

Personal resources and knowledge workers' job engagement

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Personal resources and knowledge workers' job engagement

Purpose: The purpose of this paper is to investigate the impact of personal resources on knowledge workers' job engagement in the contemporary economy. Work itself and work environments are currently undergoing fundamental changes. As such, the focus of engagement research is shifting to an interest in personal resources and the psychological capital of knowledge workers.

Design/methodology/approach: This paper proposes a theoretical model based on a modern interpretation of the Conservation of Resources Theory concerning the relationship between personal resources (self-efficacy, organization-based self-esteem, and satisfaction with life) in relation to the three dimensions of job engagement (physical, emotional, and cognitive). The proposed model is tested with structural equation modelling (LISREL).

Findings: Results from the analysis of data collected from Finnish university graduates (N = 103) show that the three dimensions of job engagement are strongly influenced by organization-based self-esteem and satisfaction with life but, surprisingly, not by self-efficacy.

Practical implications: Through understanding the impact of personal resources on knowledge workers' job engagement, organizations can enhance their human relations management practices and develop better support mechanisms for their knowledge workers.

Originality/value: This paper provides empirical evidence for the influence of personal resources on knowledge workers' job engagement. There is a lack of empirical studies on knowledge workers' job engagement in the contemporary economy. The changing nature of the

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3 way work is being carried out in the contemporary economy raises the importance of personal
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5 resources as a key resource for knowledge workers' job engagement.
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9 **Keywords:** Knowledge worker, personal resources, job engagement.
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13 **Paper type:** Research paper.
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Introduction

Currently, work and work environments are undergoing fundamental changes. This has led to an increasing number of employees who are categorized as knowledge workers; that is, employees who continuously orchestrate and generate knowledge (Davenport *et al.*, 2002) in their day-to-day work for better production and performance (Dul *et al.*, 2011). Atkins (1999) and Rüdiger and McVerry (2007) suggest that university graduates in the 21st century can be classified as knowledge workers, possessing “a combination of subject-specific skills and knowledge, generic intellectual skills, generic process skills, competencies and personal attributes” (Atkins, 2009, p. 277). The key characteristics of modern knowledge work—growth of autonomy and demand for flexibility in work arrangements as a consequence of digitalization, a growing need for an entrepreneurial attitude regarding expert knowledge tasks, and a desire for work challenges (e.g., Scarbrough, 1999; Kelloway and Barling, 2000)—differentiate knowledge work from conventional organizational employee work. Given the diversity and heterogeneity of knowledge workers, individual aspects are emphasized in explaining knowledge work.

Knowledge-intensive work is based on low capital intensity and a highly professionalized workforce (Von Nordenflycht, 2010). Both of these matters are of particular importance for the creation of sustainable competitive advantage. The competitive advantage of engaged employees is based on their ability to be innovative and to take the initiative in restructuring their job resources in conformity with organizational goals (Turner and Pennington, 2015). This poses a challenge to management (Burke and Ng, 2006), as they must figure out how to keep individuals productive and engaged in what they are doing. Contemporary work life provides unprecedented opportunities for knowledge workers; however, it also requires that these knowledge workers have sufficient personal resources to cope with and master their freedom in a working life of constant change and uncertainty (Grawitch *et al.*, 2010; Imperatori, 2017).

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3 In such a challenging work life, job engagement is critical for knowledge workers (Sullivan *et*
4 *al.*, 2007). Personal work-related engagement is a result of motivation, especially intrinsic
5 motivation (Schaufeli, 2013; Hallberg and Schaufeli, 2006). This has been conceptualized as the
6 investment of an individual's complete self into a work role (Rich *et al.*, 2010). As such, job
7 engagement is one of the key drivers of successful work performance (Rich *et al.*, 2010), as it
8 has both individual and organizational consequences. Even though the importance of job
9 engagement for productive work (Luthans and Youssef, 2004; Bakker and Demerouti, 2008) and
10 employee well-being (Hakanen *et al.*, 2012; Schaufeli *et al.*, 2008) has been widely recognized,
11 surprisingly few studies have acknowledged—particularly in the context of knowledge work—
12 that personal resources could act as important antecedents of job engagement. Indeed, several
13 scholars have recognized the lack of empirical research on job engagement in the knowledge
14 work context (Gilson *et al.*, 2015; Hakanen, 2009; O'Neill *et al.*, 2014).

