES and intentions.

Implications for practice
To enhance levels of engagement within their organization, HRD professionals might seek to leverage the psychological framework of SDT highlighted in our findings. For example, finding ways to influence the manner in which employees develop their personal sense of autonomy, relatedness and competence could have lasting impact. Recent research by Sarti (2014) and De Clercq et al. (2014) provided insight into specific action steps. Sarti (2014), for example, suggested that opportunities for learning and positive perceptions of coworker and supervisor support were distal predictors of employee engagement, highlighting some of the specific job resources HRD scholars and practitioners could leverage in developing higher levels of engagement. Further, De Clercq et al. (2014) indicated that a servant style of leadership could be an appropriate framework from which to build high levels of engagement from a leadership perspective, building on the work by Hoon Song et al. (2012).

HRD practitioners could capitalize on these findings by combining results from these studies in a way that maps the progress and development of engagement in practice. For instance, findings from our work suggested that the facets of SDT promotes levels of

engagement and that this could be accomplished through developing environments at work where employees feel supported by their coworkers and supervisors and have ample access to learning opportunities through job design, formal and informal training and systemic organization development efforts. This certainly embodies the more positive aspects of work described more fully by Luthans (2002).

Finally, we have offered initial evidence of the engagement–performance linkage. The uniqueness of our approach is in the measurement operationalization of engagement and the evidence suggesting the mediation of intentions through levels of engagement, which stemmed from the unique psychology of the employee. The implication for practice here is that HRD scholars and practitioners alike could use these findings to bolster their business case around engagement, as well as work toward understanding the unique psychological scaffolding affecting their engagement efforts. How managers and leaders empower employee-held perceptions of autonomy, competence, and relatedness matter when attempting to influence levels of engagement (Gagne and Deci, 2005; Meyer and Gagne, 2008). Our work has highlighted the complex relations between engagement and performance and provided exploratory evidence of the connection. To be certain, while evidence does suggest an engagement performance linkage within the bounds of our study, there is still much work to be done and no easy answer.

Limitations and directions for future research
No study is without limitations, which often highlight opportunities for future research. As the sample was limited to cross sectional design, casual inferences cannot be made. Moreover, the common source and method of the data collection could have introduced some systemic bias, including such things as social desirability bias and common method bias (Podsakoff et al., 2003). To combat this, we took a procedural approach (i.e. participants anonymity was assured, there were no right or wrong answers, etc.) to reduce the likelihood of bias. Future researchers might strongly consider a longitudinal approach using a multi-method data collection protocol as a more robust approach.

Finally, this study was limited to the particular set of engagement measures used. We could not capture every measure available, and so it is not possible to speculate, for example, how other measures of engagement such as the recently published ISA (Soane et al., 2012) of longer forms of the UWES (UWES-17; Schaufeli et al., 2002) could interact with the SDT and the intention outcome. Thus, our study is limited to only those scales used in our battery of scales. As a direct extension, future research might consider testing various measures of engagement and comparing findings with those presented in our study.

Notes
1. One of the primary potential contributions of this work was the disentanglement of measures from theoretical structures and labels. Within our first two hypotheses, we expected results to be similar across measures. However, within our third hypothesis, we expected measurement distinction to emerge resulting in specific measurement targeted sub-hypothesis.

2. The operationalization of engagement in Figure 1 is captured separately by the measurement operationalization. Because we used a Bayesian multiple mediation approach, we disentangled each unique measurement to better explore the variance explained by each

measurement tool independently and in combination. Basic psychological needs (BPNS) and Work Intention were both modeled as latent variables. See Table II.

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