HRM, productivity and well-being in a retail context: Insights in the trade-offs via job characteristics.

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Abstract

ENG: This study explores how high performance work systems (HPWSs) and work-unit productivity directly influence the work engagement of sales employees. Moreover, using insights from work intensification, empowerment and the job demands-resources model, this study hypothesized indirect effects on engagement via job variety and work pressure. Data of 488 sales employees and 108 managers in 101 work-units of a retail organization were collected. Management ratings of HPWSs were used while objective productivity data were obtained by dividing revenue by working hours. The levels of job variety, work pressure and engagement were rated by employees. The results of mixed models in SPSS indicate that HPWSs have no significant effect on work engagement, job variety or work pressure. However, productivity does have a negative influence on job variety and a positive influence on work pressure. In turn, job variety relates to higher engagement while work pressure relates to lower engagement. Sobel-tests show two indirect negative effects of work-unit productivity on individual work engagement were found; one via job variety and one via work pressure. No direct effect of productivity on engagement was found. The findings highlight that when improving financial performance in a retail setting, negative consequences on employee well-being via perceived job characteristics should be taken into account.

Key words: *work engagement, HRM, HPWP, HPWS, productivity, job characteristics, multi-level, work intensification, empowerment, job demands-resources (JDR) model, job variety, work pressure.*

NL: Dit onderzoek beschouwt hoe businessunit-productiviteit en prestatie verhogende human resource activiteiten direct een effect hebben op de bevlogenheid van medewerkers. Door middel van theorieën omtrent intensivering van werk, werknemerbevoegdheden en het job demands-resources model werden tevens indirecte effecten verwacht via de ervaren variëteit en druk in het werk. Data van 488 verkoopmedewerkers en 108 managers in 101 businessunits van een detailhandel organisatie zijn verzameld. Management beoordelingen van HR activiteiten zijn gebruikt terwijl productiviteit objectief werd gemeten door de omzet te delen door het aantal gewerkte uren. Daarnaast werden de werkvariëteit, werkdruk en bevlogenheid gemeten door werknemer-vragenlijsten. Mixed modellen in SPSS tonen aan dat HR activiteiten geen invloed hebben op de bevlogenheid, de werkvariëteit noch de werkdruk. Productiviteit heeft echter een negatief effect op de werkvariëteit en een positief effect op de werkdruk. Op hun beurt leiden werkvariëteit tot een hogere bevlogenheid en werkdruk tot een lagere bevlogenheid. Verder tonen Sobel-testen twee negatieve indirecte effecten van productiviteit op bevlogenheid; een via werkvariëteit en een via werkdruk. Van een direct effect is geen sprake. Deze bevindingen laten zien dat wanneer een detailhandel organisatie haar financiële prestaties wilt verbeteren, zij rekening moet houden met de negatieve effecten op het welzijn van haar werknemers via de ervaren werkkarakteristieken.

Trefwoorden: *bevlogenheid, HRM, HR activiteiten, productiviteit, multi-level, werk intensivering, werknemerbevoegdheden, job demands-resources (JDR) model, werkvariëteit, werkdruk*

Introduction

The Dutch retail market is going through a tough time. Rather than financial growth there has been stagnation and recession for some years (CBS, 2014). Retail organizations currently face difficulties in strategically increasing their financial performance while simultaneously pressing their workforce costs. On top of that, studies suggest the well-being of employees can suffer from this increase in labor productivity, among others due to the increase in workload (Bakker, Demerouti, & Verbeke, 2004; Godard, 2001, 2004). This workload is already at an all-time high in the Dutch retail sector, with 20% of employees experiencing a high work pressure and 5% experiencing an excessively high work pressure (Integron, 2014). While human resource management (HRM) practices are suggested to provide a way to increase both productivity and well-being (Wright, Gardner, & Moynihan, 2003; Wright, Gardner, Moynihan, & Allen, 2005) recent reviews provide new perspectives on the relationships. While HRM and productivity seem to be positively related (Peccei, Van de Voorde & Van Velhoven, 2012) their effects on employee well-being are somewhat inconsistent (Van de Voorde, Paauwe, & Van Veldhoven, 2012) and possibly depend on various organizational contingencies (Datta, Guthrie, & Wright, 2005).