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17 In earlier studies, the role of individuals' personal resources as a predictor of desirable work-
18 related outcomes and their role as an important factor as antecedents to engagement in
19 conventional organizational settings has been acknowledged by several researchers (Bakker *et*
20 *al.*, 2011; Rich *et al.*, 2010; Saks and Gruman, 2014; Schaufeli and Bakker, 2010; Schaufeli and
21 Salanova, 2007; Sweetman and Luthans, 2010; Van Wingerden *et al.*, 2015; Xanthopoulou *et al.*,
22 2009). However, few studies have addressed personal resources in the context of knowledge
23 work, even though personal resources are critical to success in changing work conditions. For
24 example, O'Neill *et al.* (2014) argued that an individual's personality plays an important role in
25 that individual's assessment of their self-management skills and capabilities for distributed work.

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27 To address the identified research gap, the current study investigates the impact of personal
28 resources of self-efficacy, organization-based self-esteem, and satisfaction with life on job
29 engagement among knowledge workers. This research paper asks the following question: Which
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3 personal resources influence knowledge workers' job engagement? After conducting a literature
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5 review, a theoretical model is proposed based on a modern interpretation of the Conservation of
6
7 Resources Theory (Schaufeli and Salanova, 2007) and on the experience of work engagement
8
9 and its antecedents and outcomes (Schaufeli, 2013). This model is used to investigate the
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11 relationship between job engagement and personal resources.
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16 The theoretical approach is discussed in the following section. After hypothesis formation,
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18 measurement of latent concepts and data collection issues are introduced. In the empirical part of
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20 the study, structural equation modelling is used for testing the proposed hypotheses using a
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22 dataset (N = 103) collected from graduates of a Finnish university. The final chapter of the paper
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24 discusses the findings and their implications for contemporary knowledge workers.
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33 **Theoretical background and hypotheses**

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37 The notion of job (or work) engagement¹ originates from Kahn's (1990) discussion of personal
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39 work-related engagement. For Kahn (1990), work-related engagement consists of three equally
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41 important psychological states: meaningfulness, safety, and availability. Personal engagement is
42
43 defined as "the simultaneous employment and expression of a person's 'preferred self' in task
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45 behaviors that promote connections to work and to others, personal presence (physical,
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47 cognitive, and emotional), and active, full role performances" (Kahn, 1990, p. 700). The
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¹ In this paper the concepts of job engagement and work engagement are used interchangeably according to the preference of the reference cited, as no scientifically established distinction between the two concepts exists.

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3 employment and expression of a “preferred self” can lead to both engagement and
4
5 disengagement at work. The latter has been found to be costly to businesses worldwide (Saks
6
7 and Gruman, 2014).
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11 Interest in work-related engagement has coincided with a rising interest in the positive
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13 psychology movement, which was founded by Seligman and Csikszentmihalyi (2000) in the
14
15 early 21st century. Most scholars define work-related engagement as a three-dimensional
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17 construct, though there is also evidence for the unidimensionality of the construct (e.g.,
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19 Sonnentag, 2003).
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24 One of the most commonly cited definitions of work engagement comes from Schaufeli *et al.*
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26 (2002, p. 74), who define it “as a positive, fulfilling work-related state of mind that is
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28 characterized by vigor, dedication, and absorption.” “Vigor” refers to high levels of energy and
29
30 resilience, “dedication” refers to strong involvement in work, and “absorption” refers to a
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32 pleasant state of work immersion (Yalabik *et al.*, 2015). Schaufeli *et al.* (2002) constructed their
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34 framework for engagement out of different theoretical models (Table 1). Following the work of
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36 Kahn (1990), Schaufeli *et al.* (2002) highlighted the positive psychological and attitudinal
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38 aspects of work.
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56 Personal resources describe an individual’s belief that they can influence their environment
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58 successfully. In the research literature, the terms “personal resources” (Luthans *et al.*, 2007; Van
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3 Wingerden *et al.*, 2015; Xanthopoulou *et al.*, 2009) and “positive psychological capital” (Luthans
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5 *et al.*, 2010) both refer to these malleable personal attributes. An individual with sufficient personal
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7 resources is likely to master the balance between situational and personal resource management
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9 (Wingerden *et al.*, 2015) and to perform successfully in a variety of circumstances (Bakker *et al.*,
10
11 2012b). While mastering the balance between personal resources and work demands, individuals
12
13 simultaneously maintain and develop new resources. This refers to the modern interpretation of
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15 the Conservation of Resources Theory (Hobfoll, 1989), according to which individuals in
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17 challenging work circumstances—such as in knowledge work—continuously develop their
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19 personal resources (Hobfoll, 2011) in relation to work demands.
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25 Personal resources can predict desirable work-related outcomes. They can also function as
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27 important predictors of work engagement because the more significant these personal resources
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29 are, the more such individuals in possession of them are intrinsically motivated to pursue their
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31 goals, which results in higher performance (Bakker *et al.*, 2011; Bakker *et al.*, 2008). In the
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33 research literature, an individual’s personal resources are understood to be composed of different
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35 elements. The most commonly used personal work-related resource theory is that of Luthans and
36
37 Youssef (2004), which involves four concepts or dimensions: self-efficacy, hope, optimism, and
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39 resilience. In addition to these four most commonly mentioned attributes, happiness,
40
41 compassion, and emotional intelligence (Luthans and Youssef, 2004), as well as self-esteem
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43 (Airila *et al.*, 2014; Bakker and Demerouti, 2008), have also been listed among work-related
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45 personal resources. The concept of life satisfaction involves hope and optimism (Bailey *et al.*,
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47 2007); as such, these qualities are included in most descriptions of personal resources.
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54 The present study investigates the personal resources of general self-efficacy, organization-based
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56 self-esteem, and satisfaction with life in relation to a heterogeneous group of knowledge
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58 workers’ job engagements. These personal resources have all shown a positive relationship with
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3 job engagement in previous studies (Hakanen *et al.*, 2012). However, their influence as
4
5 antecedents to job engagement among knowledge workers has not previously been studied, even
6
7 though these attributes appear to be vital for knowledge workers.
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11 The present study approaches job engagement through Rich *et al.*'s (2010) three-dimensional
12
13 concept consisting of physical, emotional, and cognitive engagement. The attributes included in
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15 Rich *et al.*'s (2010) measure bear important similarities to Kahn's (1992) definition of personal
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17 engagement at work, which also includes physical, emotional, and cognitive behavior.
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26 *Self-efficacy and knowledge workers' job engagement*

