Jenni Heinonen

Managerial coaching and employees' innovative work behaviour

The mediating effect of work engagement

School of Management
Master of Science in Economics
and Business Administration
Master's Programme in Human
Resource Management

Vaasa 2020

VAASAN YLIOPISTO
Johtamisen akateeminen yksikkö
Tekijä: Jenni Heinonen
Tutkielman nimi: Managerial coaching and employees' innovative work behaviour : The mediating effect of work engagement
Tutkinto: Kauppatieteiden maisteri
Oppiaine: Henkilöstöjohtaminen
Työn ohjaaja: Riitta Viitala
Valmistumisvuosi: 2020 **Sivumäärä:** 103

TIIVISTELMÄ:

Kilpailu uusista tuotteista ja palveluista on haastanut perinteiset toimintatavat ja lisännyt painetta erilaisille innovaatioille sekä niiden luomisesta innostuneiden työntekijöiden sitouttamiselle. Ei siis olekaan ihme, että muuttuvan työelämän tarpeet ovat koskettaneet myös johtamisen käytänteitä ja valmentava johtaminen on jatkuvasti kasvattanut suosiotaan niin yritysjohtajien, esimiesten, työntekijöiden kuin tutkijoidenkin keskuudessa. Valmentavan johtamisen on koettu luovan pohjan niin työn imulle kuin työn tuloksille. Empiirinen tutkimus ja tieteelliseen tutkimukseen pohjautuva näyttö valmentavan johtamisen vaikutuksista ja yhteyksistä muihin tekijöihin kuten työntekijöiden työn imuun ja innovatiivisuuteen on kuitenkin ollut vielä melko niukkaa. Tämän tutkimuksen tarkoitus olikin pureutua tarkastelemaan näitä yhteyksiä hieman tarkemmin.

Tutkimuksen päätavoitteena oli selvittää, onko valmentava johtajuus yhteydessä työntekijöiden innovatiivisuuteen työn imun välityksellä pienten ja keskisuurten yritysten työntekijöiden keskuudessa. Lisäksi käytettyjen mittareiden rakennetta, validiteettia ja reliabiliteettia tarkasteltiin aikaisempien tutkimusten valossa. Teoreettisena viitekehyksenä toimi työn vaatimusten ja voimavarojen (JD-R) malli ja sen positiivinen motivaatioprosessi, jonka mukaan työn voimavarat voivat johtaa työn imun kautta positiivisiin lopputuloksiin työssä. Aineistona oli Vaasan yliopiston ja Lappeenrannan teknillisen yliopiston yhteistyössä keräämä HERMES-kyselyaineisto vuosilta 2015-2016. Käytetyn aineiston lopullinen vastausprosentti oli 38%. Vastaajista (n=4004) miehiä oli 69% ja työntekijöitä 84%. Tilastollisina analyysimenetelminä käytettiin muun muassa faktorianalyysia, korrelaatiota ja hierarkkista regressioanalyysia.

Tulokset olivat pääosin linjassa asetettujen hypoteesien, teoreettisen viitekehyksen ja aikaisemman tutkimuksen kanssa ja osoittivat valmentavan esimiestyön olevan positiivisesti yhteydessä sekä työn imuun että työntekijöiden innovatiivisuuteen ja työn imun toimivan osittain välittävänä tekijänä. Toisin sanoen, mitä enemmän työntekijät kokivat lähiesimiehiltään löytyvän valmentavan johtamisen ominaisuuksia, sitä useammin he kokivat työn imua ja toimivat innovaatioita edistävästi. Valmentava johtaminen oli myös suoraan yhteydessä työntekijöiden innovatiivisuuteen. Tutkimus tarjoaa lisäymmärrystä ja näyttöä valmentavan johtamisen ja innovatiivisuuden väliseen yhteyteen ja tukee ajatusta, että valmentava johtaja pystyy työntekijöiden työnimua edistämällä vahvistamaan innovaatioiden luomista. Tutkimuksen rajoitukset tulee kuitenkin ottaa huomioon tuloksia tulkitessa tai käytännön sovelluksia pohdittaessa. Jatkossa myös muiden välittävien tekijöiden vaikutusta on tarve selvittää sekä mittareita ja menetelmiä kehittää. Lisäksi tutkimuksen poikkileikkausasetelmasta johtuen esimerkiksi syy-seuraussuhteet jäävät epäselviksi, joita voisi paremmin tarkastella pitkittäistutkimuksella.

AVAINSANAT: small and medium-sized enterprises, coaching, work engagement, innovation, correlation, regression analysis

Contents

Figures

Tables

Abbreviations

FA = Factor analysis

IWB = Innovative work behaviour

MC = Managerial coaching

PCA = Principal component analysis

UWES = Work engagement scale

1 Introduction

In today's business environment and increasingly competitive market, innovation and the ways in which we support and improve performance play an important role in enabling organisations to adapt to rapid economic changes and to gain competitive advantage (See Bos-Nehles, Renkema, & Janssen, 2017, p. 1228; Kwon & Kim, 2020; Tanskanen, Mäkelä, & Viitala, 2019, p. 2). Innovative employees have even been referred as the chief currency for contemporary organisations and promoting employees' innovativeness as a key question that both managers and academics are facing (Huhtala & Parzefall, 2007, p. 299). Employees can help to improve business performance through their ability to generate ideas and use these as building blocks for new and even better work processes, services and products (De Jong & Den Hartog, 2007, p. 41). Their innovative behaviours are central to the innovative capacity of organisations, because individuals can be regarded as the cornerstone of every innovation (Bos-Nehles, Renkema, & Janssen, 2017, p. 1229).

According to Huhtala and Parzefall (2007, p. 299-300) a number of studies have examined the influence of either personal and contextual factors or their interaction on innovation over the recent years. More and more research and frameworks have also been directed into understanding innovation, its antecedents and relationships at different levels (see Denti & Hemlin, 2012; Lin & Sanders, 2017). The innovation research has shed light upon a number of factors at three levels of analysis (individual, work group, and the organisation more widely), which have consistently been found to be either supportive or inhibitive of innovative outcomes. These factors have included e.g. motivation, autonomy, training, team structure and climate, organisational structure, size and culture. (See Anderson, De Dreu, & Nijstad, 2004, p. 149-152.) Furthermore, in their recent systematic literature review of the relationships between different HRM practices and innovative work behaviour, Bos-Nehles, Renkema and Janssen (2017) identified seven different HRM practices that could be categorised as best in terms of encouraging employees innovative work behaviour. These were (1) training and development, (2) reward, (3) job security, (4) autonomy, (5) task composition, (6) job

demands and time pressure and (7) feedback. The first one was seen as ability enhancing, the next two motivation-enhancing and the rest four opportunity-enhancing HRM practices.

Although previous studies have suggested positive correlations between a number of antecedents and innovativeness, it has remained controversial how these effects appear. Employee well-being has been argued to play a central role in innovativeness and act as a mediating factor, explaining how different job resources may influence employees' willingness to harness their creative skills and abilities for the benefit of their employer. (Huhtala & Parzefall, 2007, p. 300.) According to Sutela and Pärnänen (2019) the latest Quality of Work Life Survey, a broad-based national interview survey conducted by Statistics Finland, revealed that various physical symptoms and problems with coping have become more common especially among women, young wage and salary earners and those in early middle age. They see these results worrying and have emphasized that the results of the survey should be taken seriously in terms of mental occupational health and development measures for working life.

Studies on leadership have indicated that different leadership styles and especially transformational leadership has a positive impact on followers' daily work engagement (e.g. Tims, Bakker, & Xanthopolou, 2011; Zhu, Avolio, & Walumbwa). This is likely to happen, because transformational leaders create abundant job resources (e.g. social support, autonomy, feedback and opportunities for growth) for their followers, which may help them deal with their daily job challenges and contribute to more positive work attitudes and better job performance (see Bakker & Demerouti, 2017, p. 280). Leadership has also been believed to be integral part of innovative organisational performance, because with their actions leaders are able to construct work environments that promote the bottom-up process of innovation in addition to top-down process i.e. managing the strategic innovation goals and activities of their organisations. Moreover, leaders have also suggested to have an influence on innovation at the individual, team and organisational levels. (Denti & Hemlin, 2012, p. 2-3.)

Small and medium-sized enterprises (SMEs) have also received increasing attention from scholars and policy makers, because of their significant contribution to the economy (Rasheed, Shahzad, Conroy, Nadeem, & Siddique, 2017). However, when searching for Google Scholar and other databases for scholarly articles and relevant studies the question of how the link between managerial coaching and innovative work behaviour unfolds and what kind of mediating or moderating factors might explain the relationship has remained fairly silent area of inquiry between the scholars, especially within the SME context.

1.1 Purpose of the study

The aim of this thesis is to provide more insight into the role of managerial coaching in individual innovation and to improve understanding of the mechanisms, such as work engagement, that may influence employees' innovative work behaviour. Furthermore, the purpose of the current study is to answer to the need, suggested by previous scholars to explore the factors that may impact the interrelationships of different HRM and leadership practices, especially managerial coaching, and its outcomes such as innovation (see Bos-Nehles, Renkema, & Janssen, 2017; Dahling, Taylor, Chau, & Dwight, 2016, p. 886; Denti & Hamlin, 2012, p. 3; Hagen, 2012, p. 36; Seeck & Diehl, 2017, p. 19). The factorial validity of the selected measurement scales will also be assessed in response to calls for more accurate and appropriate measures (see Hughes, Lee, Tian, Newman, & Legood, 2018, p. 563). The main research questions are as follows and are investigated in a Finnish SME context:

Question 1: Is managerial coaching positively connected to work engagement?
Question 2: Is managerial coaching positively connected to innovative work behaviour?
Question 3: Is work engagement positively connected to innovative work behaviour?
Question 4: Does work engagement mediate the relationship between managerial coaching and innovative work behaviour?

1.2 Structure of the thesis

In addition to the introduction, this thesis includes five other chapters. The second chapter consist of literature review and theoretical framework regarding the main concepts together with proposed research model and hypotheses. The paper continues by describing chosen methodology, data collection, demographics of the sample, measurement scales, common method variance and data analyses used to explore the relations between the study variables in chapter three. The findings of the current study are presented in chapter four. Whereas, chapter five includes a discussion of the findings, potential implications, limitations of the study and suggestions for future research. Finally, chapter six draws a conclusion of the whole thesis.

1.3 Definitions of the main concepts

Before moving on to the next chapter, the main concepts of this study are defined briefly. The concepts and previous research will be reviewed in more detail in chapter 2. The measurement scales used to operationalise the concepts and to investigate the research questions will be described in chapter 3.

1.3.1 Managerial coaching

The focus of managerial coaching has been suggested to be mainly on improving the skills, competence and performance and manifested by line managers who actively engage in coaching activities. Managerial coaching has also been regarded to include four different variants: hierarchical, team, peer and cross-organisational. (See Beattie et al., 2014.) This thesis concentrates specifically on the managerial coaching and to the relationship between the line manager and their subordinate(s) i.e. hierarchical coaching.

1.3.2 Work engagement

Work engagement is defined as a positive, fulfilling, work-related state of mind that is characterized by three dimensions. The first dimension, *vigor* refers to high levels of energy and mental resilience while being at work, but also the willingness and persistence to invest effort in one's work even in the face of difficulties. Whereas, the second dimensions, *dedication* has been characterized to include a sense of significance, inspiration, enthusiasm, pride and challenge. The third dimension has been called *absorption* and defined by being fully concentrated and happily engrossed in one's work together with a feeling that time passes quickly and possibly even leading to difficulties detaching from work. (See Schaufeli & Bakker, 2004.)

1.3.3 Innovative work behaviour

In this study innovative work behaviour is seen as a behaviour that encompasses all employee behaviour related to different phases of the innovation process that directly and indirectly stimulates the development and introduction of innovations at the workplace. In addition, it is regarded as focusing on something new, for the relevant unit of adoption and produces benefits for the people involved. Whereas, creativity is regarded as focusing exclusively on the 'idea generation' phase and creation of something 'absolutely new' (See Anderson, De Dreu & Nijstad, 2004, p. 148-149; De Spiegelaere, Van Gyes, De Witte & Van Hootegem, 2015.)

1.3.4 SMEs

Statistics Finland (2019) describes SMEs as enterprises, which fulfil three requirements. First, the enterprises have fewer than 250 employees. Second, they have either an annual turnover not exceeding EUR 50 million (EUR 40 million before 2003) or an annual balance-sheet total not exceeding EUR 43 million (EUR 27 million before 2003). Third, they conform to the criterion of independence, i.e. are not owned as to 25 per cent or

more of the capital or the voting rights by one enterprise, or jointly by several enterprises, falling outside the definition of an SME or a small enterprise.

SMEs have been regarded as the cornerstone of the Finnish economy and responsible for more than 16% of Finland's export revenue. According to 2017 figures (excluding agriculture) Finland had a total of 286,934 enterprises of which 98.8% were SMEs that had fewer than 50 people. Moreover, 93.2 % of all the Finnish companies employed fewer than 10 employees and of all private-sector employees, as many as 65% worked for companies employing fewer than 250 people. These private enterprises generated about 58% of the combined turnover of all Finnish businesses. (Yrittäjät, 2019.)

2 Managerial coaching in the context of work engagement and innovative work behaviour

In this chapter previous literature and research are reviewed regarding the main concepts selected for this study and their relationships. After the review a conceptual research model and hypotheses are proposed. The hypotheses have been set in line with the research questions presented in the previous chapter.

2.1 Managerial coaching

According to Beattie et al. (2014, p. 186) there are many variants of coaching practices both in business and organisational context in addition to different variants of managerial coaching, which were introduced in the previous chapter. For example, Hamlin, Ellinger and Beattie (2008) collated a total of 37 definitions of coaching in their comprehensive literature review and grouped them into four categories i.e. variants: *coaching, executive coaching, business coaching and life coaching*. Based on their findings they derived that the coaching process common to all four variants is the fact that they provide help to individuals and organisations through some form of facilitation activity or intervention (Hamlin, Ellinger, & Beattie 2008, p. 291). Beattie et al. (2014, p. 186) have suggested that the variants of coaching differ from each other regarding their focus and emphasis and that coaching given by line managers should be termed managerial coaching.

The keyword list for the literature search of the current study included terms of managerial coaching and coaching leadership style. The subject words of workplace coaching, business coaching, executive coaching, leadership coaching, management coaching, peer coaching, team coaching and cross-organisational coaching that have been used in some reviews and studies (see e.g. Beattie et al., 2014; Blackman, Moscardo, & Gray, 2016; Bozer & Jones, 2018) were ruled out, because they were

regarded as different concepts. Mentoring, counselling and therapy were also seen as related, yet different (see Ellinger, 1999, p. 47; Hart, Blattner, & Leipsic, 2001, p. 230).

Managerial coaching is a relatively new concept compared to some other management practices that are aimed at developing organisational effectiveness. There is still a diverse range of definitions about it in the literature and no universally agreed definition in the business context. (Bond & Seneque, 2013, p. 58-59; Hagen, 2012, p. 17). According to Kim and Kuo (2015, p. 157) there is also no complete agreement on the skills set for effective managerial coaching practice due to the infancy of coaching research.

In the previous research papers managerial coaching has been defined e.g. as a supervisor or manager serving as a coach or facilitator of learning by engaging in behaviours that enable employees to learn and develop their skills and abilities related to work. These behaviours have included question framing to encourage employees to think through issues, providing resources, transferring ownership to employees, holding back with answers, giving and receiving feedback, talking things through together, creating and promoting a supportive learning environment, setting and communicating clear expectations, broadening employees' perspective by challenging them to see things differently, being a role model and engaging others to facilitate learning. (See Ellinger & Bostrom, 1999; Ellinger, Ellinger, & Keller, 2003; Ellinger, Hamlin, & Beattie, 2008; Ellinger, Ellinger, Bachrach, Wang, & Elmadağ Baş, 2011; Hamlin, Ellinger, & Beattie, 2006.)

Although there has been an ever-increasing popularity among management scholars and practitioners and a number of books and articles on the managerial coaching, only a limited number of empirical evidence has been provided regarding it (Bond & Seneque, 2013, p. 57-59; Hagen, 2012, p. 17). It has been quite well established that transformational leadership, a quite similar leadership concept, is positively related to performance across criterion types and levels of analysis (see Wang, Oh, Courtright, & Colbert, 2011). Managerial coaching has, however, been suggested to offer a more

practical approach without extraordinary capabilities, admiration and risk taking compared to transformational leadership (see Milner & McCarthy, 2016).

To fill the void in attempts to integrate the results of what little research exist on the impact of managerial coaching on individual and organisational results, Hagen (2012) carried out a thorough review of the literature on the antecedent factors that affect implementation, the behaviours, skills and attitudes that define managerial coaching, and the outcomes that managerial coaching produce. As a result of his review, he introduced a conceptual framework based on the previous research as an attempt to coalesce the literature on managerial coaching. The model is represented in Figure 1.

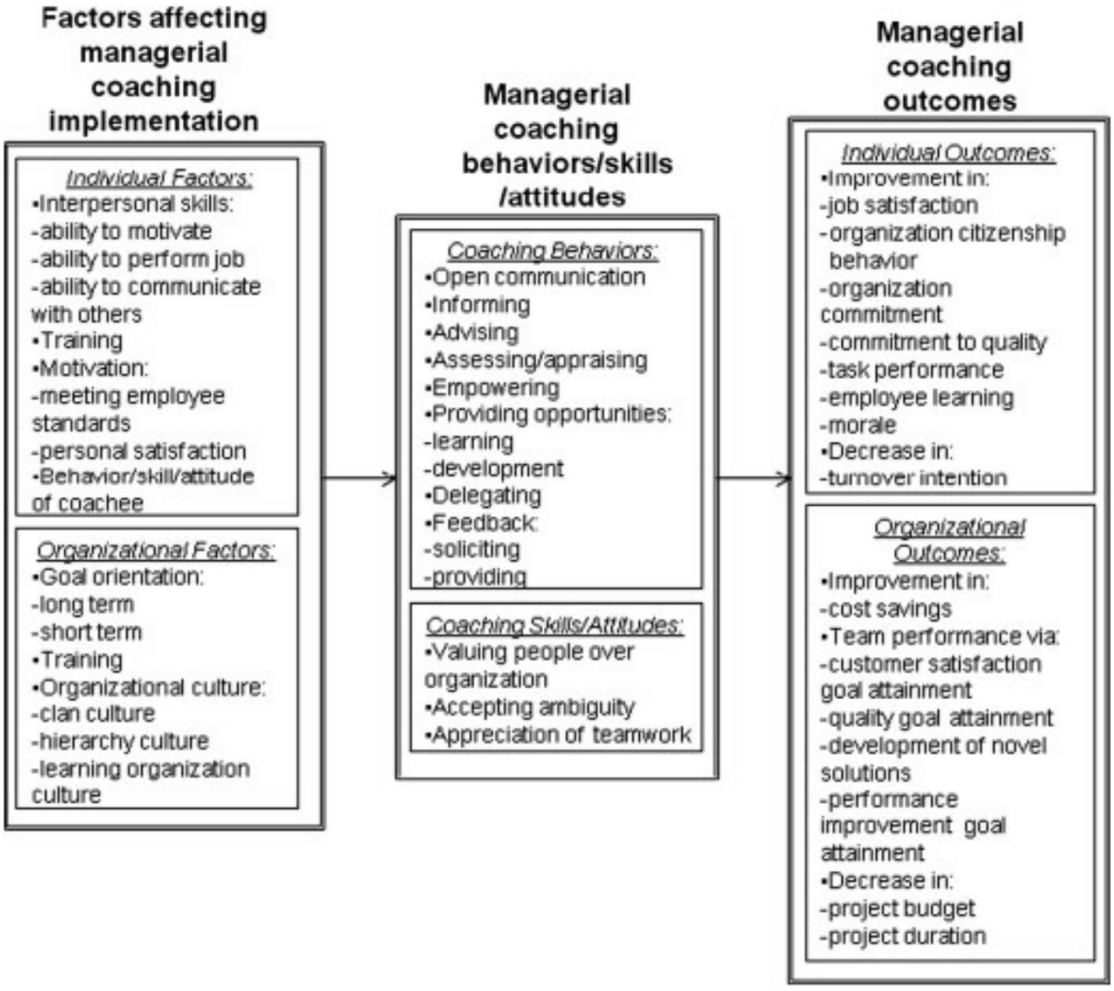


Figure 1. Conceptual framework of managerial coaching based on current literature.
(Retrieved from Hagen, 2012, p. 29.)

2.2 Work engagement

Historically the vast majority of studies on well-being have focused on occupational stress and burnout, but in line with the rise of the positive psychology movement, researchers have started to pay more and more attention to positive work-related well-being such as work engagement (Huhtala & Parzefall, 2007, p. 301). In recent years, employee engagement has also received growing interest, especially among consulting firms and in the popular press. It has even been praised as the key to an organisation's competitiveness and success. However, similar to managerial coaching, there has been controversy regarding the definitions of employee engagement. (Gruman & Saks, 2011, p. 124-125.)

Vast majority of studies on work engagement have drawn on Kahn's (1990) conceptual foundation and proposal that personal engagement represents a state in which employees "bring in" their personal selves during work role performances, investing in personal energy and experiencing an emotion al connection with their work. The researchers have differed in whether they report for each dimension separately or as a single factor and whether they conceptualize it as a relatively stable variable that varies between individuals, a temporally dynamic state or both. Yet, in general, they have defined it as a relatively enduring state of mind. (See Christian, Garza, & Slaughter, 2011, p. 91-94.)

Several models and theories have been developed in the literature to provide a framework for enhancing employee engagement (Gruman & Saks, 2011, p. 126). Kahn (1990) has described and illustrated three psychological conditions: meaningfulness, safety, and availability that promote personal engagement. In his studies he investigated how people's experiences of themselves and their work contexts influenced moments of personal engagement and disengagement. His findings showed that psychological meaningfulness was associated with work elements that created incentives or disincentives to personally engage. Whereas, psychological safety was associated with elements of social systems that created more or less nonthreatening, predictable, and

consistent social situations in which to engage. Moreover, psychological availability was associated with individual distractions that preoccupied people to various degrees and left them more or fewer resources with which to engage in role performances. (p. 702-703.)

Over the past decade, work engagement has been linked to various indicators of performance (see Chughtai & Buckley, 2011, p. 685) and suggested as an antecedent e.g. to job performance, in more detail, task performance and contextual performance (Christian, Garza, & Slaughter, 2011) and employee innovativeness (Huhtala & Parzefall, 2007). Work engagement has also been found to be positively associated with other important work outcomes such as affective commitment, active learning, initiative, organisational citizenship behaviour and perceived organisation performance (See Farndale, Beijer, Van Veldhoven, Kelliher, & Hope-Hailey's, 2014). The antecedents to work engagement will be reviewed in section 2.4.4, where the role of work engagement as a mediator will be given a deeper look.

2.3 Innovative work behaviour

Behavioural research on individual innovation has mostly focused on exploring creativity, i.e. how leaders can stipulate idea generation and the crucial part of the innovation process, when and how creative ideas are implemented has been under-researched. (De Jong & Den Hartog, 2007, p. 42.) The keywords innovation and creativity have also been used interchangeably in the previous literature (see Basadur, 2004, p. 103). Thus, drawing a line between innovative behaviour and employee creativity has been blurred. Some researchers have e.g. have proposed models of creativity that have paid attention to the implementation of creative ideas. (De Jong & Den Hartog, 2007, p. 43.) However, the main difference between the two constructs have been argued to be the fact that creativity does not always lead to an innovation, but innovativeness requires creativity (Huhtala & Parzefall, 2007, p. 300).

According to De Jong and Den Hartog (2010, 23) the importance of innovative work behaviour of individual employees has been emphasized by both practitioners and scientist, but the measurement of it is still at an evolutionary stage. Given that the definition of innovative work behaviour has been vague, it is not surprising that the measurement of it still needs improvement. In their article “Measuring Innovative Work Behaviour” De Jong and Den Hartog (2010) reviewed previous studies that have attempted to develop a scale covering different dimensions of innovative work behaviour and collated a list of available measures.

To address the caveats in the previous measures De Jong and Den Hartog (2010) also proposed a multi-dimensional measure of innovative work behaviour with four potential dimensions linked to the different stages of the innovation process: exploration, generation, championing and implementation of ideas. In addition, they carried out a pilot study to derive an initial version of the measure among 81 research professionals and their supervisors. After that they performed a large-scale follow-up survey among 703 matched dyads of knowledge workers and their supervisors to provide further validation data and reliability information by correlating their innovative work behaviour measure with measures of participative leadership, external work contacts and employees’ innovation outputs.

De Jong and Den Hartog (2010) found high intercorrelations between the four dimensions of their measure, but the evidence for the distinctiveness of the four dimensions was weak suggesting that IWB is one-dimensional. However, the analyses of hypothesized relationships of innovative work behaviour with participative leadership, external work contacts and innovative output demonstrated sufficient reliability and criterion validity. In addition, their findings suggested that participation in decision-making and autonomy encourage employees to generate and implement ideas. Participative leadership, external work contacts and innovative output were also found to be positively and significantly related with innovative work behaviour.