Accordingly, insights into the consequences of HRM investments and enhanced productivity on well-being are needed within retail. They should make for easier, more legitimate and more ethical organizational decision-making. Organizations should be able to aim for mutual gains: highly productive work-units with happy and healthy employees. This should not be hard seeing that employee well-being is identified as a driver of productivity. Healthy and happy employees show among others a lower turnover, higher customer loyalty (Harter, Schmidt, Asplund, Killham, & Agrawal, 2010; Harter, Schmidt, & Hayes, 2002), higher in- and extra-role performance (Christian, Garza, & Slaughter, 2011) and more ethical behavior (Wagner & Harter, 2006). Increases in employee well-being could very well pay off in terms of performance and hence insights into the consequences of HRM and productivity are of interest.

Contemporary research has focused mostly on the positive effects of HRM while neglecting the possible negative effects (Peccei et al., 2012; Wood, Van Veldhoven, Croon, & De Mendezes, 2012). From an academic perspective there is a need for a more balanced approach, combining positive and negative perspectives on strategic HRM. Moreover, recent work suggests that the relationships between HRM, productivity and employee attitudes run through multiple levels (Bowen & Ostroff, 2004; Nishii, & Wright, 2007; Wright & Nishii, 2007). Using measures from various organizational levels can make for more detailed analyses, possibly revealing the true relations in the HRM-well-being-productivity framework. Accordingly, this current study combines positive and negative effects of organizational behavior on employee well-being using measures at multiple levels of the organization.

In recent studies, employee well-being is often measured by work engagement (e.g. Rich, Lepine, & Crawford, 2010). Defined as a positive, fulfilling emotional state of work-related well-being (Schaufeli, Salanova, González-Romá, & Bakker, 2002), engagement can be used to measure the happiness aspect of employee well-being (Grant, Christianson, & Price, 2007). Social science theories suggest that employees show engagement when offered HRM practices (Adams, 1965; Gouldner, 1990; Rousseau, 1995). Moreover, well-performing organizations seem to have a tendency to share their success with employees (Schneider, Hanges, Smith, & Salvaggio, 2003; Subramony, Krause, Norton, & Burns, 2008) who in turn will reciprocate with engagement (Adams, 1965; Gouldner, 1960).

Additionally, HRM and productivity might indirectly affect work engagement via employees' perceptions of job characteristics. HRM practices might increase employees' task-related job resources (Boxall & Macky, 2009; Halbsleben, 2010; Jiang, Lepak, Hu, & Baer, 2012; Snape & Redman, 2010). This increase in resources would lead to a motivational process enhancing engagement (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Moreover, HRM can be seen as an investment in employee empowerment (Wright & Haggerty, 2005) and empowered employees are more engaged due to the abundance of resources (Spreitzer, Kizilos, & Nason, 1997). In contrast, increased productivity would have a negative effect on engagement via job resources. In some work contexts, a higher productivity could mean a lower diversity in tasks and responsibilities. For instance, in the retail sector, dealing with the increased amount of customers at the register would demand employees' undivided attention.

Furthermore, negative indirect effects of HRM and productivity on engagement are expected due to work intensification and empowerment. HRM practices geared towards high performance can increase job demands leading to negative well-being (Jensen et al., 2013; Kroon, Van de Voorde, & Van Veldhoven, 2009; Wood, Van Veldhoven, Croon, & De Mendezes, 2012). Moreover, the increased responsibilities and challenges HRM practices provide are not welcomed by all employees (Chan, Yim, & Lam, 2010; Varca, 2001). Regarding productivity, high levels would decrease well-being (Godard, 2001; Ramsay, Scholarios, & Harley, 2000) due to the additional effort needed to maintain the high productivity (Barker, 1993). Overall, the indirect effects mentioned above seem to overlap with the motivational and straining processes of the job demands-resources (JDR) model (Demerouti et al., 2001).