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30 As a concept, self-efficacy originates from Bandura's (1977) Social Cognitive Theory (SCT),
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32 which argues that individuals are able to master their goals and performance through self-
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34 efficacy beliefs. As such, individuals with high confidence believe in their own capabilities to
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36 conduct a required task. Luthans and Youssef (2004) define self-efficacy as "one's confidence in
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38 his or her ability to mobilize the motivation, cognitive resources, and courses of action necessary
39
40 to execute a specific course of action within a given context" (p. 153). Self-efficacy is strongly
41
42 related to an individual's own skills, knowledge, and competencies; it can be task- or domain-
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44 specific or belong to a wider concept known as general self-efficacy (Scholz *et al.*, 2002; Sherer
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46 *et al.*, 1982). While domain-specific self-efficacy (e.g., creative self-efficacy) refers to one
47
48 specific domain, general self-efficacy (Chen *et al.*, 2001) refers to one's confidence in dealing
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50 with demands across a wide variety of situations (Bandura, 1993; Bandura, 1997; Chen *et al.*,
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52 2001). By nature, self-efficacious people look for challenging tasks and are highly motivated to
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54 accomplish their goals successfully (Luthans and Youssef, 2004).
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3 Previous studies of work-related engagement in organizational settings have shown that general
4 self-efficacy contributes to employee engagement (Consiglio *et al.*, 2016; Salanova *et al.*, 2002;
5 van Wingerden *et al.*, 2015). On the basis of the above, it is expected that general self-efficacy is
6 especially important for job engagement, particularly in knowledge-intensive work where
7 individuals autonomously set and work toward their own goals. Therefore, it is hypothesized
8 that:
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19 *H1a*: General self-efficacy is positively related to knowledge workers' physical job engagement.
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22 *H1b*: General self-efficacy is positively related to knowledge workers' emotional job
23 engagement.
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28 *H1c*: General self-efficacy is positively related to knowledge workers' cognitive job
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38 *Organization-based self-esteem and knowledge workers' job engagement*

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42 Pierce *et al.* (1989) introduced the concept of organization-based self-esteem on the grounds that
43 people with high levels of self-esteem would develop and maintain favorable work attitudes
44 (e.g., work satisfaction) but saw that the global level of self-esteem was not sufficient for
45 organizational research. Individuals maintain self-esteem by having faith in a culturally derived
46 conception of reality (the cultural worldview) and by living up to the values prescribed by their
47 worldview (Greenberg *et al.*, 1992). The members of an organization can be seen as individuals
48 satisfying needs. On this basis, organization-based self-esteem is defined by Pierce *et al.* (1989)
49 as "the degree to which organizational members believe that they can satisfy their needs by
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3 participating in roles within the context of an organization” (p. 625). People who experience high
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5 levels of organization-based self-esteem have a sense of personal adequacy as organizational
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7 members; they perceive themselves as important, meaningful, and worthwhile members in their
8
9 respective organizations. In a wide-ranging review, Pierce and Gardner (2004) found that
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11 organization-based self-esteem was related to job satisfaction, organizational commitment,
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13 motivation, citizenship behavior, in-role performance, and turnover intentions, as well as other
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15 important organization-related attitudes and behaviors.
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21 In the knowledge worker context, organization-based self-esteem means that employees have a
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23 positive view of their worth and value as members of their organization (Mauno *et al.*, 2007).