Other proposed antecedents to individual innovation have included e.g. leader-member exchange, support for innovation, managerial role expectation, career stage, systematic problem-solving style (see Scott & Bruce, 1994), transformational leadership (Afsar, Badir, & Saeed, 2014; Aryee, Walumbwa, Zhou, & Hartnell, 2012), managerial coaching (Pajuoja & Viitala, 2019) and work engagement (Hakanen, Perhoniemi, & Toppinen-Tanner, 2008; Huhtala & Parzefall, 2007). The relationship with managerial coaching or related leadership behaviours and work engagement will be reviewed in more detail in the next sections.

2.4 Relationships between managerial coaching, work engagement and innovative work behaviour

In the following sections, previous literature and studies relevant to the research questions of this study will be introduced. Studies with related concepts and measurement scales are also included. This is because previous research on the relationships between the concepts of interest is limited.

2.4.1 Managerial coaching and work engagement

Leaders are important elements of work context. They can influence how individuals view their work and whether they feel engaged. (Christian, Garza, & Slaughter, 2011, p. 99-100.) Some of the typical coaching behaviours such as social support and performance feedback have been proposed to start a motivational process that leads to work engagement and consequently to higher performance (see Bakker & Demerouti, 2008; Bakker, 2011). However, to foster engagement, coaching should be an ongoing process and not just part of quarterly or annual performance evaluations (Gruman & Saks, 2011, p. 130).

Although, the coaching literature has grown significantly in recent years (Grant, Passmore, Cavanagh, & Parker, 2010) only one study was found that has explored the direct link between managerial coaching and work engagement solely. In this study, Ladyshewsky and Taplin (2017) used a self-report survey method to ask Master of Business Administration (MBA) students with work experience in Western Australia to report on their perceptions of their current manager's coaching skill and their own perceived work engagement via on an online questionnaire. To measure for managerial coaching skill, they used a modified version of the Measurement Model of Coaching Skills (MMCS) scale developed by McLean, Yang, Kuo, Tolbert and Larkin (2005) and a short version of UWES for work engagement (see Schaufeli, Bakker, & Salanova, 2006). Their findings provided support for the positive and significant correlation between the MMCS and UWES constructs suggesting that perceived coaching skill of the manager is positively related to the work engagement of the employee.

In other studies, the link between managerial coaching or other leadership style such as transformational leadership and work engagement has often been explored in conjunction with other variables. The findings have also suggested that the direct relationship between leadership practices and work engagement is not that simple. Previous literature has indicated that the relationship can be weak when other factors are taken into account (Christian, Garza & Slaughter, 2011) and mediated or moderated either fully or partially by other factors such as day-levels of optimism (Tims, Bakker, & Xanthopoulou, 2011), working conditions (Tuckey, Bakker, & Dollard, 2012), employees perception of meaning in work (Ghadi, Fernando, & Caputi, 2013), follower characteristics (Zhu, Avolio, & Walumbwa, 2009) or even disapper when other factors such as leader-member-exchange is adjusted (Tanskanen, Mäkelä, & Viitala, 2019). Schaufeli (2015) also found that leadership only had an indirect effect on burnout and engagement via job demands and job resources, but not a direct effect. Despite the discrepancies in the previous literature no study was found with a negative relationship between the constructs.

2.4.2 Managerial coaching and innovative work behaviour

Previous research on managerial coaching and individual performance has indicated that managerial coaching encourages better individual performance (see e.g. Agarwal, Angst, & Magni, 2009; Ellinger, Ellinger, & Keller, 2003; Huang & Hsieh, 2015, Tanskanen, Mäkelä, & Viitala, 2019). However, the relationship between managerial coaching behaviours and innovative work behaviour with similar measures to this study have been limited. In their study Pajuoja and Viitala (2019) divided innovative work behaviour into four different dimensions, that is idea exploration, idea generation, idea championing and idea implementation to investigate whether managerial coaching affects the different dimensions in the same way. They found positive correlations between all the variables with the highest magnitude of correlation being with idea implementation and the lowest with idea exploration and concluded that managerial coaching does not seem to have equal importance for all the different dimensions.

Empirical research on related, yet distinct, leadership constructs such as transformational and participative leadership have also provided support for the positive relationship. Finding have suggested that transformational leadership positively influences innovative work behaviour, which includes e.g. idea generation as well as idea implementation (Afsar, Badir, & Saeed, 2014; Aryee, Walumbwa, Zhou, & Hartnell, 2012). When exploring the criterion validity of their innovative work behaviour measure, De Jong and Den Hartog (2010) also found evidence for correlation between participant leadership and innovative work behaviour. Their findings led them to propose that participative leadership is likely to enhance employees' intrinsic motivation, feelings if responsibility, efficacy and control, which in turn likely enhances their willingness to engage in innovative work behaviour (p. 34).

De Jong and Den Hartog's (2007) earlier qualitative research using in-depth face-to-face interviews and literature search have also revealed a total of 13 relevant leadership behaviours likely to enhance employees' innovative behaviour i.e. idea generation or application behaviour or both. They believe that six of the leader behaviours relate to

only one type of innovative behaviour, more specifically three of them to idea generation (intellectual stimulation, stimulating knowledge and task assignment) and other three to application behaviour (organising feedback, rewards and providing resources). The seven leader behaviours likely to affect both idea generation and application behaviour include innovative role-modelling, providing vision, consulting, delegating, support for innovation, recognition and monitoring. As a conclusion, they have suggested that leaders influence employees' innovative behaviour not only through their deliberate actions aiming to stimulate idea generation and application but also by their daily general behaviour.

2.4.3 Work engagement and innovative work behaviour

Kwon & Kim (2020, p. 3) have argued that innovative behaviour should be seen as a distinctive type of performance that engaged employees are more likely to demonstrate and that it also has a unique relationship with affecting factors. This proposition has been supported e.g. by Hakanen, Perhoniemi, & Toppinen-Tanner's (2008) investigation of positive gain spirals at work. They found positive reciprocal relationships between work engagement, personal initiative and work-unit innovativeness.

According to Huhtala & Parzefall (2007, 299) understanding the relationship between employee well-being and innovativeness is important in order to comprehend how innovative employees could best be supported. Indeed, following the JD-R model they have suggested that it is through work engagement that the effects of a supportive work environment and job-related resources have an effect on employees' innovative work behaviour. They also argue that innovativeness requires individual to be both able and willing to be innovative. See Figure 2 on the next page for their conceptual framework for understanding the relationships between employees' work engagement and innovativeness.

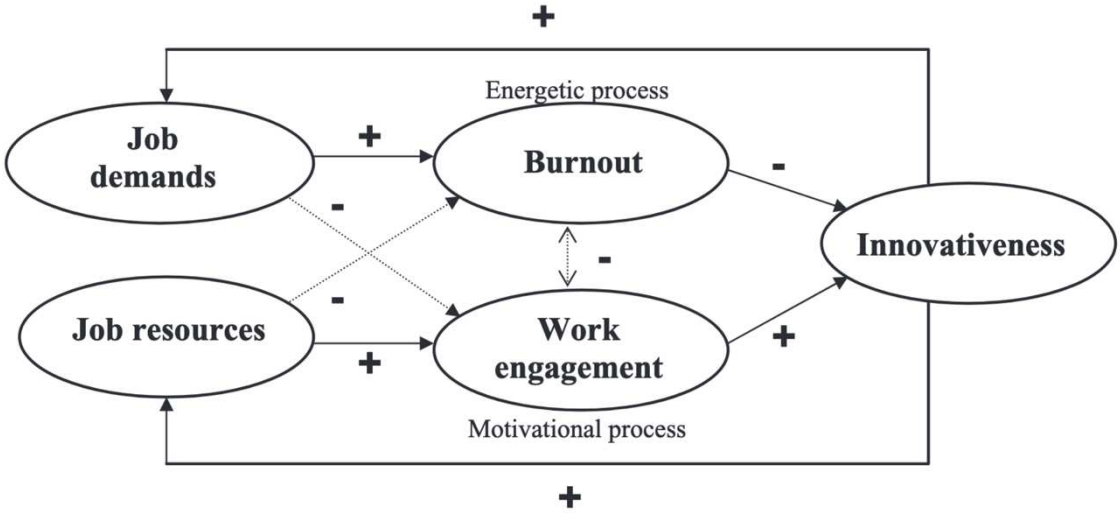


Figure 2. The Job Demands and Resources Model Applied to Well-Being and Innovativeness. (Retrieved from Huhtala and Parzefall, 2007, p. 302.)

2.4.4 The role of work engagement as a mediator

Although work engagement can be seen as an antecedent to employee innovativeness, it is likely to depend on how resources and demands are managed at the workplace in order to set either a positive or negative wheel into motion, as depicted previously in Figure 2 (see Huhtala & Parzefall, 2007, p. 302-304). Indeed, in recent years, work engagement has received more and more attention as a potential mediator and moderator between different antecedents and consequences. Researchers have also attended to developed and test different kinds of frameworks to help clarify the role of engagement as a motivational construct.

For example, Christian, Garza and Slaughter (2011) used a meta-analytic path modelling to examine the role of engagement as a mediator of the relation between distal antecedents (such as transformational leadership) and job performance i.e. task and contextual performance. Their conceptual framework of work engagement's nomological network of constructs and engagement as a mediator is presented in Figure 3 on the next page.

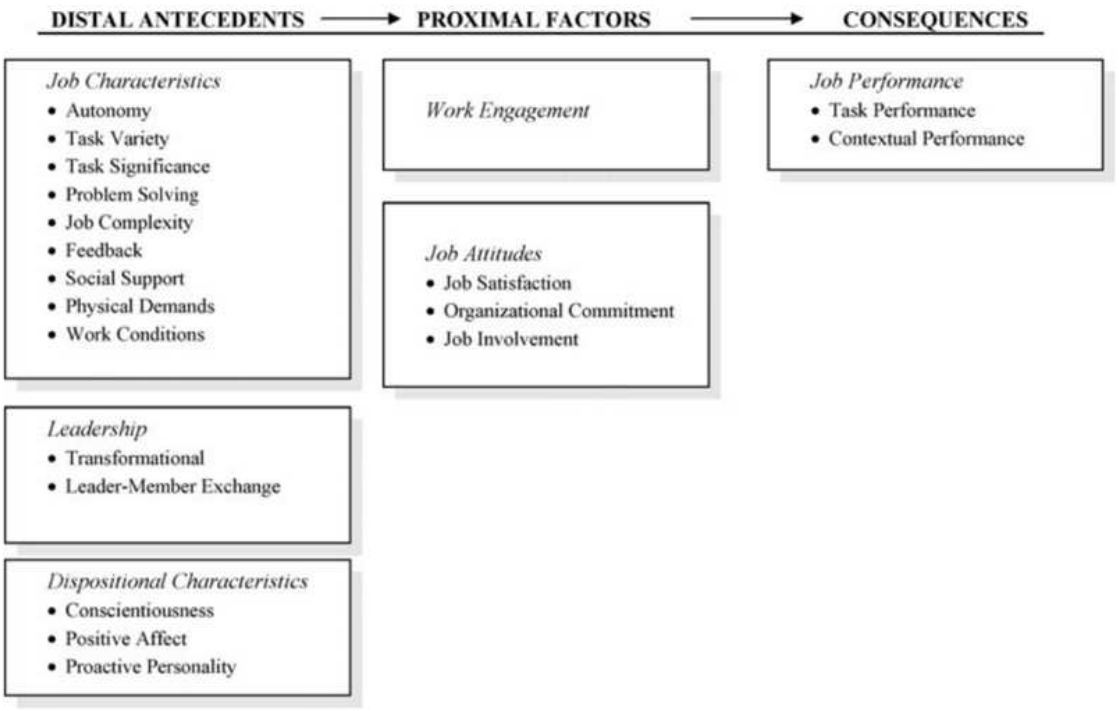


Figure 3. Conceptual Framework.
(Retrieved from Christian, Garza & Slaughter, 2011, p. 96.)

Christian, Garza and Slaughter's (2011) findings from meta-analytic calculations and moderator analysis supported their conceptual model and provided initial, tentative support for engagement as a partial mediator of the relations between distal factors and job performance. However, the path weights for transformational leadership, autonomy and feedback were near zero in terms of their relations with engagement in their final model. According to them, this implies that the practical importance of the variables may be minimal when other factors are considered. (Christian, Garza & Slaughter, 2011, p. 121.)

Recent literature reviews (Denti & Hemlin, 2012; Hughes, Lee, Tian, Newman, & Legood, 2018; Kwon & Kim, 2020) have gone a bit further and investigated a number of different factors that mediate or moderate the relationship between leadership and innovation or work as an antecedent along leadership. To start with Denti and Hemlin (2012), they focused on exploring when and how leadership relates to innovation and conducted

their literature search in several steps during 2010. Their final sample consisted of thirty empirical studies in which leadership was treated as the independent variable and innovation as the dependent variable. Majority of the studies (17) had measured transformational/transactional leadership, three leader-member-exchange and the rest other leadership traits or behaviours. In the measurement of innovation, most were at the organisational (14) and individual (12) level, only four being at the team level.

Denti and Hemlin's (2012) findings showed that there have been various studies suggesting different mediating and moderating factors on both individual and team level in addition to moderating factors on organisational level. On individual level creative self-efficacy and has been found as a mediator whereas organisational based self-esteem and self-presentation as moderators. On team level findings have pointed team reflection as a mediator and team heterogeneity and task characteristics as moderators. The moderating factor on organisational level have included organisational structure and organisational culture. Interestingly, work engagement was not mentioned or included in the studies. In addition to reviewing moderating and mediating factors, they identified two factors (psychological empowerment and team climate) where findings have been mixed and proposed three new mediators and moderators (external work contacts, personal initiative and group developmental stages).

Hughes, Lee, Tian, Newman and Legood's (2018) review of leadership, workplace creativity and innovation included a bit larger number of empirical studies (N = 195). As a result of exploring different studies they identified five classes of mediators (motivational, cognitive, affective, identification-based and social relational) with exhaustive lists of specific variables that have been examined. A summary of these mediating variables according to the five-category taxonomy is depicted in Figure 4 on the next page. Work engagement was not mentioned here either, although related constructs such as intrinsic motivation and feeling of energy were included. Moreover, no studies on managerial coaching were involved.

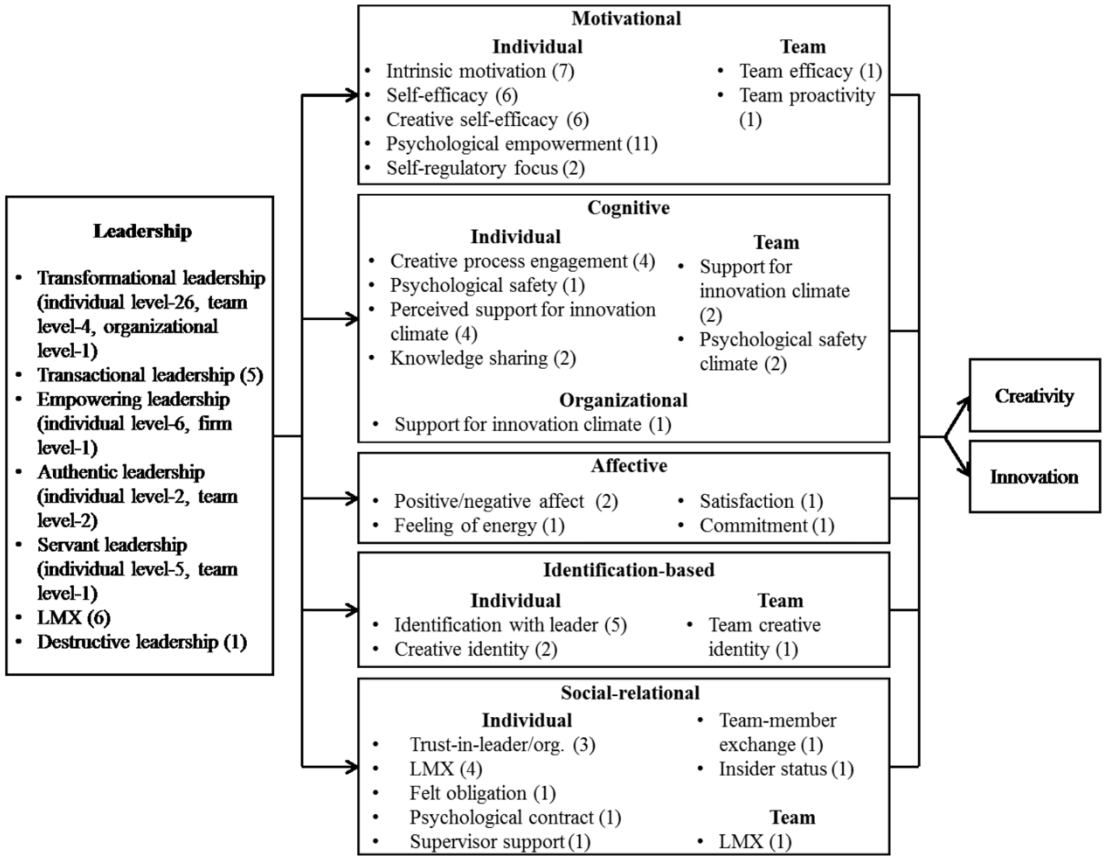


Figure 4. Summary of mediating variables according to the five-category taxonomy. Numbers in parenthesis indicate the number of studies that have examined the Variables. (Retrieved from Hughes, Lee, Tian, Newman & Legood, 2018, p. 556.)

Kwon & Kim (2020) in turn reviewed 34 empirical studies of employee engagement and innovative behaviour. Based on their findings they drew an integrated conceptual framework refining the original JD-R model and describing the dynamics around employee engagement and innovative work behaviour. Their results led them to suggest that job resources exist at multiple levels depending on situational context and employees' personal characteristics. According to them the findings from the reviewed studies indicate that innovative behaviour is a consequence of delicate interactions between job demands and resources and engaged employees are more likely to behave innovatively by activating coping strategies to deal with challenges. Their preliminary conceptual model, findings regarding different levels of job resources, employee engagement, coping and innovative behaviour are presented in Figure 5. Noteworthy is

that their framework includes employee engagement compared to Denti and Hemlin (2012) and Hughes, Lee, Tian, Newman and Legood (2018), but still lacks managerial coaching.

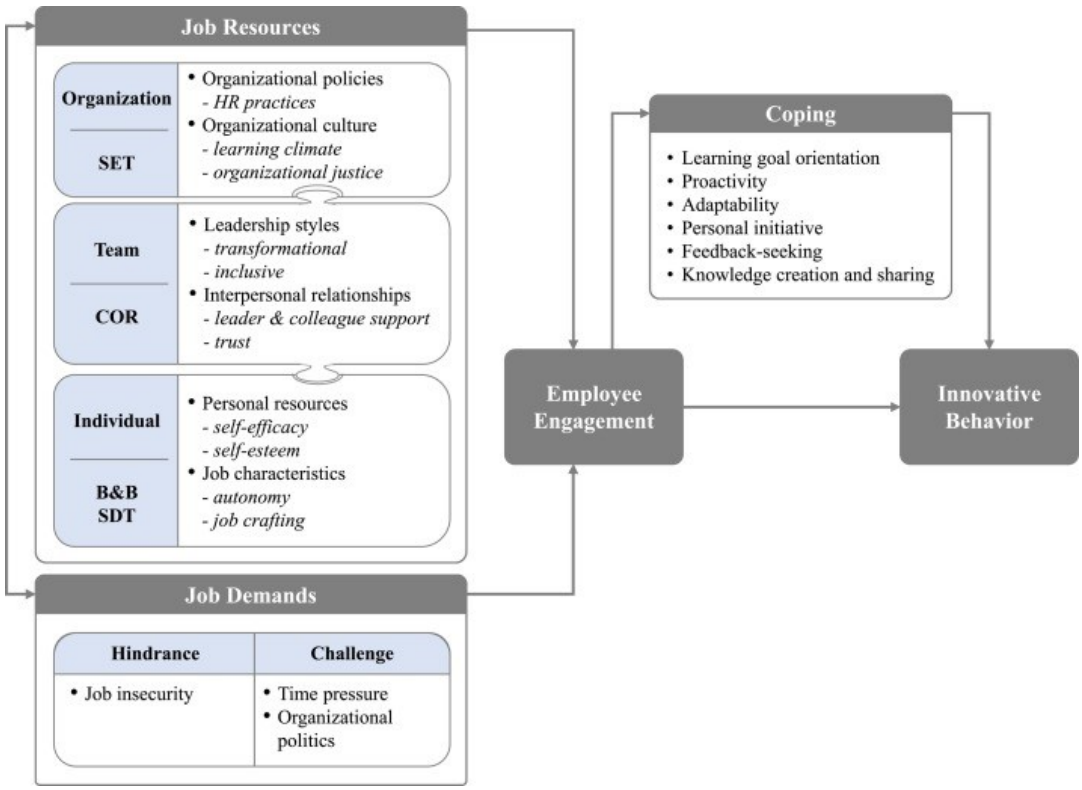


Figure 5. Preliminary conceptual model: Overview of the relationship between job resources, job demands, employee engagement, coping, and innovative behaviour. (Retrieved from Kwon & Kim, 2020, p. 13.)

Previous literature reviews have provided support for work engagement to work as mediator between leadership and innovative behaviour, but the studies have mainly concentrated on transformational leadership and varied in their measures of work engagement (see Aryee, Walumbwa, Zhou, & Hartnell, 2012; Chen & Huang, 2016). For example Chen and Huang (2016) collected data from 1501 R&D employees in Greater China information technology businesses in three phases over ten-month period to examine whether personal engagement is related to innovative behaviour and work-family conflict at the same time. To measure the personal engagement, they

employed eighteen items of which six items included physical engagement, other six emotional engagement and the rest six cognitive engagement that had been validated in previous studies and reflected Kahn's (1990) work. Their findings indicated that personal engagement was a mediating variable, but other variables such as work-family conflict may also be important for personal engagement.

No previous study was found with a specific measure of managerial coaching, work engagement and innovative work behaviour in the same study. However, Tanskanen, Mäkelä & Viitala (2019, p. 6) have used JD-R model as a framework in their study and their findings from different Finnish organisations have showed some support for work engagement to mediate the relationship between managerial coaching and performance, but when LMX was studied simultaneously the effects became nonsignificant. In another study, Pajuoja and Viitala (2019) found positive relationship between managerial coaching and different dimensions of innovative work behaviour, but they did not explore the mediating effect of work engagement.

2.5 Research model and hypotheses

To explain the relationship between different HRM or leadership practices and performance or innovative work behaviour, researchers have often used one or more of the following theoretical frameworks: Job Demands-Resources (JD-R) theory, self-determination theory, social exchange theory (see Bos-Nehles, Renkema, & Janssen, 2017, p. 1239), leader-member exchange theory (see Scott & Bruce, 1994, p. 584; Tanskanen, Mäkelä, & Viitala, 2019, p. 2), resource-based theory (see Chowhan, 2016, p. 114), person-process-product model (see Ellinger, Ellinger, & Keller, 2003, p. 439), FIT, social cognitive theory, goals setting theory (see Dahlinh, Taylor, Chau, & Dwight, 2016, p. 869), or conservation of resources theory (see Kwon & Kim, 2020). This thesis concentrates on the JD-R model's motivational process by studying how managerial coaching as an HRM practice and potential organisational job resource is related to

employees' innovative work behaviour and whether individual job resource of work engagement mediates that relationship.

The JD-R model was first introduced by Demerouti, Bakker, Nachreiner and Schaufeli (2001) in the English literature and has been applied in thousands of organisations and inspired hundreds of empirical studies since then. The model was originally used to explain burnout, but during the past years it has matured from a relatively simple model outlining two unique processes to a theory, which includes specific propositions regarding interactions between job demands and resources, self-starting employee behaviours and outcomes. The creators of the theory have suggested that future studies should, among other things, investigate e.g. the impact of different leadership behaviours on job demands, resources and employee well-being to find different contingency factors that may be used to improve the prediction of employee well-being and behaviours using JD-R theory.

The basic assumption of the JD-R model is that risk factors associated with job stress can be classified in two different categories, that is job demands and resources. Job demands refer to different physical, psychological, social and organisational aspects of the job, for example an unfavourable physical environment, high work pressure or emotionally demanding interactions with clients. Job demands play a role in the health impairment process and development of job strain exhausting employees' mental and physical resources. Whereas job resources refer to aspects that stimulate personal growth, learning and development. In addition to being necessary to deal with job demands, the resources are also important in their own right. Job resources are motivational in nature and are assumed to lead to high work engagement, low cynicism, and excellent performance. The motivational potential of job resources may also be extrinsic, because they are instrumental in achieving work goals or intrinsic by fostering employees' growth, learning and development. (Bakker & Demerouti, 2007, p. 312-313.)

The conceptual research model for the current study and overview of the relationships of the study variables are shown in Figure 6. Based on the JD-R model's motivational process and previous literature it is proposed that managerial coaching is related to both work engagement (H1) and innovative work behaviour (H2) and that work engagement is not only related to innovative work behaviour (H3), but also mediates the relationship between managerial coaching and innovative work behaviour (H4).