Using data of multiple stakeholders in a Dutch retail chain, the aim of this study is to explore how HRM and productivity relate to the engagement of retail employees. Moreover, both positive and negative mediating mechanisms through job resources and job demands are investigated. This is summarized in the research question: *To what extent do HRM practices and productivity influence the work engagement of retail employees directly and are there indirect effects via job characteristics?*

Theoretical framework

HPWSs, productivity and engagement

As HRM research moves to a more balanced perspective employee well-being becomes ever more important (Deephouse, 1999; Paauwe & Boselie, 2005). Three types of well-being can be distinguished, namely happiness, relational and health well-being (Grant et al., 2007) and it seems that each type plays a different role in the HRM-productivity framework (Van de Voorde et al., 2012). This study focusses on the happiness well-being of employees, operationalized by work engagement. Defined as a positive, fulfilling, emotional state of work-related well-being (Schaufeli et al., 2002), engagement allows people to bring their full potential to their work (Bakker & Leiter, 2010). Engaged employees have the capacity and motivation to perform well in- and outside of their work roles (Bakker & Leiter, 2010). Moreover, work engagement is argued to be a hot topic among managers as it is identified as antecedent of increased organizational performance (Christian et al., 2011; Harter et al., 2002, 2010; Rich et al., 2010; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009).

Throughout the years, scholars have found a wide variety of HRM practices related to better organizational performance and potentially to increased employee well-being (see Becker & Gerhart, 1996). These work enrichment, participation, skill acquisition and motivational practices are referred to by many different names (see Wood & Wall, 2007). This study refers to them as high performance work practices (HPWPs; Datta et al., 2005; Den Hartog & Verburg, 2004; Kroon et al., 2009; Posthuma, Campion, Masimova, & Campion, 2013). These HPWPs are defined as those HRM practices that enhance employees' competencies, commitment and productivity. When they are bundled into coherent high performance work systems (HPWSs), the practices have stronger effects due to the synergy among them (Appelbaum et al., 2000).

In this study, the remaining independent variable in the HRM-well-being-productivity framework is operationalized by work-unit labor productivity, the average revenue generated by an employee in a work-unit. Scholars have found mixed effects of HPWSs and productivity on employee well-being. Accordingly, two different streams have formed regarding the role of well-being in the framework. On the one hand there is a positive (Peccei, 2004) mutual gains (Van de Voorde et al., 2012) perspective arguing that HPWSs, well-being and productivity go hand in hand. This perspective gains support when dealing with happiness and relational well-being (Van de Voorde et al., 2012). On the other hand there is a more pessimistic (Peccei, 2004), exploitative (Legge, 1995) or critical (Guest, 1999) view of HRM. This sees well-being and productivity as conflicting outcomes and holds when measures of health-related well-being are used (Van de Voorde et al., 2012). The notion the effects of HPWSs and productivity

depend on the type of well-being finds support in the majority of studies (exceptions: Butts, Vandenberg, DeJoy, Schaffer, & Wilson, 2009; Mohr & Zoghi, 2008; Vanhala & Tuomi, 2006; Wood et al., 2012).

Social science theories can explain how HPWSs and productivity positively relate to engagement. For instance, social exchange (Gouldner, 1960) and equity theory (Adams, 1965) suggest that employees in a HPWS feel a need to show positive attitudinal reactions. Psychological contracting literature (Rousseau, 1995) argues that HRM investments lead to higher engagement through more relational contracts between employees and organizations (Bal et al., 2013). Moreover, employees can perceive a HPWS to be an appreciation of their own value to the organization (Spence, 1973; Wood & Menezes, 2011), leading to positive emotions and engagement (Fredrickson, 2001). Additionally, well-performing organizations like to share successes with their employees (Schneider et al., 2003; Subramony et al., 2008; Wright & Haggerty, 2005) and accordingly these employees reciprocate with engagement (Adams, 1965; Gouldner, 1960). Moreover, employees just seem to enjoy being part of a highly productive team or organization (Paauwe, & Boselie, 2005). Recent meta-analyses support the notions that HPWSs and productivity are positively associated with engagement (Harter et al., 2010; Jiang et al., 2012).