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25 Forret and Dougherty (2001) and Thompson (2005) found that individuals with high self-esteem
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27 were more likely to engage in networking behaviors. In their two-year follow-up study,
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29 Xanthopoulou *et al.* (2009) found that organization-based self-esteem had a reciprocal
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31 relationship with work engagement, and Hakanen *et al.* (2012) also established a connection
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33 between positive self-evaluation (i.e., self-esteem) and engagement. As such, the following
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35 hypotheses are posited:
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41 *H2a:* Organization-based self-esteem is positively related to knowledge workers’ physical job
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47 *H2b:* Organization-based self-esteem is positively related to knowledge workers’ emotional job
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49 engagement.
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53 *H2c:* Organization-based self-esteem is positively related to knowledge workers’ cognitive job
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55 engagement.
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3 *Satisfaction with life and knowledge workers' job engagement*
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7 Erdogan *et al.* (2012) acknowledge that the management research field does not have an
8 unambiguous answer to the question of what contribution the work domain makes to life
9 satisfaction. Though much research has been conducted on job satisfaction, the influence of life
10 satisfaction on work has not been thoroughly discussed. Life satisfaction is defined as “a global
11 assessment of a person’s quality of life according to his chosen criteria” (Shin and Johnson,
12 1978, p. 478) and is seen as consisting in hope and optimism (Bailey *et al.*, 2007)—both of
13 which are commonly considered as personal resources. The Satisfaction with Life Scale (SWLS)
14 has been widely used around the world for measuring well-being and overall happiness in life
15 (Diener *et al.*, 1999). According to Barrick *et al.* (2013), there is evidence from several empirical
16 studies showing that individual differences in personal resources and psychological capital play a
17 significant role in explaining employee motivation and behavior. Higher life satisfaction
18 facilitates positive work-related outcomes, such as job performance and commitment (Erdogan *et*
19 *al.*, 2012). On the basis of all this, the following hypotheses concerning an individual’s general
20 life satisfaction are posited:
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40 *H3a:* Satisfaction with life is positively related to knowledge workers’ physical job engagement.
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44 *H3b:* Satisfaction with life is positively related to knowledge workers’ emotional job
45 engagement.
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50 *H3c:* Satisfaction with life is positively related to knowledge workers’ cognitive job engagement.
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Research model

While previous studies have based their research models on the idea that work engagement is the opposite of burnout (Maslach *et al.*, 2001), the research model in this study is built on a modern interpretation of the Conservation of Resources Theory (Hobfoll, 1989), which argues that people strive to obtain, retain, and protect their personal resources (Schaufeli and Salanova, 2007). Abubakar *et al.* (2019) have recently also used the Conservation of Resources Theory in explaining the influence of certain human resource practices on the fostering of employees' psychological capital.

Schaufeli (2013) also demonstrates the role of personal resources in the development of work engagement. Xanthopoulou *et al.*'s (2009) findings support the assumption that various types of job resources and personal well-being evolve into a gain cycle determining an employee's adaptation to their work environment. Seen together, these results confirm that "engaged employees are characterized by high levels of personal resources (and particularly self-efficacy) that broaden their autonomy to change tasks or relational boundaries" (Bakker *et al.*, 2012a, p. 19), which is crucial for knowledge workers.

The research model in Figure 1 summarizes the hypotheses to be tested in order to capture the interrelationships between job engagement and the following attributes: general self-efficacy, organization-based self-esteem, and satisfaction with life.

<<< Please insert Figure 1 about here >>>

Methodology

Data collection

Data collection was targeted to university graduates as they represent a heterogeneous group of knowledge workers. The data was collected with a questionnaire sent to graduates of a university in Southern Finland via a web link in an electronic newsletter. The survey was open for one month. During that time, 172 respondents answered the questionnaire. Due to missing values in responses, the effective sample size was 103 responses. Of the respondents, 58.7% were male, 39.0% were female, and 2.3% did not state their gender. Most of the respondents (65.7%) were 25–44 years of age. A clear majority of the responders held a bachelor's or a master's degree in science (65.7%) as their most recently obtained academic degree.

59.9% of the respondents had graduated from university within six years. 83.7% of respondents were working as employees in organizations, which included professional services (12.2%), education (8.7%), information technology (18.6%), manufacturing (19.8%), financial services (6.4%), healthcare services (1.7%), telecommunications (5.8%), consumer goods (2.9%), the energy sector (7.6%), media and publishing (1.2%), the public sector (9.9%), and retail (1.7%). 3.5% of the respondents did not define the primary industry they were working in.