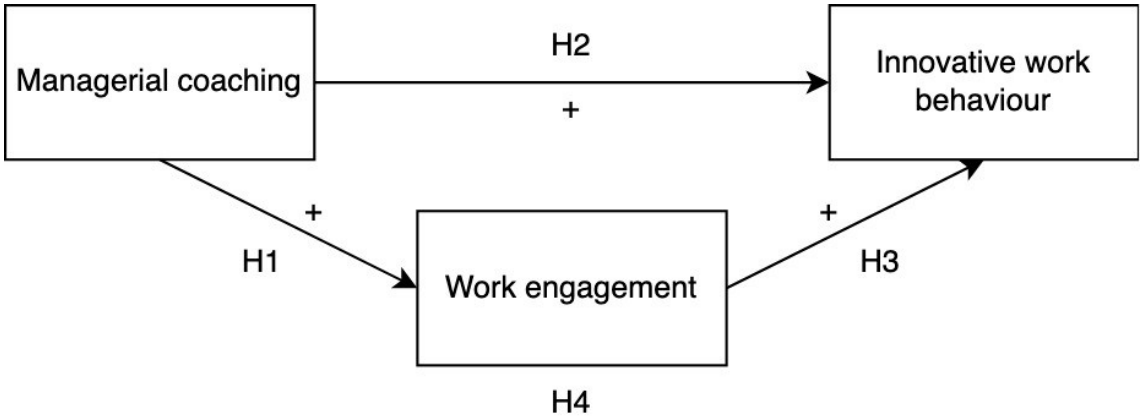


Figure 6. Proposed research model.

All the connections are expected to be positive. It is argued that leaders who utilise managerial coaching behaviours i.e. who facilitate, support, foster and encourage their subordinates' work, simultaneously increase the subordinates' levels of work engagement, which in turn triggers their innovative work behaviour. In sum, the hypotheses of this study are stated below.

Hypothesis 1: There is a positive relationship between managerial coaching and work engagement.

Hypothesis 2: There is a positive relationship between managerial coaching and innovative work behaviour

Hypothesis 3: There is a positive relationship between work engagement and innovative work behaviour

Hypothesis 4: Work engagement mediates the relationship between managerial coaching and innovative work behaviour

3 Research method

To answer to the research questions and to test the validity of the research model and hypotheses a questionnaire survey method using structured questions was adopted. This chapter includes a description of the procedures for the data collection, the study sample and demographics, the measures employed to collect the data, ways of controlling the common method bias and finally the data analysis strategy.

3.1 Data collection

The data used to test the proposed research model was initially acquired from 100 SME's in Finland as part of a larger research project called HERMES between September 2015 and September 2016. The data collection for utilised employee questionnaire was carried out during step 2 of the HERMES-project to investigate the status of human resources in the participating companies. The steps of the whole project are described in Figure 7. (See Viitala, Kultalahti, & Kantola, 2016, p. 29-33.)

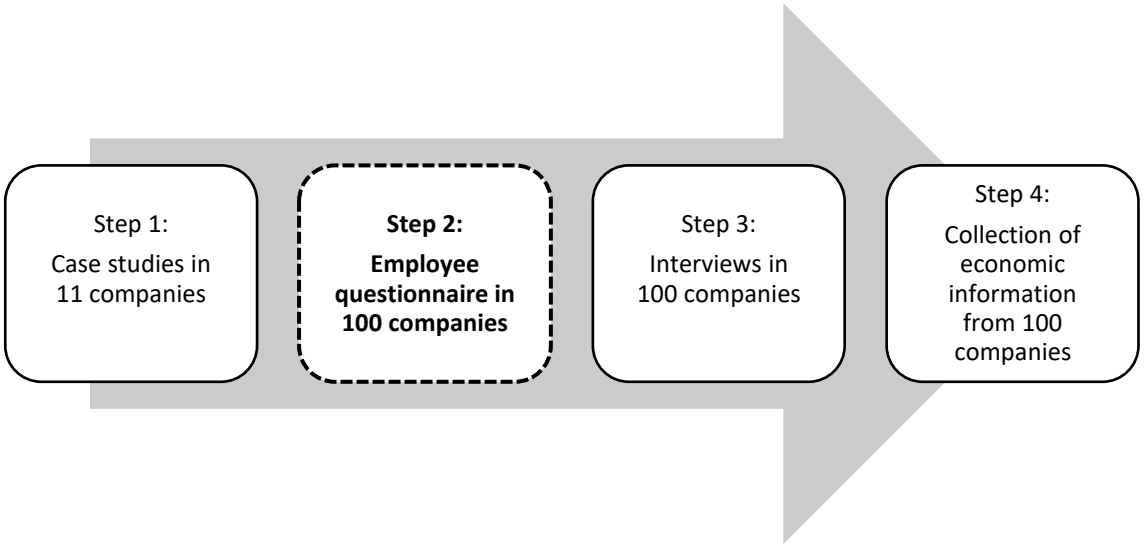


Figure 7. Steps of the HERMES-project.

(Modified from Viitala, Kultalahti, & Kantola, 2016, p. 29.)

The recruitment of the relevant companies for the project started autumn 2015 and was done by advertising the research project in different channels such as local magazines, news, social media (LinkedIn, Facebook) and asking companies to contact the researchers in order to take part in the project. The research team introduced the project also in different kind of seminars, forums and MBA-programs and received help from networks such as entrepreneurs in Vaasa and Oulu who promoted the research project for their members. In the end, most of the companies were recruited in collaboration with researchers from Lappeenranta University of Technology by contacting the CEOs and HR Managers of suitable companies through phone calls. (Viitala, Kultalahti, & Kantola, 2016, p. 33-34.)

One researcher was assigned as being responsible for each company and arranging the data collection. The data was collected mainly by an electronic questionnaire. In around third of the companies the questionnaire was shared on a paper version and typed in a Webropol-program by a research assistant. The questionnaires were available in Finnish, Swedish and English. (Viitala, Kultalahti, & Kantola, 2016, p. 90.)

3.2 Sample

A total of 4503 participants from 100 different SME's and different parts of Finland were involved in the initial HERMES-project sample. The size of the companies varied between a little less than 30 and a bit over 250 employees. (Viitala, Kultalahti, & Kantola, 2016, p. 34-90.) However, for the purpose of the current study only the completely filled data sets were included in the analysis. The questionnaires had been distributed to 10434 employees. Out of 4503 returned responses 499 had missing data regarding the variables that were of interest in this study. Thus, a sample of 4004 valid cases constituted a usable response rate of 38%. In addition, the final sample included only 88 SME's and represented several industries including IT, manufacturing, service business, construction, education and retail.

The demographic characteristics of the study sample are presented in Table 1. The distribution of responses according to gender is skewed towards males, with 69% of the sample comprising male and only 31% female respondents. In terms of position, majority of the respondents were subordinates 84% and only 16% in a managerial role.

Table 1. Demographic characteristics of the sample.

Variable	Category	Frequency (N)	Percentage (%)
Gender	Female	1255	31.3
	Male	2749	68.7
Position	Manager	626	15.6
	Subordinate	3378	84.4

Notes: n = 4004

3.3 Measures

When attempting to explain or predict behaviour it is typical for scientists to develop theories that contain hypothetical mechanisms and intangible elements that are accepted as real, because they seem to describe and explain behaviour that we see around us. Indeed, many research variables, especially those in the interest of behavioural scientist, are in fact hypothetical entities created from theory and speculation and are called constructs. Although constructs are hypothetical and intangible, they play an important role in explaining and predicting behaviour in a theory. This is because, it is possible to examine the factors that theoretically have an influence on a construct and study the behaviours that theoretically result from it. (Gravetter & Forzano, 2012, p. 104-105.)

The employee questionnaire given to the participants in the HERMES-project covered seventeen different themes i.e. research constructs with a total of 101 statements. In addition to the three constructs (managerial coaching, work engagement and innovative work behaviour) that were of interest at the present study, the themes had included topics such as goal orientation, leader-member-exchange and work motivation.

Participants had also been asked to provide some information about their background e.g. gender, whether they are in a managerial position or not, time interval for the year of birth, type of employment, time of employment at their current employer and socioeconomic status. (see Viitala, Kultalahti, & Kantola, 2016, p. 34). For the current study, only the first two mentioned background variables were selected.

All of the three research constructs chosen for the current study had been measured using a seven-point Likert scale (1-7) instead of commonly used five-point Likert scale (1-5), because the researchers had wanted to get more deviation and variance in the responses (see Viitala, Kultalahti & Kantola, 2016, p. 34). The scales with seven-point Likert items have also been found to be more accurate and easier to use, and to provide better reflection of a respondent's true subjective evaluation than five-point item scales. The reason for the more accurate measure has been argued to arise from the finding that a seven-point scale is sensitive enough to minimize interpolations that are more likely for five-points items, but also compact enough to be responded to efficiently. (Finstad, 2010.) The seven-point Likert scales have also been used by some previous scholars that have studied similar constructs than were chosen for this thesis (see e.g. Pajuoja & Viitala, 2019; Tanskanen, Mäkelä, & Viitala, 2019) Interestingly, not all researchers report the response scale used in their studies (see De Jong & Den Hartog, 2010).

The research constructs and measurement scales selected to investigate the research questions of the present study are described in the following pages. All the construct items can be found in chapter 4.1 together with results from preliminary analyses (e.g. factor analysis and Cronbach's alphas). See Viitala, Kultalahti and Kantola (2016, p. 168-173) for the original Finnish questionnaire and all the measurement scales. The English version of the full questionnaire can be found in the Appendix 1.

3.3.1 Managerial coaching

Managerial coaching is an example of intangible, abstract attribute, that is not directly observable, if compared to variables such as weight and height. Beyond disagreements about the conceptual definition of coaching, researchers have differed in how they operationalise coaching. Some researchers have measured coaching quality, impact or skills, while others have measured quantity or frequency. (Dahling, Taylor, Chau, & Dwight, 2016, p. 867.) In their comprehensive literature review and comparative analysis of coaching scales, Hagen and Peterson (2014) found ten different managerial coaching scales of which only a few provided sound theoretically based underpinnings, validity measures and model fit information.

In the HERMES-project, a scale with nine different statements of coaching behaviour had been used. The responses were asked on a seven-point scale ranging from “totally disagree” (1) to “totally agree” (7). Six of the statements (1-4 and 7-8) concerned the manager’s behaviour at the group-level and three of them (5-6 and 9) at the individual i.e. subordinate level. (See Viitala, Kultalahti, & Kantola, 2016, p. 104-105). The statements had been selected from a 29-item questionnaire developed earlier in the multi-methodological study (see Viitala, 2004). Similar statements have since been used and validated in other studies and shown strong relevance to managerial coaching (see Tanskanen, Mäkelä & Viitala, 2019; Pajuoja & Viitala, 2019).

3.3.2 Work engagement

According to Farndale, Beijer, Van Veldhoven, Kelliher, & Hope-Hailey (2014, p. 1) one of the most popular scales to measure work engagement has been the Utrecht Work Engagement Scale i.e. UWES developed by Schaufeli, Salanova, González-Romá and Bakker (2002). For the HERMES-project the Finnish version of UWES-9 with a seven-point response scale ranging from “never” (1) to “every day” (7) had been selected (see Viitala, Kultalahti, & Kantola, 2016, p. 106-108; Schaufeli, Bakker, & Salanova, 2006). However,

for the current study only the three items validated for UWES-3 were chosen (see Schaufeli, Shimazu, Hakanen, Salanova, & De Witte, 2019).

The reason for selecting the ultra-short version of the measure was to explore the reliability and validity of the UWES-3 in the current study context and to contribute to the need to develop valid, reliable, yet short measures without redundant items (see Fisher, Matthews & Gibbons, 2015, p. 15). Schaufeli, Shimazu, Hakanen, Salanova and De Witte (2019, p. 589) have argued that shortening the original version of the UWES also opens up the possibility to reduce the length of engagement surveys in companies and to include work engagement in the national and international epidemiological surveys on employee's working conditions. The three items representing each dimension of work engagement were selected according to Schaufeli, Shimazu, Hakanen, Salanova and De Witte (2019).

3.3.3 Innovative work behaviour

De Jong & Den Hartog's (2010) ten-item scale that was reviewed earlier in chapter 2 had been adopted for the HERMES-project with the exception of two extra items (10 and 11). The extra items had been added to measure the cooperative nature of innovation and the application behaviour of ideas (see Pajuoja & Viitala, 2019). Thus, the total number of items was twelve. All the items had also been amended from manager ratings to employees to rate themselves i.e. involved participants rating their own activity with a seven-point scale ranging from "never" (1) to "very often" (7). The statements started with a sentence "At your workplace, how often do you..." instead of the original sentence "How often does this employee…". (See Viitala, Kultalahti, & Kantola, 2016, p. 122-123.)

3.3.4 Control variables

The study included two control variables to exclude the possibility that observed relationships might be influenced by employees' background characteristics. The control variables were gender and position. These variables were controlled, because both of them have been found to have effect on the studied variables. For example, De Jong and den Hartog (2010) have found gender to correlate with innovative work behaviour. Previous studies have also shown supervisors to rate their own coaching behaviour significantly higher than perceived by their subordinates (see e.g. Ellinger, Ellinger, & Keller, 2003, p. 452).

In addition, the latest Quality of Work Life Survey among wage and salary earners in Finland has indicated men to be more satisfied with their manager's leadership behaviour. The results from the same survey regarding work engagement suggested that women feel more often satisfied when they are *immersed* in their work compared to men. (See Sutela, Pärnänen, & Keyriläinen, 2019.) The results from the Finnish survey should however be treated with caution as only the answers in the highest rating of the scale were presented in the publication.

For the hierarchical regression analysis both of the control variables were modified to be dummy variables in order to 'trick' the regression algorithm into correctly analysing these attribute variables. The original values of 1 = female, 2 = male and 1=manager, 2=subordinate where changed to 1 = female, 0 = male and 1=manager, 0=subordinate. According to (Bock, 2020) dummy variables are the main way categorical variables can be included as predictors in statistical models such as regression models. Moreover, they take only values of 0 and 1, where the values indicate the presence or absence of something.

3.4 Common method variance

A potential problem in behavioural research is a common method variance i.e. variance that is attributable to the measurement method instead of the constructs that the measures represent. The researchers should do their best to carefully evaluate the conditions under which the data are obtained, assess the extent to which method biases may be a problem and control for the possible bias. Understanding the potential causes of bias and implementing both procedural and statistical methods of control is important, because systematic measurement error and different common method biases can potentially have serious effects on research findings and provide an alternative explanation for the observed relationships between measures of different constructs compared to the hypotheses. (Podsakoff, MacKenzie, & Podsakoff, 2003.)

In their critical review of the literature regarding common method biases in behavioural research Podsakoff, MacKenzie and Podsakoff (2003) identified a number of different sources of method bias and research settings in which the biases are likely to pose particular problems. They have summarised these to include having a common source or rater, common item characteristics, common item context or common measurement context. Moreover, they have stated that method biases are likely to be particularly powerful in studies where all these conditions are present at the same time.

In the current study, the procedural methods of control included e.g. protecting respondents' anonymity by not asking their name when filling in the questionnaire. To further respect the anonymity of the participants and confidence of the survey the participants had been asked to choose a specific time interval for the year of birth instead of specific age (see Viitala, Kultalahti, & Kantola, 2016, p. 90). Due to the use of self-report questionnaire and collection of all measures from the same source a couple statistical methods of control were implemented. Methods of the statistical remedies will be described in more detail in the next section and results in chapter 4. The limitations and suggestions for further research will be discussed in chapter 5.

3.5 Data analysis

All the data analyses were performed using IBM SPSS Statistics version 26. The data from the questionnaires had been gathered in Microsoft Excel during the HERMES-project, but was imported into IBM SPSS for the analysis of this study. IBM SPSS was chosen, because it is a powerful statistical software platform with a robust set of features that lets its users to run a variety of statistical tests in order to understand even large and complex data sets (see IBM, 2020).

The analyses were carried out in three steps. First, the data was screened and cleaned and preliminary analyses run to explore the variables for any violation of assumptions underlying the statistical techniques used to address the research questions, to address the issue of common method variance and to assess the factorial validity of the selected measurement scales. Second, the descriptive statistics of the different constructs and correlations between the individual constructs were examined to describe the characteristics of the sample and to explore the strength and direction of the linear relationships between the variables. Third, to test the hypothesis 1-4 hierarchical multilevel regression analysis were applied.

Before calculating total scores for the measurement scales and starting to analyse the data each of the variables were checked for possible errors and out-of-range scores to avoid any mistakes distorting the results as guided by Pallant (2016, p. 44-65). The data screening and cleaning process was done by inspecting the frequencies for the categorical variables i.e. gender and position and descriptive statistics for the continuous variables i.e. different items of managerial coaching, work engagement and innovative work behaviour. The Missing Value Analysis (MVA) and more precisely Little's MCAR test was used for analysing missing data and considering whether the missing values are happening randomly (see Pallant, 2016, p. 58-59; IBM, 2019). The normality of the distribution of the scores together with outliers were also explored.

According to Bryman and Cramer (2011, p. 318-319) and Pallant (2016, p. 182) there are two main approaches or uses to *factor analysis*, which are exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The first one is used to gather information about the interrelationships among a set of variables and often used in the early stages of research. The second one is used to confirm specific theories or hypotheses concerning the structure underlying a set of variables. The term 'factor analysis' also encompasses a number of different techniques that are related to each other. The two most widely used forms of factor analysis are principal component analysis (PCA) and factor analysis (FA). The usual convention is to refer to them collectively as factor analysis as they are similar in many ways. However, they differ e.g. in the communality estimates, how they handle unique variance and whether there is a theory behind the idea of the items being related or not. (See Bryman & Cramer, 2011, p. 321-322; Field, 2002, p. 433-434; Metsämuuronen, 2005, p. 589-600; Pallant, 2016, p. 182-183.)

Tabachnick, Fidell and Ullman (2019, p. 503) have recommended researchers to experiment with different number of factors, extraction methods and rotations when carrying out factor analysis in order to find the solution with the greatest scientific utility, consistency and meaning. Inspired by this, five different PCAs were conducted to examine the potential problem of common method variance and to experiment with different extraction and rotation solutions. The suitability of the data for the PCAs was assessed by computing correlation matrices together with Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity.

The first PCA was used as a technique for Harman's one factor test i.e. to examine the potential problem of common method variance. According to Podsakoff, MacKenzie and Podsakoff (2003, p. 889) Harman's one factor test is one of the most widely used technique to address the issue and involves an assumption of a single factor to emerge from a factor analysis or one general factor to account for the majority of covariance among the measures, if a substantial amount of common method variance is present. Four other PCA were used to assess the factorial validity of the items that make up the

different scales and to explore, whether the items of the three different scales loaded to three different components i.e. form three groups of related variables that are distinct from each other.

For the second PCA the factor extraction was chosen based on Varimax method, the most commonly used orthogonal approach together with Eigen values to explain as much of the variance in the data set as possible with the assumption that the components are unrelated. For the third PCA Varimax was chosen together with a "forced" three-factor solution in order to investigate whether the items of the three different scales can be seen as forming three groups of related variables that are distinct from each other. For the fourth PCA the Direct Oblimin, the most commonly used oblique approach, was run with Eigen values to evaluate the strength of the relationship between the different factors and to decide whether it is reasonable to assume that the different components are not related. For the fifth PCA Direct Oblimin was investigated with a three-factor solution to compare the results.

To further investigate the underlying factor structures of the different scales, three FAs were performed with Maximum likelihood as an extraction method and Direct Oblimin as a rotation method together with Eigen values. Maximum likelihood was chosen, because it has been recommended for data with 100 or more values and maximises the loadings as credible as possible (see Metsämuuronen, 2005, p. 622). Oblimin rotation was selected, because the different items were expected to have strong correlations with each other. The Eigenvalues was selected, because it was of interest, how the items of different scales are grouped together without forcing a specific number of factors and if the scales could be reduced even further in the future (see Pallant, 2016, p. 182-199). The scale's reliability and internal consistency i.e. the degree to which the items that make up the scale "hang together" was measured using Cronbach's alpha coefficients.

Before performing the correlation analyses total scores for each of the scales used in the study were calculated and new variables created as recommended by Pallant (2016, p.

86-90). The descriptive statistics were run to check that the values were appropriate. The correlations between the individual constructs were examined using Pearson product-moment correlation coefficient i.e. Pearson r. According to Pallant (2016, p. 127-132) Pearson r provides an indication of the linear (straight line) relationship between different variables and is designed especially for interval level variables, but can also be used for continuous variables such as scores measured on a Likert scale like in this study. Before performing the correlation analysis, a scatterplot was generated in order to get an idea of the nature of the relationship between the variables (whether they are positively or negatively related) and to check for any violation of the assumptions of linearity and homoscedasticity. To investigate the correlations further the strength of the correlation coefficients were also compared for males and females and then for subordinates and managers by splitting the file and running the Pearson r correlations again.

Hierarchical regression analysis were applied in order to test the hypothesis 1-4. To analyse the mediating effect of work engagement between managerial coaching and innovative work behaviour Baron and Kenny's (1986) procedure was followed. Their procedure includes three regression equations and conditions, which all need to hold in the predicted direction in order to establish mediation. If all the conditions hold, then the effect of the independent variable on the dependent should be less in the third equation than in the second. Also, if the independent variable has no effect when the mediator is controlled, then perfect mediation holds. Table 2 includes the regression models that were examined in this study.

Table 2. Regression models.

Model	Regression equation	Conditions and predicted direction
1	MC & UWES	MC must affect UWES
2	MC & IWB	MC must affect IWB
3	MC & UWES & IWB	UWES must affect IWB

4 Research findings

In this chapter, the findings of the preliminary analyses, descriptive statistics, correlations and regression analyses are presented. The relevant SPSS outputs for the preliminary analyses can be found in Appendix 2, for the descriptive statistics and correlations in Appendix 3 and for the regression analyses in Appendix 4. The text in *italics* in this chapter indicates to check Appendices for more information.

4.1 Preliminary analyses

The data screening process of the original sample (N=4503) revealed that the control variables of gender and position had 2,4% and 3,4% of *missing data* respectively. Whereas, the different items of the continuous variables had only 1,4% of missing data, ranging between 1,1% and 1,9%. The *Little's MCAR test* was run to further explore the missing data. The result was significant ($p<.05$) suggesting that the causes of missing data are unrelated to the data and the data is not missing completely at random (MCAR), but may be missing at random (MAR) or not missing at random (NMAR) (see IBM, 2019).

Despite not fulfilling the MCAR criteria, the listwise deletion for the missing data was chosen over other methods, because the remaining sample was regarded to be "sufficiently large" (N=4004) and complete case analysis was regarded as most convenient for the purpose of this study. After deleting all the cases i.e. participants with one or more missing values on the analysis variables, the frequencies and descriptive statistics were calculated again and the normality of the distribution of the scores together with outliers were explored to check the variables for any violation of assumptions underlying the statistical techniques used to address the research questions. The demographics of the sample was described in the chapter 3.2. in regards of gender and position.

The test of normalities for each of the items of the three measurements scales had a significant result (p = .000), suggesting violation of the assumption of normality. However, according to Pallant (2016, p. 63) this is quite common in larger samples. The investigation of outliers involved having a look at histograms and inspecting the boxplots of the different items. As there were *four items with a few outliers* (UWES 1-3 and IWB 2), the scores in the data were checked for any mistakes in entering the data. The scores seemed genuine, thus *5% Trimmed Means* were explored next to decide whether to retain the cases in the data file or not. Because the trimmed mean and mean values were pretty similar (e.g. 5.76 and 5.62 for the first item of UWES scale) the outlying cases were not regarded as a big problem (see Pallant 2016, p. 64-65).

4.1.1 Principal component analyses

Table 3 shows a summary of the five different PCAs. The inspection of the *correlation matrices* regarding PCAs revealed the presence of many coefficients of .30 and above. Majority of the items were also positively and significantly correlated at less than .05 level with one another suggesting that they may constitute one or more factors and conducting a factor analysis is worthwhile.

Table 3. A summary of the experimented PCAs and the main results.

	Rotation/Extraction	**Assumptions**	**KMO**	**Variance**	**Components**
1	None	No single or one general factor	.940*	39.9%	>1
2	Varimax + Eigen	Orthogonal – uncorrelated Independent (not related)	.940*	73.8%	4
3	Varimax + 3 factors	Orthogonal – uncorrelated Independent (not related)	.940*	68.8%	3
4	Direct Oblimin + Eigen	Oblique – correlated (related)	.940*	73.8%	4
5	Direct Oblimin + 3 factors	Oblique – correlated (related)	.940*	68.8%	3

(*Siq. = .000)

The KMO values were .940 and *Bartlett's Test* was significant (p = .000) supporting the factorability of the data. Big sample size also filled the criteria for a sufficiently large sample to enable analysis to be done reliably. See Bryman and Cramer (2011, p. 320) and Pallant (2016, p. 183-201) for the assumptions and procedure. *The first PCA* showed that one component accounted for less than 50%, which suggested that common method bias was unlikely to be a serious problem in the current data. The assumptions of Harman's single-factor test was not met i.e. one general factor did not account for majority of the variance (See Podsakoff, MacKenzie, & Podsakoff, 2003, p. 889).

The second PCA revealed the presence of four components with eigenvalues exceeding 1 and explaining 39.9%, 22.7%, 6.2% and 5.0% of the variance respectively. The four components explained a total of 73,8% of the variance. The first component included items of the managerial coaching scale. The second and third component consisted of a mix of items from the IWB scale (items 1-5 loaded on the third component and items 6-12 on the second component). The items of the UWES-3 loaded on the fourth component. The loadings on each of the four components were strong (above .70). *The third PCA* i.e. the three-component solution with Varimax rotation explained a total of 68.8% of the variance, with IWB contributing 39.9%, MC contributing 22.7% and UWES contributing 6.2%. The item loadings varied between .56 and .88.

The results of the *fourth* and *fifth PCA* with Oblimin rotation were very similar to the ones with Varimax rotation. The Component Correlation Matrix showed that the correlations between the different components were quite low (around .30). According to Pallant (2016, 199) this gives an indication that the different components are not related and the use of Varimax rotation was reasonable. The interpretation of the three components and the weak correlation are consisted with previous literature and support the idea that the three different scales form three groups of related variables, yet distinct from each other. Table 4 on the next page shows the construct items of the different scales and loading on the three communalities i.e. factors with Varimax rotation. The table includes also the Cronbach's alpha values, which will be evaluated a bit later on.

Table 4. Construct items and factor loadings.

Items	**Factor loadings**		
	1	2	3
Managerial Coaching = MC (Cronbach's alpha .953)			
1. My manager facilitates mutual cooperation in a group	.866		
2. My manager encourages the work community to deal with problems and mistakes constructively	.880		
3. My manager seeks to improve the operation of our unit	.839		
4. My manager promotes and supports innovative ideas, trial, and creative processes	.835		
5. My manager understands the problems and needs of my work	.838		
6. I receive encouraging feedback for my work	.852		
7. My manager discusses our performance with us sufficiently	.868		
8. My manager ensures that everyone knows their task	.860		
9. I know what my manager thinks about my work performance	.730		
Work Engagement = UWES (Cronbach's alpha .827)			
1. At my work, I feel bursting with energy (vigor)		.823	
2. I am enthusiastic about my job (dedication)		.830	
3. I am immersed in my work (absorption)		.738	
Innovative Work Behaviour = IWB (Cronbach's alpha .946)			
At your workplace, how often do you...?			
1. …pay attention to that things run smoothly that are not part of your daily work			.567
2. …ponder how things could be done better			.723
3. …look for new work methods, techniques or instruments			.808
4. …sketch new solutions to problems			.841
5. …invent new ways of doing things			.820
6. …try to make the key people in the organization enthusiastic about new ideas			.804
7. …try to make people support a new idea			.827
8. …apply new ideas in practices			.815
9. …participate in putting new ideas into practice			.807
10. …participate in implementing new ideas together with others			.760
11. …get involved in developing new work methods and practices			.770
12. …devote your time and resources to develop things			.806

Extraction method: Principal Component Analysis. Rotation Method: Varimax.

4.1.2 Factor analyses

The inspection of the *correlation matrix* for each of the FAs revealed the presence of many coefficients of .3 and above. The *KMO values* varied between .658 and .948., exceeding the recommended value of .600 and the Bartlett's *Test of Sphericities* (p = .000) supported the factorability of the data. However, it should be noted that *the Goodness-of-fit Test* was significant (p = .000) for the managerial coaching and innovative work behaviour items and not shown for the work engagement scale items indicating that the models may not be very good. For the work engagement items the number of degrees of freedom was also positive s. uggesting that factor analysis may not be appropriate. Despite these limitations, the FAs were performed, because according to Metsämuuronen (2005, p. 627-627) the Goodness-of-fit Test has a tendency to deny the null hypothesis this way with samples over 500. Also, although the FAs would prefer three or more items loading on each component or factor for the solutions to be optimal (Pallant, 2016, p. 195), the UWES-3 has been found to be reliable in previous studies (see Schaufeli, Shimazu, Hakanen, Salanova, & De Witte, 2019).

The first FA, showed that only one factor was extracted for the managerial coaching scale items. One factor solution explained a total of 70.0% of the variance. *The second FA* on work engagement scale items also indicated just one factor explaining 65.5% of the variance. *The third FA* on innovative work behaviour scale revealed a two-factor solution explaining 68.3% of the total variance. The finding is consistent with the first PCA results, which also showed items 1-5 loading more strongly on one component/factor and items 6-12 on the other. However, the factor correlation matrix and high value of .717 indicate that the two factors are strongly correlated i.e. the relationship between the two factors is strong and the KMO value for one factor solutions is still at the accepted level (value is above .6), thus for the purpose of this study the items are retained as one factor. The interpretation and use of the factor analysis is also said to be up to the judgement of the researchers rather than any fast statistical rules. See Pallant (2016, p. 193-199) for more details on interpreting the results of factor analysis. Table 5 on the next page includes a summary of the experimented FAs and their results.

Table 5. A summary of the experimented FAs and the main results.

	Rotation/Extraction	Assumptions	KMO	Variance	Factors
1	Direct Oblimin + Eigen	MC items are correlated (related)	.948*	70.0%	1
2	Direct Oblimin + Eigen	UWES items are correlated (related)	.658*	65.5.2%	1
3	Direct Oblimin + Eigen	IWB items are correlated (related)	.931*	68.3% (60.6%)	2 (1)

(*Siq. = .000)

4.1.3 Reliability of the scales

According to Pallant (2016, p. 104) the internal consistency of the scales used in the research i.e. the *reliability statistics* are normally reported in the method section under the measures after describing the scales. However, because the factorial validity of the scales was part of the preliminary analysis the results are presented here instead. All three scales showed Cronbach's alpha values above the accepted threshold of 0.7, which suggest acceptable reliability and very good internal consistency (see Pallant, 2016, p. 104). The scale with the highest Cronbach's alpha was managerial coaching (α = .953) and the one with the lowest was work engagement i.e. UWES-3 (α = .827). The coefficient for innovative work behaviour was .946.

The item-total-statistic provided along Cronbach's alpha showed one value for each of the scales that was higher than the final alpha value. This finding suggests that these three values could be considered to be removed from the scales. According to Pallant (2016, p. 104) removing these items from the scales could be useful when developing the scale, but removing items from established and validated scales would mean that the results of the study could not be compared with other studies using the scale.

4.2 Descriptive statistics and correlations

The descriptive statistics of the total scales showed that the scales were appropriate for the statistical analyses. The work engagement scale had a few outliers, but the investigation of *5% Trimmed Means* showed that the two mean values (5.57 and 5.68) were very similar indicating that retaining the cases should not be much of a problem. *The test of normalities* for each of the scales were significant (p = .000), suggesting violation of the assumption of normality. However, due to the larger sample size this was not regarded as an issue.

The frequencies of the categorical (control) variables were presented earlier in section 3.2 describing the sample. The means, standard deviations and correlations of the continuous variables can be found in Table 6. Before performing the correlation analysis *the scatterplots* that were generated showed that the data points were spread all over the place suggesting very low correlations. Because the data points were not arranged in any specific shape, no outliers, straight or curved line, the assumption of homoscedasticity or the direction of the relationship between the variables could be tapped from the scatterplots. However, the *Spearman r* correlation analysis showed the expected direction of associations. *Spearman's rho* correlation was also calculated, because the scales were not normally distributed (see Pallant, 2016, p. 135; Vincent-Höper & Janneck, 2012, p. 669), but because there was not much difference between the values and the sample was large, Spearman r values are reported.

Table 6. Means, standard deviations and correlations for scale variables.

	Mean	**SD**	**1**	**2**	**3**
1. Managerial coaching	4.95	1.43	-		
2. Work engagement	5.57	1.30	.424**	-	
3. Innovative work behaviour	4.79	1.16	.361**	.222**	-

Notes: n = 4004, *Spearman r*, **p < 0.01

All the correlations showed expected direction and were significant at the p<0.01 level. There was a positive relationship between managerial coaching and work engagement (r = .424). Managerial coaching was also positively related to innovative work behaviour (r. = 361). Moreover, there was a positive relationship between work engagement and innovative work behaviour (r = .222). These results provide preliminary evidence to support the hypothesis 1-3, which are further investigated with regression analyses in section 4.3.

While reporting statistical significance of the correlation analysis, the strength of the relationship and the amount of shared variance should be paid attention to as well (see Pallant 2016; p. 137-138). The strength of the correlation i.e. relationship between managerial coaching and work engagement in the current sample was medium, similar to managerial coaching and innovative work behaviour. Calculating the coefficients of determination suggest that managerial coaching helps to explain 18% of the variance in respondents' scores on the work engagement scale. For managerial coaching and innovative work behaviour the coefficient was 13%. The results showed that there was only a small correlation between work engagement and innovative work behaviour, indicating that they share only 5% of their variance.

The comparison of correlation coefficients in regards of gender revealed that the correlations between each of the three variables were stronger for males than for females. The correlation coefficients between managerial coaching and work engagement for males was r = .444 and females r = .376, between managerial coaching and innovative work behaviour for males r = .239. and females r = .193, whereas between engagement and innovative work behaviour for males r = .388 and females r = .331.

Testing the statistical *significance of the difference between the correlation coefficients* for males and females revealed that there was a statistically significant difference in the strength of correlation between managerial coaching and work engagement (p < .05)

and work engagement and innovative work behaviour (p = .05), but not between managerial coaching and innovative work behaviour (p > .05). Thus, managerial coaching explains significantly more of the variance in work engagement for males and for females. Similarly, work engagement explains significantly more of the variance in innovative work behaviour for males than for females.

Investigation of the correlations and statistical significance for subordinates and managers revealed that there was a statistically significant difference in the strength of correlation between managerial coaching and work engagement (p < .05), but not others. The correlation coefficients between managerial coaching and work engagement for subordinates was r = .430 and managers r = .209. Hence, managerial coaching explains significantly more of the variance in work engagement for subordinates than for managers.

All the correlations in this study were below the threshold for multicollinearity (less than .7). Before continuing to regression analyses the preliminary analyses were conducted to ensure no violation of the *assumptions of multicollinearity, normality, linearity and homoscedasticity*. The variance inflation factor (VIF) and tolerance values showed to be within the acceptable limits. VIF values were a little bit over one and tolerance values a bit less than 1. The assumption including e.g. normality, linearity and outliers seemed to be ok too indicating that all the scales were appropriate to include in the regression analyses and multicollinearity was not a problem in this study. (See Jokivuori & Hietala, 2007, p. 50; Pallant, 2016, p. 159-160 for more details on the assumptions.)

4.3 Regression analyses

The base models (1a and 2a) included only the two control variables and were significant at the p<0.001, F(2, 4001) = 84.116, and F(2, 4001) = 158.374, respectively. The results show that gender and position explain 4% of the variance in work engagement and 7%

in innovative work behaviour. Being a woman predicts better work engagement, but less innovative work behaviour, whereas being in a managerial position predicts higher ratings for both work engagement and innovative work behaviour compared to those in a non-managerial role. For models 1-3 gender and position were entered in Step 1 before the independent variable(s) in step 2 in order to control their effect. Table 7 presents the results of hierarchical regression analyses.

Table 7. Results of hierarchical regression analyses.

Variables	UWES		IWB		
	Model 1a	**Model 1**	Model 2a	**Model 2**	**Model 3**
Step 1	B (Beta)	B (Beta)	B (Beta)	B (Beta)	B (Beta)
Gender [a]	.323 (.116)***	.276 (.099)***	-.097 (-.039)**	-.118 (-.047)**	-.192 (-.077)***
Position [b]	.619 (.174)***	.501 (.140)***	.846 (.265)***	.793 (.249)***	.658 (.206)***
Step 2					
MC		.372 (.410)***		**.165 (.204)*** **	**.065 (.080)*** **
UWES					.269 (.301)***
R^2	.040	.207	.073	.115	.187
Adjusted R^2	.040	.207	.073	.114	.186
F	84.116***	348.512***	158.374***	172.572***	229.231***
N	4004	4004	4004	4004	4004

Notes: ** p < 0.01, ***p < 0.001, [a] (1=female, 0=male), [b] (1=manager, 0=subordinate)
MC=Managerial coaching, UWES=Work engagement, IWB=Innovative work behaviour

Model 1 captures the direct effect of managerial coaching on work engagement. The model is significant at the p<0.001, F(3, 4000) = 348.512 and explains an additional 17% of variance over what the control variables alone explain. The finding suggests that managerial coaching is positively related to work engagement, thus supports the hypothesis 1 and satisfies the first condition for mediation.

Model 2 reveals that there is a positive relationship between managerial coaching and innovative work behaviour. The model is significant at the p<0.001, F(3, 4000) = 172.572 and explains an additional 4% of variance over what the control variables alone explain. The finding is in line with hypothesis 2 and satisfies the second condition for mediation.

Model 3 examines the third condition for mediation and how work engagement affects innovative work behaviour when both managerial coaching and work engagement are entered into the same model simultaneously. The model is still significant at the $p<0.001$, $F(4, 3999) = 229.231$ and explains an additional 11% of variance over what the control variables alone and an additional 7% over what the control variables and managerial coaching together explain. The results support the hypothesis 3, which suggest that work engagement is positively related to innovative work behaviour.

The findings show that the three regressions equations and conditions all hold in the predicted direction and the effect of managerial coaching on innovative work behaviour is less in the third equation than in the second (see bolded numbers in Table 7 or Figure 8). Thus, the results indicate that work engagement mediates the relationship between managerial coaching and innovative work behaviour and provides support for hypothesis 4. However, the mediation is not perfect, because managerial coaching does not drop significance when the mediator is controlled. When both the independent and mediator variable are put into the same model together and both remain significant the mediation is regarded as partial (see Tims, Bakker, & Xanthopoulou, 2011, p. 127). In this case, partial mediation means that managerial coaching has both direct effect on innovative work behaviour and indirect effect through work engagement. In summary, the relationships between all the study variables are described in Figure 8 (** $p < 0.01$, ***$p < 0.001$).

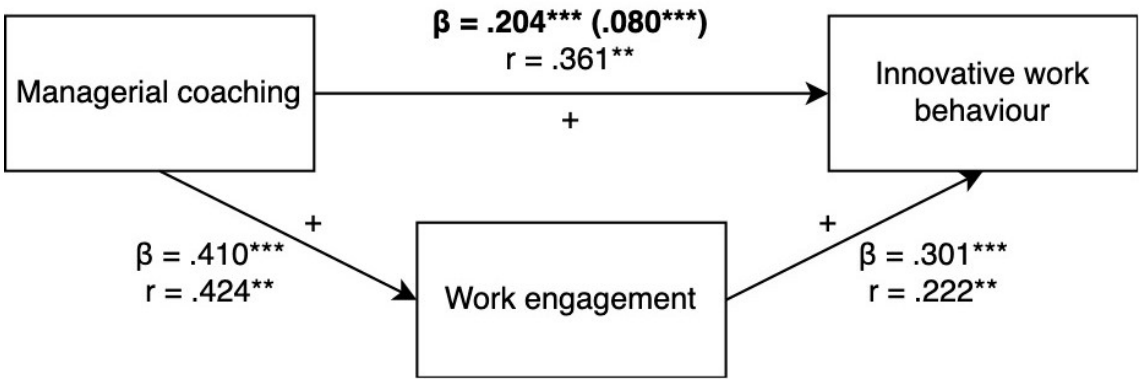


Figure 8. Relationships between all the study variables.

5 Discussion

This chapter draws it all together. First, the findings of the current study are summarised and discussed in relation to previous literature. Then, the theoretical, research and practical implications will be outlined. Finally, the limitations and suggestions for future research will be presented before the conclusion.

5.1 Summary of the findings

The aim of this thesis was to provide more insight into the role of managerial coaching in individual innovation and to improve understanding of the role of work engagement as a possible mediator between the two concepts. The hypothesised conceptual model guided by previous studies and JD-R theory was tested by a combination of quantitative analyses such as correlations and hierarchical regression analyses using a sample of 4004 respondents in the Finnish SME sector. In addition, the factorial validity and reliability of the selected measurement scales were assessed in response to calls for more accurate and appropriate measures.

The first research question of the current study asked whether there is a positive relationship between managerial coaching and work engagement. The results showed that the hypothesis for this question was met. The finding is consistent with previous studies that have also used parts of the JD-R framework for formulating hypotheses about leadership and engagement (Schaufeli, 2015; Tims, Bakker, & Xanthopoulou, 2011; Tuckey, Bakker, & Dollard, 2012; Tanskanen, Mäkelä, & Viitala, 2019) or proposed typical coaching behaviours to trigger a motivational process that leads to work engagement (see Bakker & Demerouti, 2008; Bakker, 2011).

The second research question was set, because the evidence regarding the connection between managerial coaching and innovative work behaviour is still in its infancy and require more investigation. Previous literature led to the hypothesis that the relationship

between these two variables would be positive (see Afsar, Badir, & Saeed, 2014; Aryee, Walumbwa, Zhou, & Hartnell, 2012; De Jong & Den Hartog, 2007; Pajuoja & Viitala, 2019; Tanskanen, Mäkelä, & Viitala, 2019). The findings were in line with previous literature and provided further evidence that in addition to e.g. transformational leadership style, managerial coaching behaviours can also trigger a motivational process that leads employees to exhibit innovative work behaviours.

Work engagement has previously been found to have positive relationship with important work outcomes such as affective commitment, active learning, initiative, organisational citizenship behaviour, perceived organisation performance (see Farndale, Beijer, Van Veldhoven, Kelliher, & Hope-Hailey's, 2014), personal initiative and work-unit innovativeness (Hakanen, Perhoniemi, & Toppinen-Tanner, 2008). The findings of this study are in accordance with these findings and third hypothesis. Thus, the answer to the third research question, whether work engagement is positively connected to innovative behaviour, is yes.

Fourth, and the most interesting research question of this study was whether work engagement mediates the relationship between managerial coaching and innovative work behaviour. The results support earlier studies that have also followed the JD-R model and suggested work engagement to act as a mediator between job resources and innovativeness (see e.g. Huhtala & Parzefall, 2007; Kwon & Kim, 2020). Indeed, in the light of this study managerial coaching could be seen as a resource that sets a positive wheel into motion for work engagement and innovative work behaviour as indicated by the studies carried out by Tanskanen, Mäkelä and Viitala (2019) and Pajuoja and Viitala (2019). The findings of this study also add to the review of different mediators by Hughes, Lee, Tian, Newman, & Legood (2018) and previous conceptual frameworks that have not included engagement as full or partial mediator.

The factorability of the data and the psychometric properties of the three scales were assessed by performing PCAs, FAs and Cronbach's alphas. PCA was used to explore, whether the items of the three different scales load to three different components i.e. form three groups of related variables that are distinct from each other. Whereas, FAs were used to investigate the factor structures of the three different scales. In addition, the scale's reliability and internal consistency i.e. the degree to which the items that make up the scale "hang together" was measured using Cronbach's alpha coefficients.

The findings supported the factorability of the data and the existence of three different measurement scales as suggested by previous literature. The FA on managerial coaching scale showed that only one factor was extracted for the scale items and the one factor solution explained a total of 70.0% of the variance. Cronbach's alpha value was also high suggesting good internal consistency. These findings are in line with previous study by Pajuoja & Viitala (2019), which used the same scale to measure managerial coaching. Similarly, the FA on work engagement scale items indicated just one factor and explained 65.5% of the variance. Cronbach's alpha value was .827, which is in accordance with previous studies that have shown alpha values to decrease with test length for the UWES-3 as compared to the longer version UWES-9 (see Schaufeli, Shimazu, Hakanen, Salanova, & De Witte, 2019, p. 5-8). These findings provide support for the reliability and usability of these two, quite new scales.

The results from PCA and FA regarding innovative work behaviour revealed that the scale could possibly be used as a one or two-factor solution. Cronbach's alpha value for one factor solution that was used in the current study was high .946 suggesting good reliability. This finding supports the use of 12-item measure, but does not support the four-factor solution suggested by Pajuoja & Viitala (2019). The result is in accordance with the original study by De Jong and Den Hartog (2010), which did not find sufficient evidence for the distinction of the four different dimensions i.e. idea exploration, generation, championing and implementation of innovative work behaviour.

In sum, this study offers several important findings and sheds light on the nature of the relationship between managerial coaching, work engagement and innovative work behaviour. First of all, the hypothesized relationships were supported by the data providing support for the conceptual model derived from JD-R theory and previous literature. The findings indicate that managerial coaching relates positively to work engagement, which in turn relates positively to innovation performance. In addition, the results show support for the mediating effect of work engagement on the relationship between managerial coaching and innovative work behaviour. The finding of partial mediation suggest that managerial coaching also has an effect on innovative work behaviour directly on its own. Moreover, the factor analyses of the different measurement scales used in the study provided support for the reliability and validity of the scales and contribute to the discussion of appropriate measures.

5.2 Implications

This study has potential implications for theory, research and practice. Theoretical implications will be discussed in the light of JD-R model. Implications regarding research include discussion about developing relevant and valid measures. Also, the practical implications for managers, employees and SME's will be given a thought.

5.2.1 Theoretical implications

This thesis concentrated on the JD-R model's motivational process. The findings support the motivational route and in line with the model managerial coaching could be seen as a potential organisational job resource that is related to employees' innovative work behaviour alone or through the mediating effect of individual job resource of work engagement. Interestingly, the latest and refined versions of the JD-R model including work engagement do not include direct effect between job resources and innovative work behaviour (or other job performance) that was found here. Instead additional

mediators such as job crafting (see Bakker & Demerouti, 2017) and coping (see Kwon & Kim, 2020) have been added in the models. The results from the current study indicate that managerial coaching could possibly be added in the refined model by Kwon & Kim (2020) in addition to transformational and inclusive leadership style. Moreover, the direct effect suggested by partial mediation in the current study should be investigated further.

5.2.2 Research implications

Hagen and Peterson (2014, p. 223) have stated that identification of scales and/or surveys intended to measure coaching within an organisational context and reviewing the reliability and validity of those scales e.g. in managerial context is essential not only for the growth of efficacious research, but also resulting improvements in practice within the field. Similarly, Hughes, Lee, Tian, Newman and Legood (2018, p. 563-565) have called researchers to exercise vigilance and develop new, more accurate and appropriate measures of workplace creativity and innovation, because without those all other empirical endeavours are useless.

During the research process, researcher needs to make a number of decisions, which all have an impact on the outcome. The chosen study design, selected measurement scales and data analysis methods can have a huge effect on the results. In this study the preliminary analyses especially regarding the measurement scales were described in quite detail, because it was seen important to bring the factor analyses visible and discuss them in relation to the findings, research implications, development of measurement scales and limitations of the study design.

The factor analyses of the three different scales provided further support for the reliability and validity of the scales used. However, the results regarding innovative work behaviour did not fully support all the previous findings. Especially, the number of different dimensions of the measure require further investigation.

5.2.3 Practical implications

The findings of this study provide tentative implications for managers and employees working in SME's. The results suggest that the use of managerial coaching may promote employees' work engagement and increase innovative work behaviour, and thus be considered a sustainable competitive advantage. Managers and team leaders could be supported to perform more coaching style behaviours towards the employees. Significant differences between women and men, managers and subordinates also suggest that managers should pay attention to the different needs of their subordinates.

According to Huhtala & Parzefall (2007, p. 299-300.), having an understanding of the relationships between employee well-being and innovativeness can already be beneficial in order to find ways to support innovative employees. Indeed, the results of this study provide evidence and reassurance for organisations and managers that coaching can offer tools to enhance competitiveness for management and business (see Bond & Seneque, 2013, p. 58). It is important for managers to understand employees' views, listen to their needs and concerns, be able to identify the potential demands and resources in each job, realize their independent and interactive effects on employees' well-being and consequently on their innovative behaviour (Huhtala & Parzefall, 2007, p. 304-305).

5.3 Limitations and future research

Although the findings of this study were statistically significant and the hypothesized model was adequately supported by the empirical data of the current sample, there are several limitations that should be addressed before planning on taking any actions in reference to the results. The findings and potential implications of this thesis should be interpreted with caution and within the context of the study's limitations. The limitations include aspects related to e.g. common method bias, generalisability, study design, selected measures and data analyses methods, which will be discussed next. Scholars

have also agreed that coaching research and practice is underdeveloped and requires further research (see e.g. Dahling, Taylor, Chau & Dwight, 2016, p. 885-888; Huang & Hsien, 2015, p. 43).

5.3.1 Common method bias

Although both procedural and statistical techniques were adopted to minimise the potential common method bias it cannot be stated that this study is free from it. The limitations of this study regarding common method bias include e.g. self-report questionnaire, obtaining measures of the predictor and criterion variables from the same source and feeling of anonymity. To minimise the potential effects of common method biases future studies should pay more attention to rule out any potential common method effect. Researchers could follow the techniques suggested by Podsakoff, MacKenzie and Podsakoff (2003) in more detail and develop even better ways and techniques to control their effects. They should pay attention especially to the design of the study's procedures and statistical controls.