Measurement

The concepts included in the research model were treated as latent constructs and measured with multiple items. The items were statements, and the respondents were asked to register their

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3 agreement or disagreement with each statement on a seven-point Likert scale varying from 1 =
4 completely disagree to 7 = completely agree.
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9 *Job engagement* as the dependent concept was measured with 13 items from Rich *et al.*'s (2010)
10 Job Engagement Scale. The scale has three dimensions for engagement: (1) emotional
11 engagement is measured with six items, (2) physical engagement is measured with four items,
12 and (3) cognitive engagement is measured with four items. Examples of measurement items are
13 "I work with intensity on my job" for physical engagement, "I am proud of my job" for
14 emotional engagement, and "At work, I concentrate on my job" for cognitive engagement. Some
15 of the original items were rephrased where it was deemed necessary to do so.
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27 The independent concepts were all measured with multiple item scales obtained from previous
28 research. *General self-efficacy* was measured with four items from Chen *et al.*'s (2001) Self-
29 Efficacy Scale. *Organization-based self-esteem* was measured with five items from Pierce *et*
30 *al.*'s (1989) Organization-based Self-esteem (OBSE) scale. Finally, *satisfaction with life* was
31 measured with three items from Diener *et al.*'s (1985) SWLS. Examples of measurement items
32 are "I will be able to successfully overcome many challenges" for general self-efficacy, "I count
33 around here" for OBSE, and "I am satisfied with my life" for SWLS.
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44 Measurement validation was conducted with confirmatory factor analysis using maximum
45 likelihood estimation with LISREL. Due to the sample size and the complexity of the
46 measurement model, the independent variables and the measurement of engagement were
47 analyzed separately. Table 2 includes the results of the measurement model related to the
48 explanatory variables: namely, self-efficacy, organization-based self-esteem, and satisfaction
49 with life. The model fit was relatively good. The item loadings were all higher than .700 and
50 statistically significant. Based on loadings and error variance, the measurement reliability was
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3 assessed with composite reliability (CR) and level of average variance extracted (AVE). The
4 general acceptance levels are .700 for CR and .500 for AVE (see, e.g., Diamantopoulos and
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assessed with composite reliability (CR) and level of average variance extracted (AVE). The general acceptance levels are .700 for CR and .500 for AVE (see, e.g., Diamantopoulos and Siguaw, 2000; Fornell and Larcker, 1981). Therefore, it can be concluded that the measurement of the independent constructs meets the established criteria for reliable measurement.

<<< Please insert Table 2 about here >>>

The dimensions of job engagement were also analyzed with confirmatory factor analysis. The measurement model for job engagement is presented in Table 3. The model produced good fit statistics and the reliabilities were at excellent levels.

<<< Please insert Table 3 here >>>

Results

Structural equation modelling with maximum likelihood estimation was applied for the testing of the hypotheses using LISREL. Due to the small sample size and the rather complex measurement model, summated scales were partly used instead of the full measurement model. Summated scales for each independent latent construct were computed based on the results of confirmatory factor analysis and then the indicator error variance was computed for the structural model based

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3 on summated scale variances and the composite reliability of latent constructs (see, e.g., Childers
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5 *et al.*, 2001; Fisher and Price, 1992). Three models were analyzed, one for each dimension of job
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7 engagement.
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11 The results of the modelling are presented in Table 4, which outlines the standardized path
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13 coefficients and their significance levels as well as the fit statistics of the models. Considering
14
15 the overall model fit, the results suggest quite good fits to the data in all three individual models.
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19 The first model concerned personal resources and physical engagement. These results indicated
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21 that organization-based self-esteem is significantly related to physical engagement; that is, the
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23 higher the organization-based self-esteem, the higher the level of physical engagement. In
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25 addition, satisfaction with life positively influenced physical engagement, though the level of
26
27 significance was quite low.
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31 In the second model, emotional engagement was explained with personal resources. In this case,
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33 the results were similar to the first model. However, the influence of life satisfaction was
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35 stronger, though not as strong as the effect of organization-based self-esteem.
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39 The third model focused on the cognitive dimension of engagement, and the results were almost
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41 equal to those of physical engagement. The highest and most significant coefficients were found
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43 between organization-based self-esteem and cognitive engagement. Satisfaction with life also
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45 had a positive relationship with cognitive engagement but with low statistical significance.
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3 It seems that the explanatory power of personal resources was most prominent in the emotional
4 dimensions of job engagement ($R^2 = 0.45$). As such, the proposed hypotheses were only partly
5 supported. The first set of hypotheses (H1a, H1b, and H1c) predicted a positive relationship
6 between general self-efficacy and job engagement. However, based on all three models, the
7 analysis of structural paths did not support this set of hypotheses. The estimated path coefficients
8 were negative, though insignificant in the models of physical and emotional engagement. The
9 standardized coefficient for cognitive engagement was positive, as predicted in the hypotheses,
10 though it was also insignificant.
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23 The next set of hypotheses (H2a, H2b, and H2c) predicted that organization-based self-esteem
24 has a positive relationship with job engagement. The results supported this prediction.
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28 Organization-based self-esteem had a strong and positive influence on engagement in all its
29 dimensions. The influence of organization-based self-esteem was especially high on emotional
30 and physical engagement, although the overall share of variance explained in physical
31 engagement was smallest.
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38 Finally, the third set of hypotheses (H3a, H3b, and H3c) addressed the influence of life
39 satisfaction on job engagement. The results suggested that the relationship between these two
40 constructs was, as predicted, positive and significant. The hypotheses were, therefore, supported.
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45 However, the standardized path coefficients were much smaller compared to the paths from
46 organization-based self-esteem to engagement dimensions.
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Discussion and conclusions