Anderson, De Dreu & Nijstad (2004, p. 157) have expressed concern regarding the ongoing use of self-report measures of innovativeness despite calls for researchers to move towards independent ratings in order to avoid percept–percept bias. Controlling the common method variance involve identifying similarities between the predictor and criterion variables and minimising what they have in common through the design of the study. Future studies could try to obtain the measure of managerial coaching from the subordinates and the measure of the subordinate's innovative work behaviour from the leader or archival organisational data. Although, this kind of approach has limitations too and is not feasible to use on all cases, it has some benefits. (see Podsakoff, MacKenzie, & Podsakoff, 2003, p. 887-888.)

One advantage of the recommended procedure is that it can minimise the risk of source or rater to bias the observed relationship between the dependent and independent

variables and eliminate different method effects produced by item characteristics such as consistency motifs, implicit theories, social desirability tendencies, dispositional and transient mood states or any other tendencies on part of the rater to respond in a lenient manner. Another potential remedy could be to separate the measurement of managerial coaching and work engagement and innovative work behaviour. This could be accomplished e.g. by introducing a time lag between the measurements, using a cover story to hide the connection and/or offering different response formats, media and location for the measurement of different variables. The evaluation apprehension could be improved by assuring the respondents before the data collection that they should answer the questionnaire as honestly as possible and that there are no right and wrong answers. (See Podsakoff, MacKenzie, & Podsakoff, 2003, p. 887-888.)

The questionnaire used on this study allowed the respondents to answer it without their own name, but required including the name of the supervisor and providing other background variables such as title, gender and role on the same sheet of paper. These requirements may have affected the feeling of anonymity and responses. Future studies could improve the feeling of anonymity e.g. by asking the respondents to fill in the background information and responses to the questions on a different sheet of paper or online form and match them with a respondent number. This way the respondent would also have the possibility to withdraw their data from the study later on using their respondent number in case they changed their mind.

5.3.2 Generalisability

The results of this study are limited to the particular conditions of this study. The usable response rate of the sample was 38%, which is quite low and may not represent the real population. In general, the response rate over 60% is recommended when generalising results to a certain population. However, the response rate below 50% is quite typical in survey studies nowadays (Vehkalahti, 2014, p. 44). Out of 4503 returned responses 499 also had missing data regarding the concepts that were of interest in this study. A

non-response bias is possible, because the employees who responded to the questionnaire may have differed from the employees who did not respond.

According to Viitala, Kultalahti and Kantola (2016, p. 34) the data from the HERMES-project offers good premises for generalizing the results for the Finnish population. Some caution should however be paid, because for example, the males were over represented in the sample (69%) compared to the average Finnish population (~50%). In addition, this study was a purposeful sample of employees in 100 Finnish SMEs. The SMEs approached to take part in the research project were not randomly selected and the final sample included only 88 SMEs compared to around 18 872 SMEs that were reported in Finland 2017.

The problems of low response rate, missing data, over representation of males and purposeful sample are likely to have an effect on the generalisability of the results. According to Armstrong and Overton (1977) a non-response bias may weaken arguments and conclusions of the study, because it presents vulnerability to accurate reflections of the population parameter. The data collection involved only SMEs and employees in Finland. Thus, the results cannot be generalised to other types of organisations or other countries. Further studies should also look at different professions in more detail. There may be differences between e.g. sales people and hairdresses. Managerial coaching may be more beneficial for certain types of positions and depend on the size of the company.

5.3.3 Study design

The literature review of this thesis was limited e.g. to keywords of managerial coaching and coaching leadership style and does not purport to address all of the factors associated with coaching and other related constructs. The results should be compared with caution to other similar concepts such as workplace coaching, business coaching, executive coaching or leadership coaching that have been used in some other reviews or studies (see e.g. Blackman, Moscardo & Gray, 2016; Bozer & Jones, 2018). Future

studies should compare different types of coaching practices and their effects on employees work engagement and innovation. For example, leadership coaching, team coaching and mentoring may all have positive effect on employees work engagement and innovative work behaviour, but in different ways. The review was also limited to term work engagement ignoring all the other employee well-being measures and innovative work behaviour although creativity is occasionally used interchangeably with innovation in the literature.

Beattie et al. (2014, p. 193-197) have suggested that all modes of managerial coaching could still benefit from further empirical evidence. They have identified significant gaps in managerial coaching evidence especially regarding “virtual” or “e-coaching”, “cross-cultural coaching” and the interaction between “demographic variables” and coaching efficacy. Indeed, as many organisations already have vast possibilities to work from home or somewhere else outside the office and the younger generations have grown up with using technology for many of their relationships, it would probably be beneficial to investigate whether the effects of virtual managerial coaching on employees work engagement and innovative work behaviour would differ compared to face-to-face coaching.

Other potential antecedents, relations and outcomes of managerial coaching need to be explored too, because the hypothesized conceptual model of the current study is not anywhere near exhaustive. Previous literature has indicated that the relationship can be weak when other factors are taken into the model (Christian, Garza, & Slaughter, 2011). For example, Tanskanen, Mäkelä, & Viitala (2019) found some support for work engagement to mediate the relationship between managerial coaching and performance when studied separately from other constructs, but when LMX was included the effects became nonsignificant. Future research could address whether the mediating effect found in this study would become nonsignificant by studying LMX or other similar constructs simultaneously. Dahling, Taylor, Chau and Dwight (2016, p. 888) have suggested that LMX could be an important moderator of the relationship between

coaching skill and subordinate performance. Building on the previous findings (Sue-Chan, Chen, & Lam, 2011; Tanskanen, Mäkelä, & Viitala, 2019), managerial coaching could have a greater impact on innovative work behaviour among employees, who have a high-quality LMX relationship with their manager. In their systematic review of mediating and moderating factors of leadership and innovation, Denti & Hemlin (2012, p. 13) found only a limited number of literature on the ways in which leaders may obstruct or imbed innovation. Future studies could look at how and when managerial coaching is detrimental to individual innovation.

More and more, innovation in organisation has been viewed as an outcome of individual, team and organisational efforts and a result of a number of activities performed at different levels of the organisation and its external word. Therefore, future research could investigate different mediating, but also moderating factors between managerial coaching and individual innovation i.e. address through which other mediating variables managerial coaches possibly stimulate employee's individual innovation and when the relationship between managerial coaching and individual innovation appears strongest. Also apply multi-level and structuration equation models to analyse the complex intercorrelations of leadership and innovation. (See Denti & Hemlin, 2012, p. 14.)

In this thesis managerial coaching was regarded as an additional job resource in the JD-R model. Schaufeli (2015) has already made an effort to integrate leadership into the JD-R framework and argued that leadership is a distinct feature that has a bigger role than just a mere resource. Moreover, he has suggested that it is important to investigate the impact of leadership in its own right, because leaders are supposed to balance the job demands and resources of their followers so that they remain healthy, motivated and productive. Future studies could look at how managerial coaching fits in this type of extension of the JD-theory i.e. do leaders utilising managerial coaching behaviours manage different job demands and resources in ways that promote work engagement and prevent burnout or in other words does managerial coaching have an indirect effect on work engagement and burnout through increasing job resources and lowering demands.

One limitation of this thesis is also the fact that the study focused only on the motivational process of the JD-R model. As Schaufeli and Bakker (2004, p. 311) have suggested both well-being and un-well-being should be included in frameworks attempting to explain well-being, because in the light of previous research these two states complement each other instead of being antipodes. In addition, they have also suggested that from a preventative point of view, decreasing job demands should be preferred above increasing job resources as increasing job resources (e.g., through participative management, increasing social support, and team building) would eventually lead to more engagement at the job, but its indirect effect on turnover intention has been found to be rather small; and so is its direct effect on burnout.

5.3.4 Measures

This study is limited to the selected measurement scales. First, all the measures in this study were taken at the same point in time, thus we cannot test for causal relationships and the results presented should be interpreted as non-directional. Other measurement scales regarding the main concepts of the study exist too as there is no agreed definition or skills set of managerial coaching (see Bond & Seneque, 2013, p. 58-59; Hagen, 2012, p. 17; Kim & Kuo, 2015, p. 157). Two extra items had been added to the De Jong & Den Hartog's (2010) original ten-item scale and the items had also been amended from manager ratings to employees to rate themselves i.e. involved participants rating their own activity with a seven-point scale ranging from "never" (1) to "very often" (7). These kinds of amendments make it difficult to compare the results of this study to other studies. Future studies should pay attention to the comparability of the measures used.

The current study included only two control variables. Due to the scope of the study and focus on specific research questions only gender and position were controlled to exclude the possibility that observed relationships might be influenced by employees' background characteristics. The investigation of differences between men and women

and managers and their subordinates in more detail was also out of the scope of this study, but could offer valuable information for the future. For example, the recent Quality of Work Life Survey has suggested that men's ratings of work engagement seem to diminish when they get older (Sutela, Pärnänen, & Keyriläinen, 2019, p. 144.). Future studies could further explore why this may happen. Studies should investigate the effects of other control variables as well. Previous studies have suggested that variables such as educational background, working sector and socioeconomic status may have an effect e.g. on employees' work engagement and employees' ratings about their manager's leadership behaviour (see Sutela, Pärnänen, & Keyriläinen, 2019, 141-144, 174).

5.3.5 Data analysis

This study used factor analysis, correlations and regression to find answers to a set of research questions. However, there are other data analysis methods that could have been used too. According to Tabarnick and Fidell (2019, 503) most researchers begin their factor analysis with principal components extraction and varimax rotation and continue experimenting with different number of factors, extraction techniques and rotations until they find a satisfactory solution. Carrying out research in an explorative way may lead only to finding solutions that confirm beliefs and something important may stay unnoticed. The interpretation and use of the factor analysis is also said to be up to the judgement of the researchers rather than any statistical rules (See Pallant, 2016, p. 193). Moreover, Harman's single-factor test and PCAs were used as statistical remedies for common method variance in this study. Despite its popularity there are limitations with Harman's single-factor test. Some researchers have already moved from EFA to using CFA as a more sophisticated test of the hypothesis. However, any one-factor model is unlikely to fit the data and thus act as a useful remedy to deal with the problem. Future studies could move on to using other statistical remedies such as partial correlations or multiple methods factors. (See Podsakoff, MacKenzie, & Podsakoff, 2003, p. 889-897.)

6 Conclusion

During the past few years managerial coaching and innovation have gained increased attention among different scholars and practitioners. However, a little empirical work has investigated the existence and nature of this link and whether work engagement mediates the relationship, especially in the SME sector. The findings of this thesis add to the growing collection of studies that examine the mechanisms through which different leader behaviours carry their influence on their subordinates and provide further empirical evidence in regards of managerial coaching. In addition, the results add to the discussion and development of reliable and validated scales on the field.

The results highlight the role of managerial coaching and work engagement in the process of individual innovation and suggest that managers may facilitate their subordinates innovative work behaviour by engaging in managerial coaching behaviours, but also through influencing on their work engagement. The findings are consistent with previous studies and the motivational process of JD-R model. The results provide support for the idea that managers may act as a potential resource for their subordinates. However, the results are limited regarding the chosen sample, study design, measurement scales, etc.

Although this thesis improves the overall understanding of the concept of managerial coaching and its relations with other constructs by providing new evidence to the mediating effect of work engagement between the managerial coaching and innovative work behaviour, the results should be assessed against the background of the limitations inherent in the study. Managers or different practitioners promoting coaching services should carefully consider what kind of leadership practices or coaching services they want to engage in when aiming to increase the level of innovative work behaviour among the employees. More work and empirical studies are still needed.

References

Afsar, B., F. Badir, Y., & Bin Saeed, B. (2014). Transformational leadership and innovative work behavior. *Industrial Management & Data Systems*, *114*(8), 1270-1300. https://doi.org/10.1108/IMDS-05-2014-0152

Agarwal, R., Angst, C. M., & Magni, M. (2009). The performance effects of coaching: A multilevel analysis using hierarchical linear modeling. *The International Journal of Human Resource Management, 20*(10), 2110-2134. https://doi.org/10.1080/09585190903178054

Anderson, N., De Dreu, C. K., & Nijstad, B. A. (2004). The routinization of innovation research: A constructively critical review of the state‐of‐the‐science. *Journal of Organizational Behavior, 25*, 147-173. https://doi.org/10.1002/job.236

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research, 14*(3), 396-402. Retrieved 2020-04-10 from https://mpra.ub.uni-muenchen.de/81694/1/MPRA_paper_81694.pdf

Aryee, S., Walumbwa, F. O., Zhou, Q., & Hartnell, C. A. (2012). Transformational leader ship, innovative behavior, and task performance: Test of mediation and moderation processes. *Human Performance, 25*(1), 1-25. https://doi.org/10.1080/08959285.2011.631648

Bakker, A. B. (2011). An evidence-based model of work engagement. *Current directions in psychological science, 20*(4), 265-269. https://doi.org/10.1177/0963721411414534

Bakker, A. B., & Demerouti, E. (2007). The Job Demands‐Resources model: state of the Art. *Journal of Managerial Psychology, 22*(3), 309-328. https://doi.org/10.1108/02683940710733115

Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International, 13*(3), 209-223. https://doi.org/10.1108/13620430810870476

Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology, 22*(3), 273-285. https://doi.org/10.1037/ocp0000056

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182. Retrieved 2020-02-08 from http://webcom.upmf-grenoble.fr/LIP/Perso/DMuller/GSERM/Articles/Journal%20of%20Personality%20and%20Social%20Psychology%201986%20Baron.pdf

Basadur, M. (2004). Leading others to think innovatively together: Creative leadership. *The Leadership Quarterly, 15*(1), 103-121. https://doi.org/10.1016/j.leaqua.2003.12.007

Beattie, R. S., Kim, S., Hagen, M. S., Egan, T. M., Ellinger, A. D., & Hamlin, R. G. (2014). Managerial coaching: A review of the empirical literature and development of a model to guide future practice. *Advances in Developing Human Resources, 16*(2), 184-201. https://doi.org/10.1177/1523422313520476

Blackman, A., Moscardo, G., & Gray, D. E. (2016). Challenges for the theory and practice of business coaching: A systematic review of empirical evidence. *Human Resource Development Review, 15*(4), 459-486. https://doi.org/10.117/ 153448431667 3177

Bock, T. (2020). *What are Dummy Variables?* Retrieved 2020-04-10 from https://www. displayr.com/what-are-dummy-variables/

Bond, C., & Seneque, M. (2012). Conceptualizing coaching as an approach to management and organizational development. *Journal of Management Development, 32*(1), 57-72. https://doi.org/10.1108/02621711311287026

Bos-Nehles, A., Renkema, M., & Janssen, M. (2017). HRM and innovative work behaviour: A systematic literature review. *Personnel review, 46*(7), 1228-1253. https://doi.org /10.1108/PR-09-2016-0257

Bozer, G., & Jones, R. J. (2018). Understanding the factors that determine workplace coaching effectiveness: a systematic literature review. *European Journal of Work and Organizational Psychology, 27*(3), 342-361. https://doi.org/10.1080/ 13594 32X.2018.1446946

Bryman, A. & Cramer, D. (2011). *Quantitative data analysis with IBM SPSS 17, 18 and 19: A guide for social scientists.* Hove, New York: Routledge.

Chen, Y. S., & Huang, S. Y. (2016). A conservation of resources view of personal engagement in the development of innovative behavior and work-family conflict. *Journal of Organizational Change Management, 29*(6), 1030-1040. https://doi.org/10.1108/JOCM-11-2015-0213

Chowhan, J. (2016). Unpacking the black box: understanding the relationship between strategy, HRM practices, innovation and organizational performance. *Human Resource Management Journal, 26*(2), 112-133. https://doi.org/10.1111/1748-8583.12097

Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology, 64*(1), 89-136. https://doi.org/10.1111/j.1744-6570.2010.01203.x

Chughtai, A. A., & Buckley, F. (2011). Work engagement: Antecedents, the mediating role of learning goal orientation and job performance. *Career Development International, 16*(7), 684-705. https://doi.org/10.1108/13620431111187290

Dahling, J. J., Taylor, S. R., Chau, S. L., & Dwight, S. A. (2016). Does coaching matter? A multilevel model linking managerial coaching skill and frequency to sales goal attainment. *Personnel Psychology, 69*(4), 863-894. https://doi.org/10.1111/peps.12123

De Jong, J. P., & Den Hartog, D. N. (2007). How leaders influence employees' innovative behaviour. *European Journal of innovation management, 10*(1), 41-64. https://doi.org/10.1108/14601060710720546

De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behaviour. *Creativity and Innovation Management, 19*(1), 23-36. https://doi.org/10.1111/j.1467-8691.2010.00547.x

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499-512. https://doi.org/10.1037/0021-9010.86.3.499

Denti, L., & Hemlin, S. (2012). Leadership and innovation in organizations: A systematic review of factors that mediate or moderate the relationship. *International Journal of Innovation Management, 16*(03), 1240007, 1-20. https://doi.org/10.1142/S1363919612400075

De Spiegelaere, S., Van Gyes, G., De Witte, H., & Van Hootegem, G. (2015). Job design, work engagement and innovative work behavior: A multi-level study on Karasek's learning hypothesis. *Management Revue*, 123-137. https://doi.org/10.1688/mrev-2015-02-DeSpiegelaere

Ellinger, A. D. (1999). Antecedents and consequences of coaching behavior. *Performance Improvement Quarterly, 12*(4), 45-70. https://doi.org/10.1111/j.1937-8327.1999.tb00148.x

Ellinger, A. D., & Bostrom, R. P. (1999). Managerial coaching behaviors in learning organizations. *Journal of Management Development, 18*(9), 752-771. https://doi.org/10.1108/02621719910300810

Ellinger, A. D., Ellinger, A. E., & Keller, S. B. (2003). Supervisory coaching behavior, employee satisfaction, and warehouse employee performance: A dyadic perspective in the distribution industry. *Human Resource Development Quarterly, 14*(4), 435-458. https://doi.org/10.1002/hrdq.1078

Ellinger, A. D., Hamlin, R. G., & Beattie, R. S. (2008). Behavioural indicators of ineffective managerial coaching: A cross-national study. *Journal of European Industrial Training, 32*(4), 240-257. https://doi.org/10.1108/03090590810871360

Ellinger, A. D., Ellinger, A. E., Bachrach, D. G., Wang, Y. L., & Elmadağ Baş, A. B. (2011). Organizational investments in social capital, managerial coaching, and employee work-related performance. *Management Learning, 42*(1), 67-85. https://doi.org/10.1177/1350507610384329

Farndale, E., Beijer, S. E., Van Veldhoven, M. J. P. M., Kelliher, C., & Hope-Hailey, V. (2014). Work and organisation engagement: aligning research and practice. *Journal of Organizational Effectiveness: People and Performance, 1*(2), 157-176. https://doi.org/10.1108/JOEPP-03-2014-0015

Field, A. (2001). *Discovering statistics using SPSS for Windows: Advanced techniques for the beginner.* London: SAGE.

Finstad, K. (2010). Response interpolation and scale sensitivity: Evidence against 5-point scales. *Journal of Usability Studies, 5*(3), 104-110. Retrieved 2019-11-16 from https://www.researchgate.net/publication/265929744_Response_Interpolation_and_Scale_Sensitivity_Evidence_Against_5-Point_Scales

Fisher, G. G., Matthews, R. A., & Gibbons, A. M. (2016). Developing and investigating the use of single-item measures in organizational research. *Journal of Occupational Health Psychology*, 1-21. http://dx.doi.org/10.1037/a0039139

Grant, A. M., Passmore, J., Cavanagh, M. J., & Parker, H. M. (2010). The state of play in coaching today: a comprehensive review of the field. *Annual Review of Industrial & Organizational Psychology*. Chichester: Wiley. Retrieved 2020-04-11 from http://www.jonathanpassmore.com/resources/The%20State%20of%20Play%20in%20Coaching%20Today-%202010%20PDF.pdf

Gravetter, F. J., & Forzano, L. B. (2012). *Research Methods for the Behavioral Sciences* (4th ed, International ed.). Belmont, CA: Wadsworth Cengage Learning.

Gruman, J. A., & Saks, A. M. (2011). Performance management and employee engagement. *Human Resource Management Review, 21*(2), 123-136. https://doi.org/10.1016/j.hrmr.2010.09.004

Hagen, M. S. (2012). Managerial coaching: A review of the literature. *Performance Improvement Quarterly, 24*(4), 17-39. https://doi.org/10.1002/piq.20123

Hakanen, J. J., Perhoniemi, R., & Toppinen-Tanner, S. (2008). Positive gain spirals at work: From job resources to work engagement, personal initiative and work-unit innovativeness. *Journal of Vocational Behavior, 73*(1), 78-91. https://doi.org/10.1016/j.jvb.2008.01.003

Hamlin, R. G., Ellinger, A. D., & Beattie, R. S. (2006). Coaching at the heart of managerial effectiveness: A cross-cultural study of managerial behaviours. *Human Resource Development International, 9(*3), 305-331. https://doi.org/10.1080/13678860600893524

Hamlin, R. G., Ellinger, A. D., & Beattie, R. S. (2008). The emergent 'coaching industry': a wake-up call for HRD professionals. *Human Resource Development International, 11*(3), 287-305. https://doi.org/10.1080/13678860802102534

Hart, V., Blattner, J., & Leipsic, S. (2001). Coaching versus therapy: A perspective. *Consulting Psychology Journal: Practice and Research, 53*(4), 229-237. https://doi.org/ 10.1037//1061-4087.53.4.229

Huang, J. T., & Hsieh, H. H. (2015). Supervisors as good coaches: Influences of coaching on employees' in-role behaviors and proactive career behaviors. *The International Journal of Human Resource Management, 26*(1), 42-58. https://doi.org/10.1080/09585192.2014.940993

Hughes, D. J., Lee, A., Tian, A. W., Newman, A., & Legood, A. (2018). Leadership, creativity, and innovation: A critical review and practical recommendations. *The Leadership Quarterly, 29*(5), 549-569.

Huhtala, H., & Parzefall, M. R. (2007). A review of employee well‐being and innovativeness: An opportunity for a mutual benefit. *Creativity and innovation management, 16*(3), 299-306. https://doi.org/10.1111/j.1467-8691.2007.00442.x

IMB (2020) *IBM SPSS Statistics*. Retrieved 2020-01-04 from https://www.ibm.com/products/spss-statistics

IBM (2019) *IBM SPSS Missing Values*. Retrieved 2020-01-20 from https://www.ibm.com/support/pages/node/874712

Jokivuori, P. & Hietala, R. (2007). *Määrällisiä tarinoita: Monimuuttujamenetelmien käyttö ja tulkinta*. Porvoo: WSOY.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*(4), 692-724. Retrieved 2020-04-11 from https://www.jstor.org/stable/256287

Kim, S., & Kuo, M. H. (2015). Examining the relationships among coaching, trustworthy ness, and role behaviors: A social exchange perspective. *The Journal of Applied Behavioral Science, 51*(2), 152-176. https://doi.org/10.1177/0021886315574884

Kwon, K., & Kim, T. (2020). An integrative literature review of employee engagement and innovative behavior: Revisiting the JD-R model. *Human Resource Management Review, 30*(2), 10070, 1-18. https://doi.org/10.1016/j.hrmr.2019.100704

Ladyshewsky, R., & Taplin, R. (2017). Employee perceptions of managerial coaching and work engagement using the Measurement Model of Coaching Skills and the Utrecht Work Engagement Scale. *International Journal of Evidence Based Coaching and Mentoring, 15*(2), 25-42. https://doi.org/10.24384/000249

Lin, C., & Sanders, K. (2017). HRM and innovation: a multi‐level organisational learning perspective. *Human Resource Management Journal, 27*(2), 300-317. https://doi.org/10.1111/1748-8583.12127

Metsämuuronen, J. (2005). *Tutkimuksen tekemisen perusteet ihmistieteissä* (3. laitos.). Helsinki: International Methelp.

McLean, G. N., Yang, B., Kuo, M. H. C., Tolbert, A. S., & Larkin, C. (2005). Development and initial validation of an instrument measuring managerial coaching skill. *Human Resource Development Quarterly, 16*(2), 157-178. Retrieved 2020-03-11 from https://onlinelibrary.wiley.com/doi/pdf/10.1002/hrdq.1131?casa_token=c8EHweOu7fgAAAAA:hEQ6wwNSZeDO2aSArUXNXhcU8jUSJmvuwfOynm1shb72V-Og_7OgGtpQzfXrctY0xz-EneZNFIa

Milner, J., & McCarthy, G. (2016). Managerial coaching: A practical way to apply leadership theory? In P. A. Davis (Ed.), *The Psychology of Effective Coaching and Management* (p. 353-365). New York: Nova Science Publishers. Retrieved 2019-12-21 from https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1825&context=buspapers

Pajuoja, M., & Viitala, R. (2019) *Managerial coaching and innovative work behaviour: Different needs for different dimensions.* Conference paper presented in The 14. International Conference on Innovation, Sustainability and High-Technology Pro duction (ICISHTP), in February 2020, Bankok, Thailand. Retrieved 2020-02-24 from Riitta Viitala.

Pallant, J. (2016). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (6th edition.). Maidenhead: Open University Press.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903. https://doi.org/10.1037/0021-9010.88.5.879

Rasheed, M. A., Shahzad, K., Conroy, C., Nadeem, S., & Siddique, M. U. (2017). Exploring the role of employee voice between high-performance work system and organizational innovation in small and medium enterprises. *Journal of Small Business and Enterprise Development, 24*(4), 670-688. https://doi.org/10.1108/JSBED-11-2016-0185

Schaufeli, W. B. (2015). Engaging leadership in the job demands-resources model. *Career Development International, 20*(5), 446-463. https://doi.org/10.1108/CDI-02-2015-0025

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi‐sample study. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior, 25*(3), 25, 293-315. https://doi.org/10.1002/job.248

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*(4), 701-716. https://doi.org/10.1177/0013164405282471

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness studies, 3*(1), 71-92. Retrieved 2019-12-04 from https://link.springer.com/content/pdf/10.1023%252FA%253A1015630930326.pdf

Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2019). An ultra-short measure for work engagement: The UWES-3 validation across five countries. *European Journal of Psychological Assessment, 35*(4), 577-591. https://doi.org/10.1027/1015-5759/a000430

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of management journal, 37*(3), 580-607. https://doi.org/10.5465/256701

Seeck, H., & Diehl, M. R. (2017). A literature review on HRM and innovation–taking stock and future directions. *The International Journal of Human Resource Management, 28*(6), 913-944. https://doi.org/10.1080/09585192.2016.1143862

Statistics Finland (2019). *SME.* Retrieved 2019-06-04 from https://www.stat.fi/meta/kas/pk_yritys_en.html

Sue-Chan, C., Chen, Z., & Lam, W. (2011). LMX, coaching attributions, and employee performance. *Group & Organization Management, 36*(4), 466-498. https://doi.org/10.1177/1059601111408896

Sutela, H., & Pärnänen, A. (2019) *Working life in the digital age: enthusiasm, social support – and coping problems*. Statistics Finland, 12.12.2019. Retrieved 2019-12-21 from https://www.tilastokeskus.fi/uutinen/working-life-in-the-digital-age-enthusiasm-social-support-and-coping-problems

Sutela, H., Pärnänen A., & Keyriläinen, M. (2019). *Digiajan työelämä - työolotutkimusten tuloksia 1977–2018*. Tilastokeskus, 1-436. Retrieved 2019-12-21 from https://www.tilastokeskus.fi/uutinen/working-life-in-the-digital-age-enthusiasm-social-support-and-coping-problems

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2019). *Using multivariate statistics* (Seventh edition.). Boston: Pearson.

Tanskanen, J., Mäkelä, L., & Viitala, R. (2019). Linking managerial coaching and leader–member exchange on work engagement and performance. *Journal of Happiness Studies, 20*(4), 1217-1240. http://doi.org/10.1007/s10902-018-9996-9

Tims, M., Bakker, A. B., & Xanthopoulou, D. (2011). Do transformational leaders enhance their followers' daily work engagement? *The Leadership Quarterly, 22*(1), 121-131. https://doi.org/10.1016/j.leaqua.2010.12.011

Tuckey, M. R., Bakker, A. B., & Dollard, M. F. (2012). Empowering leaders optimize working conditions for engagement: A multilevel study. *Journal of Occupational Health Psychology, 17*(1), 15-27. https://doi.org/10.1037/a0025942

Vehkalahti, K. (2014). *Kyselytutkimuksen mittarit ja menetelmät.* Helsinki: Finn Lectura.

Viitala, R. (2004). Towards knowledge leadership. *Leadership & Organization Develop ment Journal, 25*(6), 528-544. https://doi.org/10.1108/01437730410556761

Viitala, R., Kultalahti, S., & Kantola, J. (2016). *Henkilöstöjohtamisen tila, tarpeet ja tulos vaikutukset pk-yrityksissä.* Työsuojelurahaston hankkeen nro 114136 loppuraportti. Vaasan yliopiston julkaisuja: Selvityksiä ja raportteja, 211. Retrieved 2019-04-02 from https://www.univaasa.fi/materiaali/pdf/isbn_978-952-476-723-1.pdf

Wang, G., Oh, I. S., Courtright, S. H., & Colbert, A. E. (2011). Transformational leadership and performance across criteria and levels: A meta-analytic review of 25 years of research. *Group & Organization Management, 36*(2), 223-270. https://doi.org/10.1177/1059601111401017

Yrittäjät (2019). *Small and medium-sized enterprises*. Retrieved 2019-6-4 from https://www.yrittajat.fi/about-federation-finnish-enterprises/small-and-medium-sized-enterprises-526261

Zhu, W., Avolio, B. J., & Walumbwa, F. O. (2009). Moderating role of follower characteristics with transformational leadership and follower work engagement. *Group & Organization Management, 34*(5), 590-619. https://doi.org/10.1177/1059601108331242

Appendices

Appendix 1. Research questionnaire

Vaasan yliopisto
UNIVERSITY OF VAASA

Workplace survey

Your workplace is participating in a research project which is conducted by the University of Vaasa and Lappeenranta University of Technology and deals with human resource management in small and medium size companies. The results will help companies to improve their human resource management.

Completing the survey takes ca. 10 minutes.

Information you provide is fully confidential. The survey data is stored directly to the University of Vaasa database and accessible only by the researchers. The results will be reported in averages for each company. If you would like to have more information about the research, please contact professor Riitta Viitala (riitta.viitala@uva.fi).

There will be a prize drawing of a Jopo bicycle (value ca. 500€) among all respondents. If you wish to participate, please fill in your contact information at the end of the questionnaire. Your name and responses cannot be combined.

1. Name of your employer (If you work as agency-hired labor, the name of the company where your conduct your work)

_____

2. Name of your nearest manager/supervisor

_____

3. Your work title

_____

4. I am

◯ Female ◯ Male

5. My year of birth

◯ - 1950
◯ 1951-1960
◯ 1961-1970
◯ 1971-1980
◯ 1981-1990
◯ 1991-2000
◯ 2001-

6. I have worked for my current employer for

◯ less than 1 year
◯ 1-3 years
◯ 4 - 10 years
◯ 11- 20 years
◯ 21 - 30 years
◯ over 30 years

7. My work contract is ◯ permanent ◯ temporary ◯ (agency) hired worker

8. My job position

◯ Blue-collar worker
◯ White-collar (lower level)
◯ White-collar (upper level)
◯
Top management

9. I work in a managerial position

◯ Yes ◯ No

10. If you work as a manager, how many subordinates do you have?

_____ subordinates

The following questions are related to your workplace.

12. Information flow in our organization is sufficient

1 = I fully disagree … 7 = I fully agree

	1	2	3	4	5	6	7
within my work unit	○	○	○	○	○	○	○
between different units	○	○	○	○	○	○	○
between the top management and personnel	○	○	○	○	○	○	○

11. Knowledge about targets

1 = I fully disagree … 7 = I fully agree

	1	2	3	4	5	6	7
I am very familiar with my work targets	○	○	○	○	○	○	○
I know what the targets of my unit are	○	○	○	○	○	○	○

13. To what extent do the following characteristics match with the atmosphere at your workplace?

(1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
tense and competitive, everyone looks after his/her own best interest	○	○	○	○	○	○	○
encouraging and supportive of new ideas	○	○	○	○	○	○	○
prejudiced and clinging to old ways	○	○	○	○	○	○	○
relaxed and friendly	○	○	○	○	○	○	○
strained and quarrelsome	○	○	○	○	○	○	○

14. Possibilities to influence (1 = Not at all.... 7 = Very much)

	1	2	3	4	5	6	7
How much can you influence the variation of your work tasks?	○	○	○	○	○	○	○
How much can you influence the variation of your work time or the scheduling of your work?	○	○	○	○	○	○	○
How much can you influence the pace of your work?	○	○	○	○	○	○	○

15. Work excitement

	never	few times per year	once a month	couple times a month	once a week	couple times a week	daily
At my work, I feel bursting with energy	○	○	○	○	○	○	○
At my job, I feel strong and vigorous	○	○	○	○	○	○	○
I am enthusiastic about my job	○	○	○	○	○	○	○
My job inspires me	○	○	○	○	○	○	○
When I get up in the morning, I feel like going to work	○	○	○	○	○	○	○
I feel happy when I am working intensely	○	○	○	○	○	○	○
I am proud of the work that I do	○	○	○	○	○	○	○
I am immersed in my work	○	○	○	○	○	○	○
I get carried away when I am working	○	○	○	○	○	○	○

16. Functionality and flexibility of the workplace (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
There are enough employees compared to the work tasks	○	○	○	○	○	○	○
(At the workplace ,) the work is well organized	○	○	○	○	○	○	○
It is common that employees' ideas and development initiatives are implemented at the workplace	○	○	○	○	○	○	○
My employer enables flexible working times when necessary	○	○	○	○	○	○	○
My employer enables flexibility with working location when necessary (e.g., distance work)	○	○	○	○	○	○	○
My employer enables flexible ways of completing the work when necessary	○	○	○	○	○	○	○

17. Employer image (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
My employer has a good reputation	○	○	○	○	○	○	○

Think of the following questions from the perspective of your unit. The unit may be your department, team, or other group consisting of the subordinates of your nearest supervisor.

18. Know-how (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
The competence level at our unit is at high level	○	○	○	○	○	○	○
There is a clear common agreement in our unit about the direction of development of competence	○	○	○	○	○	○	○

19. Performance (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
Operation of our unit is high quality	○	○	○	○	○	○	○
Our unit always reaches its quantitative goals	○	○	○	○	○	○	○
Our unit has performed much better than average in our organization	○	○	○	○	○	○	○

In the following questions, think about your supervisor and your relationship with him/her.

20. My nearest manager/supervisor has ○ 1-5 ○ 6-14 ○ 15-30 ○ over 30 subordinates

21. Nearest manager's/Supervisor's activity (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
My manager facilitates mutual cooperation in a group	○	○	○	○	○	○	○
My manager encourages the work community to deal with problems and mistakes constructively	○	○	○	○	○	○	○
My manager seeks to improve the operation of our unit	○	○	○	○	○	○	○
My manager promotes and supports innovative ideas, trial, and creative processes	○	○	○	○	○	○	○
My manager understands the problems and needs of my work	○	○	○	○	○	○	○
I receive encouraging feedback for my work	○	○	○	○	○	○	○
My manager discusses our performance with us sufficiently	○	○	○	○	○	○	○
My manager ensures that everyone knows their task	○	○	○	○	○	○	○
I know what my manager thinks about my work performance	○	○	○	○	○	○	○

22. Relationship with the nearest manager/supervisor (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
We get along well with my supervisor	○	○	○	○	○	○	○
My supervisor helps me in solving problems	○	○	○	○	○	○	○
Our cooperation advances both of us in performing at work	○	○	○	○	○	○	○
We can openly handle even challenging issues with each other	○	○	○	○	○	○	○
We trust each other	○	○	○	○	○	○	○
We respect each other's work performance/ knowledge at work	○	○	○	○	○	○	○
We can honestly listen to each other's opinions	○	○	○	○	○	○	○
Usually we are willing to understand each other	○	○	○	○	○	○	○
We respect each other's opinions, even when we don't agree on the matters	○	○	○	○	○	○	○
We are able to support each other in developing in our work	○	○	○	○	○	○	○
If needed, we are ready to support each other's viewpoints to work issues	○	○	○	○	○	○	○
It is easy for us to arise a discussion concerning different work related issues	○	○	○	○	○	○	○

Think about the following considering yourself.

23. Know-how (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
My competence level is sufficient for accomplishing my current tasks	○	○	○	○	○	○	○
My know-how would be enough for clearly more challenging tasks	○	○	○	○	○	○	○
I know very well to which direction my know-how should be developed in the future	○	○	○	○	○	○	○
I have good opportunities to develop the know-how needed in my work	○	○	○	○	○	○	○
I receive enough support for developing the know-how I need at work	○	○	○	○	○	○	○
I am very active in developing the know-how I need at work	○	○	○	○	○	○	○

24. Performance (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4	5	6	7
I always reach the goals at my job	○	○	○	○	○	○	○
I am very pleased for the quality of my work	○	○	○	○	○	○	○
I perform better than average in my unit	○	○	○	○	○	○	○

25. Coping with work (1 = I fully disagree … 7 = I fully agree)

	1	2	3	4
I get easily overwhelmed by time pressures at work	○	○	○	○
As soon as I get up in the morning I start thinking about work problems	○	○	○	○
When I get home, I can easily relax and 'switch off' wor	○	○	○	○
People close to me say I sacrifice too much for my job	○	○	○	○
Work rarely lets me go, it is still on my mind when I go to bed	○	○	○	○
If I postpone something that I was supposed to do today I'll have trouble sleeping at night	○	○	○	○

26. Haste (1 = hardly ever.... 7 = very often)

	1	2	3	4	5	6	7
How often do you have to hurry at your work?	○	○	○	○	○	○	○
How often do you have too little time to complete your work?	○	○	○	○	○	○	○

27. In my current job, I am motivated by the

1 = I fully disagree … 7 = I fully agree

	1	2	3	4	5	6	7
salary	○	○	○	○	○	○	○
Interesting job	○	○	○	○	○	○	○
variability of the work	○	○	○	○	○	○	○
challenges at work	○	○	○	○	○	○	○
opportunity to fulfill myself	○	○	○	○	○	○	○
flexibility of the work	○	○	○	○	○	○	○
location of the workplace	○	○	○	○	○	○	○
easiness of the work	○	○	○	○	○	○	○
possibility to learn and develop	○	○	○	○	○	○	○
good atmosphere at the workplace	○	○	○	○	○	○	○
friendships at the workplace	○	○	○	○	○	○	○
good supervisor	○	○	○	○	○	○	○
fringe benefits offered by the employer	○	○	○	○	○	○	○
possibility for career advancement	○	○	○	○	○	○	○
appreciation I receive at workplace	○	○	○	○	○	○	○
security of employment	○	○	○	○	○	○	○
possibility to combine work and family life in the way I want	○	○	○	○	○	○	○
greater meaning of my work	○	○	○	○	○	○	○
positive feedback I receive from work	○	○	○	○	○	○	○

28. At your workplace, how often do you (1 = never... 7= very often)

	1	2	3	4	5	6	7
...pay attention to that things run smoothly that are not part of your daily work	○	○	○	○	○	○	○
...ponder how things could be done better	○	○	○	○	○	○	○
...look for new work methods, techniques or tools	○	○	○	○	○	○	○
...sketch new solutions to problems	○	○	○	○	○	○	○
...invent new ways of doing things	○	○	○	○	○	○	○
...try to make the key people in the organization enthusiastic about new ideas	○	○	○	○	○	○	○
...try to make people support a new idea	○	○	○	○	○	○	○
...apply new ideas in practice	○	○	○	○	○	○	○
...participate in putting new ideas into practice	○	○	○	○	○	○	○
...participate in implementing new ideas together with others	○	○	○	○	○	○	○
...get involved in developing new work methods and practices	○	○	○	○	○	○	○
...devote your time and resources to develop things	○	○	○	○	○	○	○

29. You may give free and any kind of feedback here. We would be glad to learn of experiences and thoughts about completing this survey.

_____

_____

30. If you wish to participate in the drawing of a Jopo bicycle, please write your name and contact information below. Your name and responses will not be combined.

_____

_____

Thank you for your response!

Appendix 2. Preliminary analysis

Missing data & Little's MCAR test

Frequency Table

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	1377	30.6	31.3	31.3
	Male	3016	67.0	68.7	100.0
	Total	4393	97.6	100.0	
Missing	System	110	2.4		
Total		4503	100.0		

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manager	676	15.0	15.5	15.5
	Subordinate	3674	81.6	84.5	100.0
	Total	4350	96.6	100.0	
Missing	System	153	3.4		
Total		4503	100.0		

Univariate Statistics

	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
UWES1	4450	5.62	1.386	53	1.2	218	0
UWES2	4423	5.63	1.435	80	1.8	222	0
UWES3	4417	5.41	1.549	86	1.9	328	0
MC1	4443	5.00	1.521	60	1.3	137	0
MC2	4441	5.02	1.563	62	1.4	151	0
MC3	4440	5.29	1.551	63	1.4	331	0
MC4	4435	5.04	1.577	68	1.5	140	0
MC5	4439	5.12	1.641	64	1.4	164	0
MC6	4442	4.79	1.779	61	1.4	293	0
MC7	4437	4.65	1.738	66	1.5	275	0
MC8	4440	4.74	1.629	63	1.4	214	0
MC9	4435	4.72	1.730	68	1.5	301	0
IWB1	4446	5.02	1.357	57	1.3	236	0
IWB2	4451	5.48	1.183	52	1.2	266	0
IWB3	4451	5.01	1.308	52	1.2	187	0
IWB4	4452	5.01	1.323	51	1.1	197	0
IWB5	4446	4.86	1.284	57	1.3	199	0
IWB6	4446	4.29	1.550	57	1.3	219	0
IWB7	4449	4.36	1.484	54	1.2	175	0
IWB8	4452	4.74	1.346	51	1.1	309	0
IWB9	4445	4.70	1.460	58	1.3	128	0
IWB10	4444	4.71	1.473	59	1.3	144	0
IWB11	4446	4.36	1.572	57	1.3	233	0
IWB12	4435	4.46	1.549	68	1.5	186	0

a. Number of cases outside the range (Mean – 2*SD, Mean + 2*SD).

EM Estimated Statistics

EM Means[a]

UWES1	UWES2	UWES3	MC1	MC2	MC3	MC4	MC5	MC6	MC7	MC8	MC9	IWB1
5.62	5.64	5.41	5.00	5.03	5.29	5.04	5.11	4.79	4.65	4.74	4.71	5.01

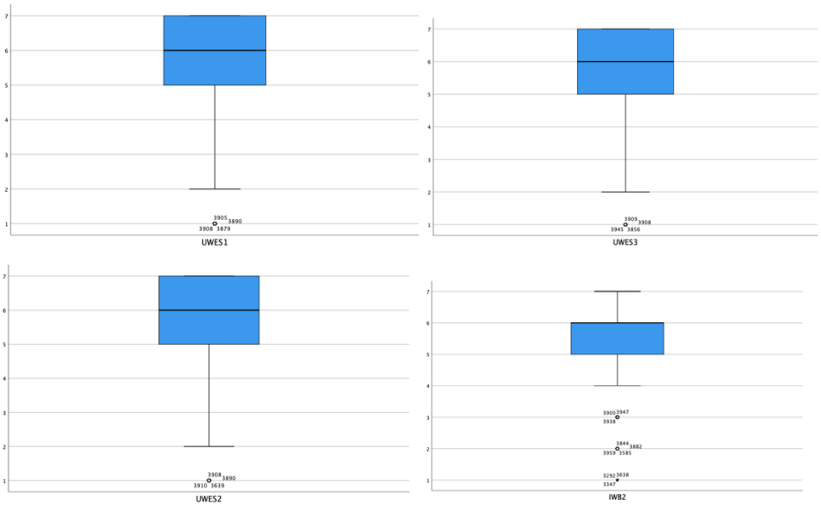
a. Little's MCAR test: Chi-Square = 1649.081, DF = 1444, Sig. = .000

Test of normality, outliers & 5% Trimmed Means

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
UWES1	.299	4004	.000	.819	4004	.000
UWES2	.268	4004	.000	.829	4004	.000
UWES3	.268	4004	.000	.839	4004	.000
MC1	.185	4004	.000	.907	4004	.000
MC2	.198	4004	.000	.901	4004	.000
MC3	.224	4004	.000	.875	4004	.000
MC4	.192	4004	.000	.903	4004	.000
MC5	.216	4004	.000	.886	4004	.000
MC6	.180	4004	.000	.904	4004	.000
MC7	.166	4004	.000	.920	4004	.000
MC8	.174	4004	.000	.919	4004	.000
MC9	.168	4004	.000	.912	4004	.000
IWB1	.193	4004	.000	.919	4004	.000
IWB2	.210	4004	.000	.888	4004	.000
IWB3	.180	4004	.000	.926	4004	.000
IWB4	.183	4004	.000	.925	4004	.000
IWB5	.183	4004	.000	.931	4004	.000
IWB6	.150	4004	.000	.946	4004	.000
IWB7	.166	4004	.000	.943	4004	.000
IWB8	.191	4004	.000	.928	4004	.000
IWB9	.186	4004	.000	.928	4004	.000
IWB10	.193	4004	.000	.923	4004	.000
IWB11	.164	4004	.000	.940	4004	.000
IWB12	.169	4004	.000	.940	4004	.000

a. Lilliefors Significance Correction



			Statistic	Std. Error
UWES1	Mean		5.62	.022
	95% Confidence Interval for Mean	Lower Bound	5.58	
		Upper Bound	5.66	
	5% Trimmed Mean		5.76	
	Median		6.00	
	Variance		1.912	
	Std. Deviation		1.383	
	Minimum		1	
	Maximum		7	
	Range		6	
	Interquartile Range		2	
	Skewness		-1.299	.039
	Kurtosis		1.292	.077

UWES3	Mean		5.41	.024
	95% Confidence Interval for Mean	Lower Bound	5.37	
		Upper Bound	5.46	
	5% Trimmed Mean		5.55	
	Median		6.00	
	Variance		2.390	
	Std. Deviation		1.546	
	Minimum		1	
	Maximum		7	
	Range		6	
	Interquartile Range		2	
	Skewness		-1.168	.039
	Kurtosis		.744	.077

UWES2	Mean		5.64	.023
	95% Confidence Interval for Mean	Lower Bound	5.60	
		Upper Bound	5.69	
	5% Trimmed Mean		5.78	
	Median		6.00	
	Variance		2.034	
	Std. Deviation		1.426	
	Minimum		1	
	Maximum		7	
	Range		6	
	Interquartile Range		2	
	Skewness		-1.189	.039
	Kurtosis		.853	.077

IWB2	Mean		5.48	.019
	95% Confidence Interval for Mean	Lower Bound	5.44	
		Upper Bound	5.51	
	5% Trimmed Mean		5.56	
	Median		6.00	
	Variance		1.425	
	Std. Deviation		1.194	
	Minimum		1	
	Maximum		7	
	Range		6	
	Interquartile Range		1	
	Skewness		-.857	.039
	Kurtosis		.944	.077