The present study has addressed an important research gap in knowledge workers' job engagement in contemporary work life by investigating the impact of personal resources on the job engagement of a heterogeneous group of knowledge workers. More specifically, this study investigated the relation of three personal resources—general self-efficacy, organization-based self-esteem, and satisfaction with life—to knowledge workers' job engagement. The results show that both organization-based self-esteem and satisfaction in life are important and contribute to knowledge workers' job engagement.

Theoretical implications

Theoretically, the present study contributes to the literature on work-related engagement (Saks, 2006; Saks and Gruman, 2014; Schaufeli, 2013; Shuck, 2011) by providing empirical evidence of the impact of personal resources on knowledge workers' job engagement. In particular, the study shows that knowledge workers who experience high levels of organization-based self-esteem are highly engaged to perform their work tasks. This finding is consistent with past studies, which have found a relationship between organization-based self-esteem and employee engagement (Hakanen *et al.*, 2012; Xanthopoulou *et al.*, 2009). As such, this finding expands on earlier research by showing that the relationship is also positive and strong in a heterogeneous knowledge worker context. The study results also show that satisfaction with life positively contributes to knowledge workers' job engagement. This finding aligns with, and adds to, previous studies (Forret and Dougherty, 2001; Thompson, 2005) by showing that satisfaction with life has an impact on knowledge workers' job engagement.

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3 Contrary to expectations, general self-efficacy was shown not to be related to knowledge
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5 workers' job engagement. This is in contrast to the earlier findings of Salanova *et al.* (2002) and
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7 Salanova *et al.* (2003), who found a positive connection between general self-efficacy and work
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9 engagement in the contexts of information technology workers and university psychology
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11 students. However, the study of Salanova *et al.* (2006) showed that general self-efficacy
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13 mediates the relationship between a positive outlook on life and work engagement. This finding
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15 may also explain the results in this study, as only the direct impact of general self-efficacy on job
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17 engagement was examined. As such, this study did not account for the possible presence—as
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19 found in previous studies—of mediating or moderating causes acting between the two variables.
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25 Furthermore, our findings contribute to the research on employee personal resources (Luthans *et al.*
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27 *al.*, 2007; Van Wingerden *et al.*, 2015; Xanthopoulou *et al.*, 2009) by investigating personal
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29 resources among knowledge workers and showing that, indeed, personal resources of
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31 organization-based self-esteem and satisfaction with life are important for knowledge workers'
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33 job engagement. Hence, our findings expand our understanding of the positive role of personal
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35 resources (e.g., O'Neill *et al.*, 2014) by confirming that personal resources are important for
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37 knowledge workers' job engagement.
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43 Boundaryless careers, together with demands for flexibility, are becoming the new norm in many
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45 occupations, particularly with knowledge workers (Hakanen *et al.*, 2012). The present study
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47 contributes to the growing body of research on knowledge work and the variety of forms it takes
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49 in contemporary work life by showing that personal resources are important, influencing
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51 physical, emotional, and cognitive job engagement among an occupationally heterogeneous
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53 group of knowledge workers. As such, this study makes an important contribution to the
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55 understanding of the role of knowledge workers' personal resources in contemporary work life.
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7 *Practical implications*
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10 For knowledge workers in boundaryless careers—that is, independent knowledge workers who
11 are responsible for the development and maintenance of their personal resources as well as their
12 job engagement—our research expands understanding of the individual level antecedents of
13 knowledge work and the importance of personal resources in a challenging form of knowledge
14 work. As such, a better understanding of the role of personal resources for knowledge workers'
15 job engagement might help knowledge workers identify and develop their personal resources, for
16 example, through conscious training (e.g., Wingerden *et al.*, 2015) and education. In particular,
17 the findings indicate that in independent knowledge work an individual must continuously pay
18 attention, maintain, and develop his or her personal resources according to the demands they face
19 (changes in the environment as well as in one's interests). In this way, they may be better able to
20 identify and take advantage of work opportunities more appropriate to their competencies, which
21 is likely to result in increased productivity. As such, the results of the current study contribute to
22 a better understanding of the role of personal resources for independent knowledge work.
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42 This study also makes a contribution to the managerial domain. It does this by providing human
43 resource management professionals with an understanding of the importance of personal
44 resources for knowledge workers' job engagement. An individual's positive self-regard—which
45 reflects high levels of personal resources—is an important part of an organization's human-
46 resource-based competitive strategies (e.g., Lawler, 1992; Pfeffer and Jeffrey, 1998). As the
47 strategic goals of contemporary organizations increasingly concern creating new knowledge and
48 seizing opportunities in the global economy, it is important for strategic human resource
49 management to support employee behaviors that are critical to an organization's strategic goal
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3 attainment (Schuler and Jackson, 1987). In this way, organizations might enhance their human
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5 relations management practices and develop better support mechanisms to enhance the
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7 dedication of their university graduated knowledge workers. Moreover, while supporting and
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9 developing knowledge workers, human resource professionals should consider the underlying
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11 aspects affecting physical, cognitive, and emotional engagement. That is, they should consider
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13 personal resources. In an endeavor to foster knowledge workers' personal resources and job
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15 engagement, human resource managers may direct specific educational and training activities for
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17 knowledge workers. This is particularly important in organizations in which success relies on the
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19 critical knowledge of knowledge workers.
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29 *Limitations and recommendations for future research*

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33 This study has its limitations, however. One limitation is that the research model is based on only
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35 three personal resources: general self-efficacy, organization-based self-esteem, and satisfaction
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37 with life. As such, future studies should consider a wider set of personal resources, including
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39 hope, optimism, and resilience (Luthans and Youssef, 2004) when investigating the relationship
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41 between personal resources and knowledge workers' job engagement.
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46 Another limitation of the present study is that it investigates only the direct effects of general
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48 self-efficacy and knowledge workers' job engagement. In previous studies, general self-efficacy
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50 has been found to positively affect job engagement. However, in this study, the relationship was
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52 found to be negative, although statistically not significant. It is likely that self-efficacy acts as a
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54 mediating or moderating mechanism between personal resources and job engagement. Future
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56 studies should consider such relations as well.
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3 To the authors' knowledge, this study was one of the first attempts to validate Rich *et al.*'s
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5 (2010) job engagement scale, as suggested by Jeung (2008), in the knowledge worker context.
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7 An interesting avenue for future research would be to compare various job or work engagement
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9 scales against the same study sample. This would provide the research community with
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11 important information about the suitability of different scales in various work contexts. Finally,
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13 while current empirical research on contemporary knowledge work is sparse, the authors suggest
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15 that scholars focus their research on the various forms of knowledge work in contemporary work
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17 life.
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Table 1**The Composition of Schaufeli's (2002) Framework for Work-related Engagement**

Theories and models in Schaufeli's framework	Key elements for engagement
The needs-satisfying approach (Kahn, 1990).	<ul style="list-style-type: none"> - Three psychological conditions exist: meaningfulness, safety, and availability. - If psychological conditions are satisfied, engagement is likely to occur.
The job demands-resources model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).	<ul style="list-style-type: none"> - Demands require sustained physical or mental effort. - Resources energize employees, encourage persistence, and assist in focusing on work-related tasks. - Most empirical support for this theory is in relation to work engagement.
The affective shift model (Bledlow, Schmitt, Frese, & Kühnel, 2011).	<ul style="list-style-type: none"> - The shift explains the dynamic nature of work engagement (an interplay of positive and negative affect).
Social exchange theory (see, e.g., Emerson, 1976).	<ul style="list-style-type: none"> - Relationships evolve into trusting, loyal, and mutual commitments over time if reciprocity of rules is followed. - Empirical support for relativeness to employee engagement is limited.