Correlation Matrix, KMO & Bartlett's test

Correlation Matrix

		UWES1	UWES2	UWES3	MC1	MC2	MC3	MC4	MC5	MC6	MC7	MC8	MC9	IWB1	IWB2	IWB3	IWB4	IWB5	IWB6	IWB7	IWB8	IWB9	IWB10	IWB11	IWB12
Correlation	UWES1	1.000	.805	.507	.399	.375	.366	.384	.356	.360	.344	.349	.303	.165	.197	.236	.246	.247	.277	.268	.289	.330	.321	.292	.326
	UWES2	.805	1.000	.552	.415	.392	.391	.410	.382	.376	.352	.362	.307	.167	.213	.255	.274	.264	.306	.304	.327	.368	.361	.329	.366
	UWES3	.507	.552	1.000	.288	.272	.274	.295	.251	.252	.246	.260	.241	.130	.178	.184	.215	.210	.232	.249	.243	.271	.241	.245	.282
	MC1	.399	.415	.288	1.000	.840	.765	.768	.726	.705	.712	.729	.570	.043	.071	.125	.139	.146	.178	.193	.192	.255	.270	.242	.207
	MC2	.375	.392	.272	.840	1.000	.767	.773	.741	.721	.727	.733	.558	.032	.065	.111	.120	.125	.147	.161	.159	.218	.236	.215	.178
	MC3	.366	.391	.274	.765	.767	1.000	.806	.691	.662	.679	.700	.531	.052	.096	.121	.138	.130	.165	.176	.195	.260	.276	.246	.218
	MC4	.384	.410	.295	.768	.773	.806	1.000	.695	.679	.675	.684	.545	.060	.103	.155	.178	.178	.207	.222	.234	.306	.320	.301	.261
	MC5	.356	.382	.251	.726	.741	.691	.695	1.000	.695	.691	.719	.579	.014	.050	.092	.108	.105	.115	.124	.142	.186	.196	.178	.152
	MC6	.360	.376	.252	.705	.721	.662	.679	.695	1.000	.797	.704	.691	.050	.079	.123	.143	.142	.176	.188	.189	.242	.248	.241	.203
	MC7	.344	.352	.246	.712	.727	.679	.675	.691	.797	1.000	.772	.671	.019	.046	.104	.125	.121	.157	.177	.165	.216	.233	.216	.179
	MC8	.349	.362	.260	.729	.733	.700	.684	.719	.704	.772	1.000	.618	-.012	.017	.059	.080	.089	.107	.125	.110	.181	.197	.180	.145
	MC9	.303	.307	.241	.570	.558	.531	.545	.579	.691	.671	.618	1.000	.049	.085	.107	.133	.145	.161	.179	.170	.204	.211	.215	.179
	IWB1	.165	.167	.130	.043	.032	.052	.060	.014	.050	.019	-.012	.049	1.000	.582	.460	.456	.423	.395	.394	.388	.360	.336	.323	.368
	IWB2	.197	.213	.178	.071	.065	.096	.103	.050	.079	.046	.017	.085	.582	1.000	.674	.646	.597	.507	.515	.506	.466	.436	.422	.485
	IWB3	.236	.255	.184	.125	.111	.121	.155	.092	.123	.104	.059	.107	.460	.674	1.000	.799	.746	.575	.584	.634	.550	.491	.504	.578
	IWB4	.246	.274	.215	.139	.120	.138	.178	.108	.143	.125	.080	.133	.456	.646	.799	1.000	.812	.614	.629	.674	.598	.534	.543	.622
	IWB5	.247	.264	.210	.146	.125	.130	.178	.105	.142	.121	.089	.145	.423	.597	.746	.812	1.000	.607	.616	.693	.585	.518	.540	.596
	IWB6	.277	.306	.232	.178	.147	.165	.207	.115	.176	.157	.107	.161	.395	.507	.575	.614	.607	1.000	.849	.620	.642	.608	.637	.681
	IWB7	.268	.304	.249	.193	.161	.176	.222	.124	.188	.177	.125	.179	.394	.515	.584	.629	.616	.849	1.000	.668	.681	.655	.671	.698
	IWB8	.289	.327	.243	.192	.159	.195	.234	.142	.189	.165	.110	.170	.388	.506	.634	.674	.693	.620	.668	1.000	.733	.659	.621	.659
	IWB9	.330	.368	.271	.255	.218	.260	.306	.186	.242	.216	.181	.204	.360	.466	.550	.598	.585	.642	.681	.733	1.000	.848	.763	.732
	IWB10	.321	.361	.241	.270	.236	.276	.320	.196	.248	.233	.197	.211	.336	.436	.491	.534	.518	.608	.655	.659	.848	1.000	.770	.699
	IWB11	.292	.329	.245	.242	.215	.246	.301	.178	.241	.216	.180	.215	.323	.422	.504	.543	.540	.637	.671	.621	.763	.770	1.000	.789
	IWB12	.326	.366	.282	.207	.178	.218	.261	.152	.203	.179	.145	.179	.368	.485	.578	.622	.596	.681	.698	.659	.732	.699	.789	1.000
Sig. (1-tailed)	UWES1		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	UWES2	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	UWES3	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC1	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC2	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.022	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC3	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC4	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC5	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.196	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC6	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC7	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.118	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC8	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.232	.147	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	MC9	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	IWB1	.000	.000	.000	.003	.022	.000	.000	.196	.001	.118	.232	.001		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	IWB2	.000	.000	.000	.000	.000	.000	.000	.001	.000	.002	.147	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	IWB3	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	IWB4	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	IWB5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	IWB6	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	IWB7	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	IWB8	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	IWB9	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	IWB10	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	IWB11	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	IWB12	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.940
Bartlett's Test of Sphericity	Approx. Chi-Square	84853.985
	df	276
	Sig.	.000

Principal Component Analysis 1

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.581	39.923	39.923	9.581	39.923	39.923
2	5.456	22.734	62.657			
3	1.480	6.168	68.825			
4	1.191	4.964	73.788			
5	.711	2.964	76.752			
6	.666	2.774	79.526			
7	.566	2.357	81.883			
8	.540	2.250	84.133			
9	.399	1.662	85.795			
10	.353	1.473	87.267			
11	.340	1.416	88.683			
12	.311	1.297	89.981			
13	.285	1.189	91.170			
14	.276	1.149	92.319			
15	.255	1.064	93.383			
16	.234	.974	94.358			
17	.196	.817	95.175			
18	.190	.791	95.966			
19	.185	.773	96.739			
20	.179	.748	97.487			
21	.165	.687	98.174			
22	.155	.647	98.821			
23	.146	.607	99.428			
24	.137	.572	100.000			

Extraction Method: Principal Component Analysis.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.940
Bartlett's Test of Sphericity	Approx. Chi-Square	84853.985
	df	276
	Sig.	.000

Principal Component Analysis 2

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.581	39.923	39.923	9.581	39.923	39.923	7.599
2	5.456	22.734	62.657	5.456	22.734	62.657	7.502
3	1.480	6.168	68.825	1.480	6.168	68.825	4.592
4	1.191	4.964	73.788	1.191	4.964	73.788	5.872
5	.711	2.964	76.752				
6	.666	2.774	79.526				
7	.566	2.357	81.883				
8	.540	2.250	84.133				
9	.399	1.662	85.795				
10	.353	1.473	87.267				
11	.340	1.416	88.683				
12	.311	1.297	89.981				
13	.285	1.189	91.170				
14	.276	1.149	92.319				
15	.255	1.064	93.383				
16	.234	.974	94.358				
17	.196	.817	95.175				
18	.190	.791	95.966				
19	.185	.773	96.739				
20	.179	.748	97.487				
21	.165	.687	98.174				
22	.155	.647	98.821				
23	.146	.607	99.428				
24	.137	.572	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
UWES1	5.62	1.383	4004
UWES2	5.64	1.426	4004
UWES3	5.41	1.546	4004
MC1	5.00	1.505	4004
MC2	5.03	1.555	4004
MC3	5.30	1.547	4004
MC4	5.05	1.572	4004
MC5	5.12	1.635	4004
MC6	4.80	1.785	4004
MC7	4.65	1.741	4004
MC8	4.75	1.619	4004
MC9	4.72	1.732	4004
IWB1	5.01	1.358	4004
IWB2	5.48	1.194	4004
IWB3	5.01	1.315	4004
IWB4	5.01	1.329	4004
IWB5	4.86	1.290	4004
IWB6	4.28	1.552	4004
IWB7	4.35	1.490	4004
IWB8	4.74	1.355	4004
IWB9	4.70	1.460	4004
IWB10	4.71	1.473	4004
IWB11	4.35	1.572	4004
IWB12	4.45	1.555	4004

Communalities

	Initial	Extraction
UWES1	1.000	.806
UWES2	1.000	.837
UWES3	1.000	.611
MC1	1.000	.788
MC2	1.000	.799
MC3	1.000	.736
MC4	1.000	.748
MC5	1.000	.727
MC6	1.000	.748
MC7	1.000	.768
MC8	1.000	.755
MC9	1.000	.553
IWB1	1.000	.521
IWB2	1.000	.724
IWB3	1.000	.773
IWB4	1.000	.790
IWB5	1.000	.737
IWB6	1.000	.685
IWB7	1.000	.735
IWB8	1.000	.695
IWB9	1.000	.818
IWB10	1.000	.791
IWB11	1.000	.796
IWB12	1.000	.766

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component			
	1	2	3	4
IWB9	.751	-.387	-.012	-.323
IWB10	.729	-.338	-.019	-.380
IWB12	.723	-.425	.015	-.250
IWB11	.717	-.361	-.039	-.387
IWB7	.703	-.457	-.065	-.165
IWB8	.699	-.447	-.048	-.066
IWB6	.678	-.454	-.049	-.132
MC4	.673	.535	-.089	-.028
IWB4	.662	-.510	-.119	.278
MC1	.652	.596	-.082	.017
IWB5	.650	-.492	-.116	.243
MC3	.635	.569	-.097	.005
MC2	.630	.624	-.107	.043
MC6	.630	.575	-.139	.032
IWB3	.622	-.503	-.124	.342
MC7	.613	.606	-.156	.020
MC9	.547	.483	-.133	.047
IWB2	.530	-.483	-.096	.448
MC8	.577	.640	-.107	.023
MC5	.583	.611	-.095	.068
UWES1	.567	.147	.674	.091
UWES2	.604	.137	.671	.061
UWES3	.453	.083	.626	.083
IWB1	.402	-.400	-.054	.444

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Rotated Component Matrix[a]

	Component			
	1	2	3	4
MC2	.880	.073	.029	.138
MC7	.867	.090	.021	.082
MC1	.865	.115	.025	.162
MC8	.859	.045	-.016	.120
MC6	.851	.106	.048	.102
MC5	.840	.034	.032	.137
MC3	.837	.125	.024	.140
MC4	.831	.185	.028	.152
MC9	.731	.089	.066	.078
IWB11	.151	.858	.164	.102
IWB9	.149	.849	.234	.143
IWB10	.171	.849	.160	.127
IWB12	.101	.802	.291	.166
IWB7	.089	.759	.377	.092
IWB6	.074	.720	.389	.103
IWB8	.095	.689	.444	.118
IWB2	.009	.286	.798	.080
IWB3	.050	.420	.768	.068
IWB4	.064	.487	.737	.076
IWB1	-.018	.166	.697	.088
IWB5	.068	.493	.696	.072
UWES2	.300	.218	.107	.830
UWES1	.286	.170	.110	.827
UWES3	.181	.140	.096	.741

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Component Matrix[a]

	Component			
	1	2	3	4
UWES1	.567		.674	
UWES2	.604		.671	
UWES3	.453		.626	
MC1	.652	.596		
MC2	.630	.624		
MC3	.635	.569		
MC4	.673	.535		
MC5	.583	.611		
MC6	.630	.575		
MC7	.613	.606		
MC8	.577	.640		
MC9	.547	.483		
IWB1	.402	-.400		.444
IWB2	.530	-.483		.448
IWB3	.622	-.503		.342
IWB4	.662	-.510		
IWB5	.650	-.492		
IWB6	.678	-.454		
IWB7	.703	-.457		
IWB8	.699	-.447		
IWB9	.751	-.387		-.323
IWB10	.729	-.338		-.380
IWB11	.717	-.361		-.387
IWB12	.723	-.425		

Extraction Method: Principal Component Analysis.

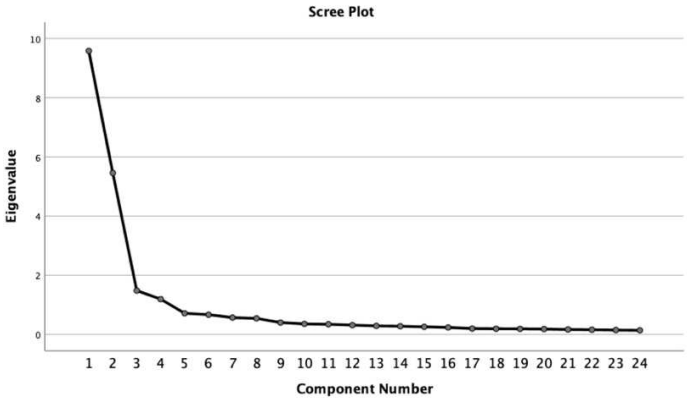
a. 4 components extracted.

Rotated Component Matrix[a]

	Component			
	1	2	3	4
UWES1				.827
UWES2	.300			.830
UWES3				.741
MC1	.865			
MC2	.880			
MC3	.837			
MC4	.831			
MC5	.840			
MC6	.851			
MC7	.867			
MC8	.859			
MC9	.731			
IWB1			.697	
IWB2			.798	
IWB3		.420	.768	
IWB4		.487	.737	
IWB5		.493	.696	
IWB6		.720	.389	
IWB7		.759	.377	
IWB8		.689	.444	
IWB9		.849		
IWB10		.849		
IWB11		.858		
IWB12		.802		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.



Component Transformation Matrix

Component	1	2	3	4
1	.605	.617	.408	.295
2	.751	-.476	-.451	.077
3	-.257	-.077	-.185	.945
4	.058	-.622	.772	.116

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Principal Component Analysis 3

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.581	39.923	39.923	9.581	39.923	39.923	7.545	31.439	31.439
2	5.456	22.734	62.657	5.456	22.734	62.657	6.738	28.073	59.513
3	1.480	6.168	68.825	1.480	6.168	68.825	2.235	9.312	68.825
4	1.191	4.964	73.788						
5	.711	2.964	76.752						
6	.666	2.774	79.526						
7	.566	2.357	81.883						
8	.540	2.250	84.133						
9	.399	1.662	85.795						
10	.353	1.473	87.267						
11	.340	1.416	88.683						
12	.311	1.297	89.981						
13	.285	1.189	91.170						
14	.276	1.149	92.319						
15	.255	1.064	93.383						
16	.234	.974	94.358						
17	.196	.817	95.175						
18	.190	.791	95.966						
19	.185	.773	96.739						
20	.179	.748	97.487						
21	.165	.687	98.174						
22	.155	.647	98.821						
23	.146	.607	99.428						
24	.137	.572	100.000						

Extraction Method: Principal Component Analysis.

Communalities

	Initial	Extraction
UWES1	1.000	.798
UWES2	1.000	.834
UWES3	1.000	.604
MC1	1.000	.788
MC2	1.000	.798
MC3	1.000	.736
MC4	1.000	.747
MC5	1.000	.722
MC6	1.000	.747
MC7	1.000	.767
MC8	1.000	.755
MC9	1.000	.550
IWB1	1.000	.324
IWB2	1.000	.524
IWB3	1.000	.656
IWB4	1.000	.713
IWB5	1.000	.678
IWB6	1.000	.668
IWB7	1.000	.708
IWB8	1.000	.691
IWB9	1.000	.714
IWB10	1.000	.646
IWB11	1.000	.647
IWB12	1.000	.704

Extraction Method: Principal Component Analysis.

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
UWES1	5.62	1.383	4004
UWES2	5.64	1.426	4004
UWES3	5.41	1.546	4004
MC1	5.00	1.505	4004
MC2	5.03	1.555	4004
MC3	5.30	1.547	4004
MC4	5.05	1.572	4004
MC5	5.12	1.635	4004
MC6	4.80	1.785	4004
MC7	4.65	1.741	4004
MC8	4.75	1.619	4004
MC9	4.72	1.732	4004
IWB1	5.01	1.358	4004
IWB2	5.48	1.194	4004
IWB3	5.01	1.315	4004
IWB4	5.01	1.329	4004
IWB5	4.86	1.290	4004
IWB6	4.28	1.552	4004
IWB7	4.35	1.490	4004
IWB8	4.74	1.355	4004
IWB9	4.70	1.460	4004
IWB10	4.71	1.473	4004
IWB11	4.35	1.572	4004
IWB12	4.45	1.555	4004

Component Matrix[a]

	Component		
	1	2	3
IWB9	.751	−.387	−.012
IWB10	.729	−.338	−.019
IWB12	.723	−.425	.015
IWB11	.717	−.361	−.039
IWB7	.703	−.457	−.065
IWB8	.699	−.447	−.048
IWB6	.678	−.454	−.049
MC4	.673	.535	−.089
IWB4	.662	−.510	−.119
MC1	.652	.596	−.082
IWB5	.650	−.492	−.116
MC3	.635	.569	−.097
MC2	.630	.624	−.107
MC6	.630	.575	−.139
IWB3	.622	−.503	−.124
MC7	.613	.606	−.156
MC9	.547	.483	−.133
IWB2	.530	−.483	−.096
IWB1	.402	−.400	−.054
MC8	.577	.640	−.107
MC5	.583	.611	−.095
UWES1	.567	.147	.674
UWES2	.604	.137	.671
UWES3	.453	.083	.626

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Rotated Component Matrix[a]

	Component		
	1	2	3
IWB4	.841	.054	.044
IWB7	.827	.105	.112
IWB5	.820	.060	.044
IWB8	.815	.105	.127
IWB3	.808	.037	.028
IWB9	.807	.174	.182
IWB12	.806	.121	.197
IWB6	.804	.087	.120
IWB11	.770	.179	.149
IWB10	.760	.199	.173
IWB2	.723	−.012	.028
IWB1	.567	−.039	.036
MC2	.069	.880	.138
MC7	.077	.868	.085
MC1	.099	.866	.166
MC8	.019	.860	.123
MC6	.106	.852	.104
MC3	.107	.839	.145
MC5	.040	.838	.134
MC4	.155	.835	.161
MC9	.105	.730	.077
UWES2	.235	.300	.830
UWES1	.200	.283	.823
UWES3	.168	.179	.738

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Component Matrix[a]

	Component		
	1	2	3
UWES1	.567		.674
UWES2	.604		.671
UWES3	.453		.626
MC1	.652	.596	
MC2	.630	.624	
MC3	.635	.569	
MC4	.673	.535	
MC5	.583	.611	
MC6	.630	.575	
MC7	.613	.606	
MC8	.577	.640	
MC9	.547	.483	
IWB1	.402	−.400	
IWB2	.530	−.483	
IWB3	.622	−.503	
IWB4	.662	−.510	
IWB5	.650	−.492	
IWB6	.678	−.454	
IWB7	.703	−.457	
IWB8	.699	−.447	
IWB9	.751	−.387	
IWB10	.729	−.338	
IWB11	.717	−.361	
IWB12	.723	−.425	

Extraction Method: Principal Component Analysis.

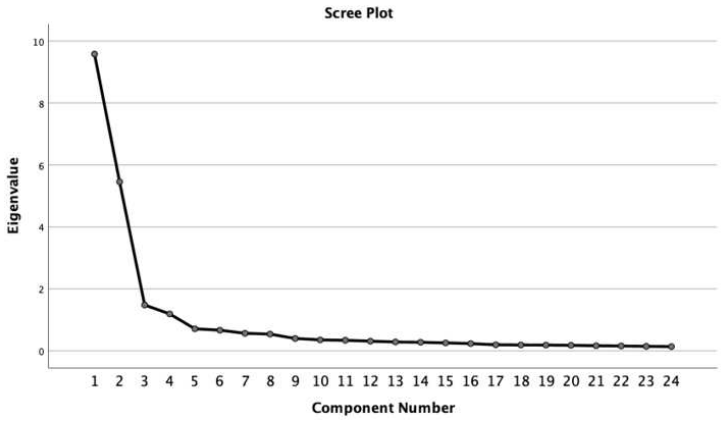
a. 3 components extracted.

Rotated Component Matrix[a]

	Component		
	1	2	3
UWES1			.823
UWES2			.830
UWES3			.738
MC1		.866	
MC2		.880	
MC3		.839	
MC4		.835	
MC5		.838	
MC6		.852	
MC7		.868	
MC8		.860	
MC9		.730	
IWB1	.567		
IWB2	.723		
IWB3	.808		
IWB4	.841		
IWB5	.820		
IWB6	.804		
IWB7	.827		
IWB8	.815		
IWB9	.807		
IWB10	.760		
IWB11	.770		
IWB12	.806		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.



Component Transformation Matrix

Component	1	2	3
1	.732	.612	.300
2	−.659	.748	.082
3	−.174	−.257	.950

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Principal Component Analysis 4-5

Component Matrix[a]

	Component			
	1	2	3	4
IWB9	.751	-.387		-.323
IWB10	.729	-.338		-.380
IWB12	.723	-.425		
IWB11	.717	-.361		-.387
IWB7	.703	-.457		
IWB8	.699	-.447		
IWB6	.678	-.454		
MC4	.673	.535		
IWB4	.662	-.510		
MC1	.652	.596		
IWB5	.650	-.492		
MC3	.635	.569		
MC2	.630	.624		
MC6	.630	.575		
IWB3	.622	-.503		.342
MC7	.613	.606		
MC9	.547	.483		
IWB2	.530	-.483		.448
MC8	.577	.640		
MC5	.583	.611		
UWES1	.567		.674	
UWES2	.604		.671	
UWES3	.453		.626	
IWB1	.402	-.400		.444

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Pattern Matrix[a]

	Component			
	1	2	3	4
IWB11	.942			
IWB10	.926			
IWB9	.893			
IWB12	.811			
IWB7	.733			
IWB6	.680			
IWB8	.613			
MC7		.895		
MC2		.894		
MC8		.877		
MC6		.871		
MC1		.864		
MC5		.857		
MC3		.840		
MC4		.822		
MC9		.753		
UWES1			.881	
UWES2			.878	
UWES3			.803	
IWB2				.859
IWB3				.779
IWB1				.777
IWB4				.718
IWB5				.668

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Structure Matrix

	Component			
	1	2	3	4
IWB9	.903		.365	.528
IWB11	.888		.322	.463
IWB10	.884		.348	.458
IWB12	.871		.371	.567
IWB7	.843		.300	.627
IWB6	.809		.301	.624
IWB8	.799		.321	.666
MC2		.894	.395	
MC1		.887	.421	
MC7		.875	.342	
MC8		.866	.363	
MC6		.865	.362	
MC4	.309	.860	.416	
MC3		.857	.395	
MC5		.850	.376	
MC9		.742	.305	
UWES2	.370	.438	.913	
UWES1	.324	.418	.897	
UWES3			.781	
IWB3	.621			.869
IWB4	.679			.865
IWB2	.498			.851
IWB5	.673			.829
IWB1	.355			.715

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Component Matrix[a]

	Component		
	1	2	3
IWB9	.751	-.387	
IWB10	.729	-.338	
IWB12	.723	-.425	
IWB11	.717	-.361	
IWB7	.703	-.457	
IWB8	.699	-.447	
IWB6	.678	-.454	
MC4	.673	.535	
IWB4	.662	-.510	
MC1	.652	.596	
IWB5	.650	-.492	
MC3	.635	.569	
MC2	.630	.624	
MC6	.630	.575	
IWB3	.622	-.503	
MC7	.613	.606	
MC9	.547	.483	
IWB2	.530	-.483	
IWB1	.402	-.400	
MC8	.577	.640	
MC5	.583	.611	
UWES1	.567		.674
UWES2	.604		.671
UWES3	.453		.626

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Pattern Matrix[a]

	Component		
	1	2	3
IWB4	.865		
IWB5	.842		
IWB3	.835		
IWB7	.831		
IWB8	.814		
IWB6	.806		
IWB12	.789		
IWB9	.788		
IWB11	.757		
IWB2	.749		
IWB10	.740		
IWB1	.586		
MC7		.896	
MC2		.892	
MC8		.878	
MC6		.870	
MC1		.867	
MC5		.850	
MC3		.844	
MC4		.831	
MC9		.749	
UWES2			.882
UWES1			.880
UWES3			.802

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

Structure Matrix

	Component		
	1	2	3
IWB4	.842		
IWB7	.841		.319
IWB9	.835		.400
IWB12	.831		.398
IWB8	.830		.330
IWB5	.822		
IWB6	.817		.316
IWB3	.806		
IWB11	.795		.362
IWB10	.790		.388
IWB2	.717		
IWB1	.561		
MC2		.893	.400
MC1		.887	.429
MC7		.875	.349
MC8		.866	.369
MC6		.864	.368
MC4		.861	.427
MC3		.858	.403
MC5		.849	.378
MC9		.741	.308
UWES2	.355	.438	.912
UWES1	.318	.418	.893
UWES3			.776

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Component Correlation Matrix

Component	1	2	3	4
1	1.000	.258	.357	.597
2	.258	1.000	.433	.081
3	.357	.433	1.000	.246
4	.597	.081	.246	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Component Correlation Matrix

Component	1	2	3
1	1.000	.205	.354
2	.205	1.000	.443
3	.354	.443	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Factor Analysis 1

Correlation Matrix

		MC1	MC2	MC3	MC4	MC5	MC6	MC7	MC8	MC9
Correlation	MC1	1.000	.840	.765	.768	.726	.705	.712	.729	.570
	MC2	.840	1.000	.767	.773	.741	.721	.727	.733	.558
	MC3	.765	.767	1.000	.806	.691	.662	.679	.700	.531
	MC4	.768	.773	.806	1.000	.695	.679	.675	.684	.545
	MC5	.726	.741	.691	.695	1.000	.695	.691	.719	.579
	MC6	.705	.721	.662	.679	.695	1.000	.797	.704	.691
	MC7	.712	.727	.679	.675	.691	.797	1.000	.772	.671
	MC8	.729	.733	.700	.684	.719	.704	.772	1.000	.618
	MC9	.570	.558	.531	.545	.579	.691	.671	.618	1.000
Sig. (1-tailed)	MC1		.000	.000	.000	.000	.000	.000	.000	.000
	MC2	.000		.000	.000	.000	.000	.000	.000	.000
	MC3	.000	.000		.000	.000	.000	.000	.000	.000
	MC4	.000	.000	.000		.000	.000	.000	.000	.000
	MC5	.000	.000	.000	.000		.000	.000	.000	.000
	MC6	.000	.000	.000	.000	.000		.000	.000	.000
	MC7	.000	.000	.000	.000	.000	.000		.000	.000
	MC8	.000	.000	.000	.000	.000	.000	.000		.000
	MC9	.000	.000	.000	.000	.000	.000	.000	.000	

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.948
Bartlett's Test of Sphericity	Approx. Chi-Square	34132.278
	df	36
	Sig.	.000

Total Variance Explained

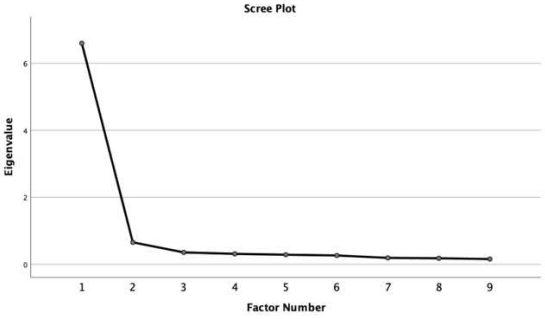
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.597	73.303	73.303	6.300	69.997	69.997
2	.657	7.295	80.599			
3	.355	3.944	84.543			
4	.312	3.469	88.012			
5	.286	3.176	91.189			
6	.264	2.939	94.127			
7	.192	2.132	96.259			
8	.180	1.995	98.254			
9	.157	1.746	100.000			

Extraction Method: Maximum Likelihood.

Communalities

	Initial	Extraction
MC1	.768	.784
MC2	.782	.798
MC3	.725	.718
MC4	.729	.723
MC5	.657	.684
MC6	.722	.693
MC7	.744	.715
MC8	.700	.709
MC9	.532	.476

Extraction Method: Maximum Likelihood.



Factor Matrix[a]

	Factor
	1
MC1	.885
MC2	.893
MC3	.847
MC4	.850
MC5	.827
MC6	.833
MC7	.846
MC8	.842
MC9	.690

Extraction Method: Maximum Likelihood.

a. 1 factors extracted. 4 iterations required.

Goodness-of-fit Test

Chi-Square	df	Sig.
2252.542	27	.000

Factor Analysis 2

Correlation Matrix

		UWES1	UWES2	UWES3
Correlation	UWES1	1.000	.805	.507
	UWES2	.805	1.000	.552
	UWES3	.507	.552	1.000
Sig. (1-tailed)	UWES1		.000	.000
	UWES2	.000		.000
	UWES3	.000	.000	

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.658
Bartlett's Test of Sphericity	Approx. Chi-Square	5703.337
	df	3
	Sig.	.000

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.253	75.103	75.103	1.964	65.470	65.470
2	.554	18.483	93.585			
3	.192	6.415	100.000			

Extraction Method: Maximum Likelihood.

Communalities

	Initial	Extraction
UWES1	.654	.740
UWES2	.676	.877
UWES3	.316	.348

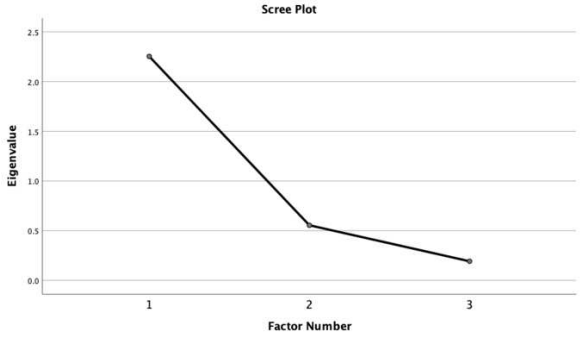
Extraction Method: Maximum Likelihood.

Factor Matrix[a]

	Factor
	1
UWES1	.860
UWES2	.936
UWES3	.590

Extraction Method: Maximum Likelihood.

a. 1 factors extracted. 4 iterations required.



Warnings

The number of degrees of freedom (0) is not positive. Factor analysis may not be appropriate.

Factor Analysis 3

Correlation Matrix

		IWB1	IWB2	IWB3	IWB4	IWB5	IWB6	IWB7	IWB8	IWB9	IWB10	IWB11	IWB12
Correlation	IWB1	1.000	.582	.460	.456	.423	.395	.394	.388	.360	.336	.323	.368
	IWB2	.582	1.000	.674	.646	.597	.507	.515	.506	.466	.436	.422	.485
	IWB3	.460	.674	1.000	.799	.746	.575	.584	.634	.550	.491	.504	.578
	IWB4	.456	.646	.799	1.000	.812	.614	.629	.674	.598	.534	.543	.622
	IWB5	.423	.597	.746	.812	1.000	.607	.616	.693	.585	.518	.540	.596
	IWB6	.395	.507	.575	.614	.607	1.000	.849	.620	.642	.608	.637	.681
	IWB7	.394	.515	.584	.629	.616	.849	1.000	.668	.681	.655	.671	.698
	IWB8	.388	.506	.634	.674	.693	.620	.668	1.000	.733	.659	.621	.659
	IWB9	.360	.466	.550	.598	.585	.642	.681	.733	1.000	.848	.763	.732
	IWB10	.336	.436	.491	.534	.518	.608	.655	.659	.848	1.000	.770	.699
	IWB11	.323	.422	.504	.543	.540	.637	.671	.621	.763	.770	1.000	.789
	IWB12	.368	.485	.578	.622	.596	.681	.698	.659	.732	.699	.789	1.000
Sig. (1-tailed)	IWB1		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	IWB2	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	IWB3	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	IWB4	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	IWB5	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	IWB6	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	IWB7	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	IWB8	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	IWB9	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	IWB10	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	IWB11	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	IWB12	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

Goodness-of-fit Test

Chi-Square	df	Sig.
3521.035	43	.000

Factor Correlation Matrix

Factor	1	2
1	1.000	.717
2	.717	1.000

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.580	63.165	63.165	7.270	60.582	60.582	6.482
2	1.244	10.368	73.533	.921	7.672	68.253	6.255
3	.708	5.897	79.430				
4	.564	4.704	84.134				
5	.398	3.316	87.450				
6	.351	2.922	90.372				
7	.271	2.260	92.632				
8	.236	1.969	94.602				
9	.195	1.622	96.224				
10	.168	1.399	97.622				
11	.147	1.223	98.845				
12	.139	1.155	100.000				

Extraction Method: Maximum Likelihood.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Communalities

	Initial	Extraction
IWB1	.357	.283
IWB2	.571	.533
IWB3	.705	.761
IWB4	.764	.829
IWB5	.718	.757
IWB6	.744	.614
IWB7	.772	.664
IWB8	.668	.669
IWB9	.793	.823
IWB10	.759	.800
IWB11	.729	.747
IWB12	.714	.710

Extraction Method: Maximum Likelihood.

Factor Matrix[a]

	Factor	
	1	2
IWB1	.494	
IWB2	.660	.312
IWB3	.780	.390
IWB4	.829	.377
IWB5	.803	.334
IWB6	.783	
IWB7	.812	
IWB8	.818	
IWB9	.854	-.308
IWB10	.810	-.380
IWB11	.802	-.322
IWB12	.825	

Extraction Method: Maximum Likelihood.

a. 2 factors extracted. 4 iterations required.

Pattern Matrix[a]

	Factor	
	1	2
IWB1		.503
IWB2		.736
IWB3		.900
IWB4		.905
IWB5		.835
IWB6	.519	.323
IWB7	.580	
IWB8	.489	.392
IWB9	.914	
IWB10	.981	
IWB11	.901	
IWB12	.719	

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 12 iterations.

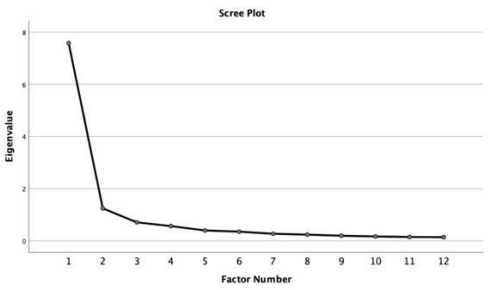
Structure Matrix

	Factor	
	1	2
IWB1	.400	.531
IWB2	.518	.730
IWB3	.606	.872
IWB4	.656	.911
IWB5	.646	.869
IWB6	.751	.695
IWB7	.789	.708
IWB8	.770	.743
IWB9	.907	.646
IWB10	.890	.576
IWB11	.864	.594
IWB12	.835	.677

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.931
Bartlett's Test of Sphericity	Approx. Chi-Square	42809.595
	df	66
	Sig.	.000



Reliability statistics

Reliability Statistics

Cronbach's Alpha	N of Items
.953	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
MC1	39.40	126.524	.849	.946
MC2	39.37	125.298	.856	.945
MC3	39.11	126.797	.813	.948
MC4	39.35	126.205	.817	.947
MC5	39.29	125.365	.805	.948
MC6	39.60	121.744	.828	.947
MC7	39.75	122.182	.840	.946
MC8	39.66	124.983	.827	.947
MC9	39.68	127.668	.686	.954

Reliability Statistics

Cronbach's Alpha	N of Items
.827	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
UWES1	11.06	6.857	.738	.710
UWES2	11.03	6.468	.773	.670
UWES3	11.26	7.121	.558	.892

Reliability Statistics

Cronbach's Alpha	N of Items
.946	12

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IWB1	51.95	161.868	.493	.949
IWB2	51.48	159.558	.656	.944
IWB3	51.95	154.597	.747	.941
IWB4	51.95	153.015	.790	.940
IWB5	52.10	154.497	.767	.940
IWB6	52.67	148.885	.778	.940
IWB7	52.61	149.119	.808	.939
IWB8	52.22	152.484	.790	.940
IWB9	52.26	149.692	.810	.939
IWB10	52.24	151.057	.761	.940
IWB11	52.60	148.946	.764	.940
IWB12	52.50	147.973	.803	.939

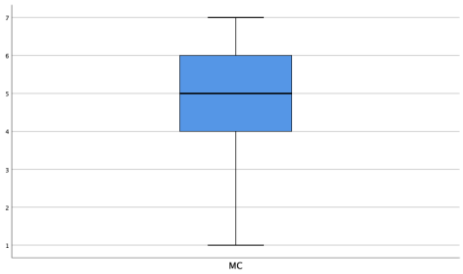
Appendix 3. Descriptive statistics and correlations

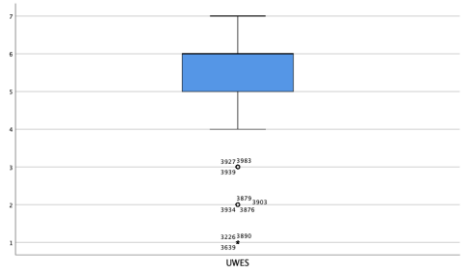
Descriptive Statistics

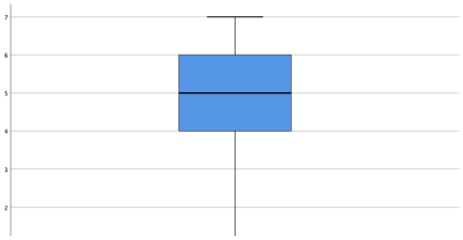
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
MC	4004	1	7	4.95	1.430	-.657	.039	-.114	.077
UWES	4004	1	7	5.57	1.297	-1.094	.039	.973	.077
IWB	4004	1	7	4.79	1.159	-.386	.039	.029	.077
Valid N (listwise)	4004								

Descriptives

			Statistic	Std. Error
MC	Mean		4.95	.023
	95% Confidence Interval for Mean	Lower Bound	4.90	
		Upper Bound	4.99	
	5% Trimmed Mean		5.02	
	Median		5.00	
	Variance		2.044	
	Std. Deviation		1.430	
	Minimum		1	
	Maximum		7	
	Range		6	
	Interquartile Range		2	
	Skewness		-.657	.039
	Kurtosis		-.114	.077
UWES	Mean		5.57	.020
	95% Confidence Interval for Mean	Lower Bound	5.53	
		Upper Bound	5.61	
	5% Trimmed Mean		5.68	
	Median		6.00	
	Variance		1.681	
	Std. Deviation		1.297	
	Minimum		1	
	Maximum		7	
	Range		6	
	Interquartile Range		1	
	Skewness		-1.094	.039
	Kurtosis		.973	.077
IWB	Mean		4.79	.018
	95% Confidence Interval for Mean	Lower Bound	4.76	
		Upper Bound	4.83	
	5% Trimmed Mean		4.81	
	Median		5.00	
	Variance		1.343	
	Std. Deviation		1.159	
	Minimum		1	
	Maximum		7	
	Range		6	
	Interquartile Range		2	
	Skewness		-.386	.039
	Kurtosis		.029	.077



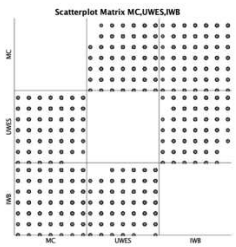




Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
MC	.185	4004	.000	.915	4004	.000
UWES	.262	4004	.000	.857	4004	.000
IWB	.203	4004	.000	.926	4004	.000

a. Lilliefors Significance Correction



Correlations[b]

		MC	UWES	IWB
MC	Pearson Correlation	1	.424**	.222**
	Sig. (2-tailed)		.000	.000
UWES	Pearson Correlation	.424**	1	.361**
	Sig. (2-tailed)	.000		.000
IWB	Pearson Correlation	.222**	.361**	1
	Sig. (2-tailed)	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N=4004

Correlations[b]

			MC	UWES	IWB
Spearman's rho	MC	Correlation Coefficient	1.000	.417**	.226**
		Sig. (2-tailed)	.	.000	.000
	UWES	Correlation Coefficient	.417**	1.000	.344**
		Sig. (2-tailed)	.000	.	.000
	IWB	Correlation Coefficient	.226**	.344**	1.000
		Sig. (2-tailed)	.000	.000	.

**. Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N = 4004

Correlations[b]

		MC	UWES	IWB
MC	Pearson Correlation	1	.424**	.222**
	Sig. (2-tailed)		.000	.000
UWES	Pearson Correlation	.424**	1	.361**
	Sig. (2-tailed)	.000		.000
IWB	Pearson Correlation	.222**	.361**	1
	Sig. (2-tailed)	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N=4004

Correlations[b]

			MC	UWES	IWB
Spearman's rho	MC	Correlation Coefficient	1.000	.417**	.226**
		Sig. (2-tailed)	.	.000	.000
	UWES	Correlation Coefficient	.417**	1.000	.344**
		Sig. (2-tailed)	.000	.	.000
	IWB	Correlation Coefficient	.226**	.344**	1.000
		Sig. (2-tailed)	.000	.000	.

**. Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N = 4004

Descriptive Statistics

Gender		Mean	Std. Deviation	N
Female	MC	5.02	1.448	1255
	UWES	5.77	1.177	1255
	IWB	4.69	1.189	1255
Male	MC	4.91	1.421	2749
	UWES	5.48	1.338	2749
	IWB	4.84	1.142	2749

Correlations[b,c]

Gender			MC	UWES	IWB
Female	MC	Pearson Correlation	1	.376**	.193**
		Sig. (2-tailed)		.000	.000
	UWES	Pearson Correlation	.376**	1	.331**
		Sig. (2-tailed)	.000		.000
	IWB	Pearson Correlation	.193**	.331**	1
		Sig. (2-tailed)	.000	.000	
Male	MC	Pearson Correlation	1	.444**	.239**
		Sig. (2-tailed)		.000	.000
	UWES	Pearson Correlation	.444**	1	.388**
		Sig. (2-tailed)	.000		.000
	IWB	Pearson Correlation	.239**	.388**	1
		Sig. (2-tailed)	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

b. Gender=Female,:Listwise N=1255

c. Gender=Male,:Listwise N=2749

Descriptive Statistics

Position		Mean	Std. Deviation	N
Manager	MC	5.20	1.289	626
	UWES	6.07	.917	626
	IWB	5.51	.900	626
Subordinate	MC	4.90	1.450	3378
	UWES	5.48	1.336	3378
	IWB	4.66	1.152	3378

Correlations[b,c]

Position			MC	UWES	IWB
Manager	MC	Pearson Correlation	1	.327**	.211**
		Sig. (2-tailed)		.000	.000
	UWES	Pearson Correlation	.327**	1	.299**
		Sig. (2-tailed)	.000		.000
	IWB	Pearson Correlation	.211**	.299**	1
		Sig. (2-tailed)	.000	.000	
Subordinate	MC	Pearson Correlation	1	.430**	.209**
		Sig. (2-tailed)		.000	.000
	UWES	Pearson Correlation	.430**	1	.338**
		Sig. (2-tailed)	.000		.000
	IWB	Pearson Correlation	.209**	.338**	1
		Sig. (2-tailed)	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

b. Position=Manager,:Listwise N=626

c. Position=Subordinate,:Listwise N=3378

vassarstats.net/rdiff.html

Significance of the Difference Between Two Correlation Coefficients

Using the Fisher r-to-z transformation, this page will calculate a value of z that can be applied to assess the significance of the difference between two correlation coefficients, r_a and r_b, found in two independent samples. If r_a is greater than r_b, the resulting value of z will have a positive sign; if r_a is smaller than r_b, the sign of z will be negative.

To perform the calculation, enter the respective values of r and n for the two samples into the designated cells, then click the «Calculate» button.

Sample A		Sample B	
r_a =	.444	r_b =	.376
n_a =	2749	n_b =	1255
z =	2.4		
P	one-tailed	0.0082	
	two-tailed	0.0164	

Sample A		Sample B	
r_a =	.239	r_b =	.193
n_a =	2749	n_b =	1255
z =	1.42		
P	one-tailed	0.0778	
	two-tailed	0.1556	

Sample A		Sample B	
r_a =	.388	r_b =	.331
n_a =	2749	n_b =	1255
z =	1.92		
P	one-tailed	0.0274	
	two-tailed	0.0549	

Sample A		Sample B	
r_a =	.430	r_b =	.327
n_a =	3378	n_b =	626
z =	2.76		
P	one-tailed	0.0029	
	two-tailed	0.0058	

Sample A		Sample B	
r_a =	.209	r_b =	.211
n_a =	3378	n_b =	626
z =	-0.05		
P	one-tailed	0.4801	
	two-tailed	0.9601	

Sample A		Sample B	
r_a =	.338	r_b =	.299
n_a =	3378	n_b =	626
z =	1		
P	one-tailed	0.1587	
	two-tailed	0.3173	

Appendix 4. Regression analyses

Model 1a

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.201[a]	.040	.040	1.271

a. Predictors: (Constant), Position_dummy, Gender_dummy

b. Dependent Variable: UWES

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	271.583	2	135.792	84.116	.000[b]
	Residual	6458.988	4001	1.614		
	Total	6730.571	4003			

a. Dependent Variable: UWES

b. Predictors: (Constant), Position_dummy, Gender_dummy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.373	.026		205.790	.000	5.322	5.425					
	Gender_dummy	.323	.043	.116	7.437	.000	.238	.408	.102	.117	.115	.994	1.006
	Position_dummy	.619	.055	.174	11.170	.000	.511	.728	.165	.174	.173	.994	1.006

a. Dependent Variable: UWES

Model 2a

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.271[a]	.073	.073	1.116

a. Predictors: (Constant), Position_dummy, Gender_dummy

b. Dependent Variable: IWB

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	394.523	2	197.261	158.374	.000[b]
	Residual	4983.424	4001	1.246		
	Total	5377.947	4003			

a. Dependent Variable: IWB

b. Predictors: (Constant), Position_dummy, Gender_dummy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.691	.023		204.527	.000	4.646	4.736					
	Gender_dummy	-.097	.038	-.039	-2.547	.011	-.172	-.022	-.059	-.040	-.039	.994	1.006
	Position_dummy	.846	.049	.265	17.364	.000	.750	.941	.268	.265	.264	.994	1.006

a. Dependent Variable: IWB

Model 1

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.201[a]	.040	.040	1.271	.040	84.116	2	4001	.000
2	.455[b]	.207	.207	1.155	.167	841.946	1	4000	.000

a. Predictors: (Constant), Position_dummy, Gender_dummy

b. Predictors: (Constant), Position_dummy, Gender_dummy, MC

c. Dependent Variable: UWES

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	271.583	2	135.792	84.116	.000[b]
	Residual	6458.988	4001	1.614		
	Total	6730.571	4003			
2	Regression	1394.711	3	464.904	348.512	.000[c]
	Residual	5335.861	4000	1.334		
	Total	6730.571	4003			

a. Dependent Variable: UWES

b. Predictors: (Constant), Position_dummy, Gender_dummy

c. Predictors: (Constant), Position_dummy, Gender_dummy, MC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.373	.026		205.790	.000	5.322	5.425					
	Gender_dummy	.323	.043	.116	7.437	.000	.238	.408	.102	.117	.115	.994	1.006
	Position_dummy	.619	.055	.174	11.170	.000	.511	.728	.165	.174	.173	.994	1.006
2	(Constant)	3.567	.067		53.528	.000	3.436	3.697					
	Gender_dummy	.276	.039	.099	6.998	.000	.199	.354	.102	.110	.099	.992	1.008
	Position_dummy	.501	.051	.140	9.909	.000	.402	.600	.165	.155	.140	.988	1.013
	MC	.372	.013	.410	29.016	.000	.347	.397	.424	.417	.408	.992	1.008

a. Dependent Variable: UWES

Model 2

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.271[a]	.073	.073	1.116	.073	158.374	2	4001	.000
2	.339[b]	.115	.114	1.091	.041	186.299	1	4000	.000

a. Predictors: (Constant), Position_dummy, Gender_dummy

b. Predictors: (Constant), Position_dummy, Gender_dummy, MC

c. Dependent Variable: IWB

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	394.523	2	197.261	158.374	.000[b]
	Residual	4983.424	4001	1.246		
	Total	5377.947	4003			
2	Regression	616.296	3	205.432	172.572	.000[c]
	Residual	4761.651	4000	1.190		
	Total	5377.947	4003			

a. Dependent Variable: IWB

b. Predictors: (Constant), Position_dummy, Gender_dummy

c. Predictors: (Constant), Position_dummy, Gender_dummy, MC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.691	.023		204.527	.000	4.646	4.736					
	Gender_dummy	-.097	.038	-.039	-2.547	.011	-.172	-.022	-.059	-.040	-.039	.994	1.006
	Position_dummy	.846	.049	.265	17.364	.000	.750	.941	.268	.265	.264	.994	1.006
2	(Constant)	3.888	.063		61.769	.000	3.765	4.012					
	Gender_dummy	-.118	.037	-.047	-3.157	.002	-.191	-.045	-.059	-.050	-.047	.992	1.008
	Position_dummy	.793	.048	.249	16.604	.000	.700	.887	.268	.254	.247	.988	1.013
	MC	.165	.012	.204	13.649	.000	.142	.189	.222	.211	.203	.992	1.008

a. Dependent Variable: IWB

Model 3

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Position_dummy, Gender_dummy[b]	.	Enter
2	MC, UWES[b]	.	Enter

a. Dependent Variable: IWB

b. All requested variables entered.

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.271[a]	.073	.073	1.116	.073	158.374	2	4001	.000
2	.432[b]	.187	.186	1.046	.113	278.148	2	3999	.000

a. Predictors: (Constant), Position_dummy, Gender_dummy

b. Predictors: (Constant), Position_dummy, Gender_dummy, MC, UWES

c. Dependent Variable: IWB

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	394.523	2	197.261	158.374	.000[b]
	Residual	4983.424	4001	1.246		
	Total	5377.947	4003			
2	Regression	1003.103	4	250.776	229.231	.000[c]
	Residual	4374.844	3999	1.094		
	Total	5377.947	4003			

a. Dependent Variable: IWB

b. Predictors: (Constant), Position_dummy, Gender_dummy

c. Predictors: (Constant), Position_dummy, Gender_dummy, MC, UWES

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.691	.023		204.527	.000	4.646	4.736					
	Gender_dummy	-.097	.038	-.039	-2.547	.011	-.172	-.022	-.059	-.040	-.039	.994	1.006
	Position_dummy	.846	.049	.265	17.364	.000	.750	.941	.268	.265	.264	.994	1.006
2	(Constant)	2.928	.079		37.035	.000	2.773	3.083					
	Gender_dummy	-.192	.036	-.077	-5.341	.000	-.263	-.122	-.059	-.084	-.076	.980	1.020
	Position_dummy	.658	.046	.206	14.201	.000	.567	.749	.268	.219	.203	.964	1.037
	MC	.065	.013	.080	5.100	.000	.040	.090	.222	.080	.073	.820	1.220
	UWES	.269	.014	.301	18.804	.000	.241	.297	.361	.285	.268	.793	1.261

a. Dependent Variable: IWB

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	MC	.204[b]	13.649	.000	.211	.992	1.008	.988
	UWES	.335[b]	22.956	.000	.341	.960	1.042	.960

a. Dependent Variable: IWB

b. Predictors in the Model: (Constant), Position_dummy, Gender_dummy

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	Gender_dummy	Position_dummy	MC	UWES
1	1	1.768	1.000	.15	.13	.10		
	2	.848	1.444	.01	.25	.67		
	3	.384	2.146	.85	.62	.22		
2	1	3.530	1.000	.00	.02	.02	.00	.00
	2	.852	2.035	.00	.18	.73	.00	.00
	3	.550	2.534	.01	.79	.23	.01	.00
	4	.042	9.122	.22	.01	.00	.98	.13
	5	.026	11.751	.77	.00	.02	.01	.87

a. Dependent Variable: IWB

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.14	5.93	4.79	.501	4004
Std. Predicted Value	-3.311	2.265	.000	1.000	4004
Standard Error of Predicted Value	.022	.074	.036	.010	4004
Adjusted Predicted Value	3.14	5.93	4.79	.501	4004
Residual	-4.268	3.134	.000	1.045	4004
Std. Residual	-4.081	2.997	.000	1.000	4004
Stud. Residual	-4.083	2.999	.000	1.000	4004
Deleted Residual	-4.273	3.140	.000	1.047	4004
Stud. Deleted Residual	-4.091	3.002	.000	1.000	4004
Mahal. Distance	.837	19.156	3.999	2.874	4004
Cook's Distance	.000	.009	.000	.001	4004
Centered Leverage Value	.000	.005	.001	.001	4004

a. Dependent Variable: IWB

Charts