Table 2**Measurement Model for Independent Variables**

Constructs and their items	Std. loading	CR	AVE
<i>Self-efficacy</i>		0.904	0.701
When facing difficult tasks, I am certain that I will accomplish them.	0.858		
I believe I can succeed at almost any endeavor I set my mind to.	0.813		
I can accomplish most tasks very well.	0.827		
Even when things are tough, I can perform quite well.	0.852		
<i>Organization-based self-esteem</i>		0.940	0.724
I am taken seriously.	0.898		
I am trusted.	0.840		
I can make a difference.	0.917		
I count around here.	0.901		
I am cooperative.	0.794		
<i>Satisfaction with life</i>		0.915	0.782
In most ways my life is close to my ideal.	0.869		
The conditions of my life are excellent.	0.887		
I am satisfied with my life.	0.897		
Goodness of fit: $\chi^2(df) = 79.8 (51)$ RMSEA = .079 NFI = .954 NNFI = .980			

Table 3**Measurement Model for Job Engagement Dimensions**

Constructs and their items	Std.		
	loading	CR	AVE
<i>Physical engagement</i>		0.90	0.69
I exert my full effort to my job.	0.81		
I devote a lot of energy to my job.	0.88		
I try my hardest to perform well on my job.	0.83		
I exert a lot of energy on my job.	0.80		
<i>Emotional engagement</i>		0.95	0.77
I am enthusiastic in my job.	0.92		
I feel energetic at my job.	0.89		
I am interested in my job.	0.90		
I feel positive about my job.	0.90		
I am excited about my job.	0.89		
<i>Cognitive engagement</i>		0.93	0.77
While working, I pay a lot of attention to my job.	0.86		
While working, I am absorbed by my job.	0.84		
While working, I concentrate on my job.	0.89		
While working, I devote a lot of attention to my job.	0.92		
χ^2 (df) = 100.28 (62) RMSEA = 0.083 NFI = 0.964 NNFI = 0.982			

Table 4**Results of Structural Model Explaining Dimensions of Job Engagement**

	<i>Physical</i>	<i>Emotional</i>	<i>Cognitive</i>
	<i>engagement</i>	<i>engagement</i>	<i>engagement</i>
<i>Independent variables</i>	β	β	β
General self-efficacy	-0.147	-0.13	0.105
Org.-based self-esteem	0.607***	0.61****	0.482****
Satisfaction with life	0.140*	0.25***	0.182*
<i>Model statistics</i>			
dependent R ²	0.35	0.45	0.27
χ^2 (df)	13.147 (11)	18.439 (17)	6.949 (11)
RMSEA	0.044	0.029	0
NFI	0.97	0.981	0.987
NNFI	0.988	0.997	1.104
**** p < 0.001			
*** p < 0.010			
** p < 0.050			
* p < 0.100			

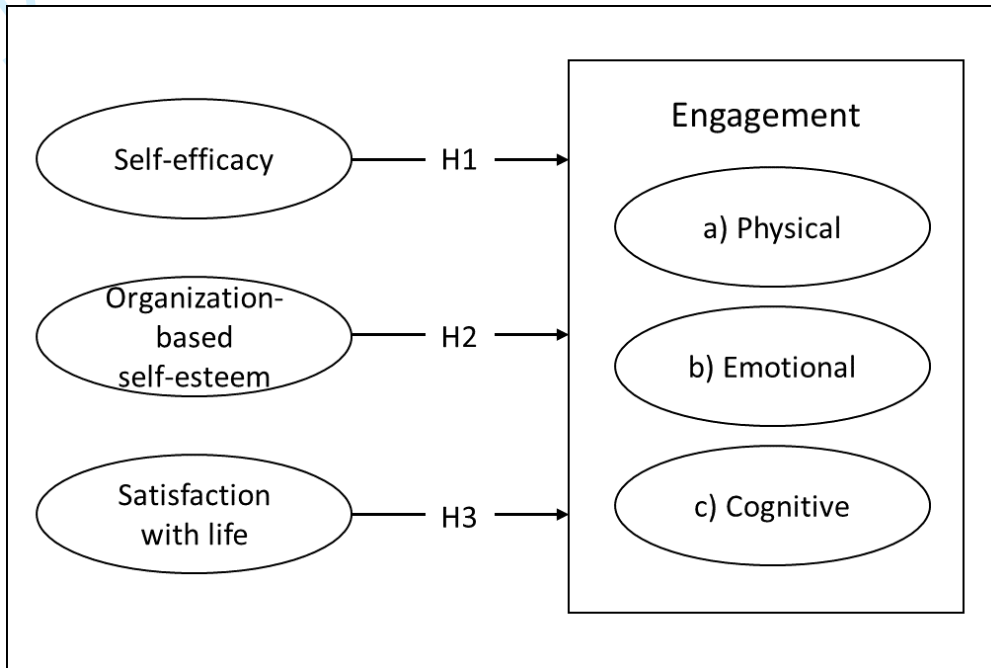


Figure 1. The Research Model