In contrast, it is suggested that HPWSs can lead to stressful work environments (Combs et al., 2006) and high productivity levels might be demanding for employees (Barker, 1993; Janssen, 2001). Also, organizations aiming for high productivity are likely to intensify work to achieve their goals (Godard, 2001, 2004; Ramsey et al., 2000; Allen & Lovell, 2003). Even though these negative processes mainly hold for health-related well-being (Van de Voorde, et al., 2012), they might ultimately cross over to happiness well-being. Together with the exceptions mentioned above, this could provide a minor case for a contingency approach (Datta et al., 2005) in which the effects are dependent on the work context. Nevertheless, in line with the majority of empirical work in various contexts (Van de Voorde et al., 2012), it is expected that there is a bottom-line positive direct effect of HPWSs and work-unit productivity on work engagement in a retail context.

H1a: For retail sales employees, HPWSs are directly positively associated with work engagement.

H1b: For retail sales employees, work-unit productivity is directly positively associated with work engagement.

Job characteristics and engagement

In recent years, the JDR model (Demerouti et al., 2001) showed two ways in which characteristics of the job influence employee well-being outcomes. While job resources have a motivational potential, job demands lead to health issues and strain, which are negatively related to motivation (Bakker &

Demerouti, 2006). Accordingly, it can be expected that job resources have a positive influence on engagement while job demands have a negative influence.

Harter and colleagues suggest that employee perceptions of job resources function as key causes of their engagement (Harter et al, 2002). Contemporary studies confirm this positive influence (Christian et al., 2011; Crawford, Lepine, & Rich, 2010) and even the causal direction in the relationship between job resources and work engagement has been confirmed (Hakanen, Schaufeli, & Aloha, 2008; Mauno, Kinnunen, & Ruokolainen, 2007; Schaufeli, Bakker, & Van Rhenen, 2009).

Especially task-related job resources would have a motivational potential (Habesleben, 2010). Employees who experience variety, autonomy and challenge in their work feel more engaged (Macey & Schneider, 2008; Morgeson, Delaney-Klinger, & Hemingway, 2005). Task-related job resources would spur the intrinsic motivation by fostering employee growth, learning and development. Additionally, they would aid employees in achieving their work goals, providing them with extrinsic motivation (Ryan & Deci, 2000; Schaufeli & Bakker, 2004; Schaufeli et al., 2009). Job resources also fulfill basic human needs, providing employees with a sense of competence, relatedness and autonomy (Deci & Ryan, 2000; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). This fosters the willingness of employees to dedicate their expertise and their effort fully to the task at hand (Meijman & Mulder, 1998; Schaufeli & Bakker, 2004; Schaufeli et al., 2009). The positive relation between task-related job resources and engagement has been verified in a wide range of contexts (see JDR model literature) and accordingly positive relations are also expected in this retail setting.

Simultaneously, a negative process is expected. Poorly designed jobs and continuous, excessive job demands can exhaust and strain employees leading to health issues (Bakker & Demerouti, 2006). The high effort needed to deal with these demands can result in lower energy-related well-being (Cavanaugh, Boswell, Roehlin, & Boudreau, 2000; Lepine, Lepine, & Jackson, 2004; Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). Studies testing the negative process have primarily operationalized job demands by workload and -pressure (Bakker & Demerouti, 2006). These quantitative demands showed mixed effects on engagement. Some longitudinal studies found high demands to be a cause of decreasing engagement (Hakanen et al., 2008) while others found no relation with future engagement (Schaufeli et al., 2009). Some scholars even found positive relations between demands and engagement (Bakker, van Emmerik, & Euwema, 2006). Consequently, scholars have questioned the relevance of job demands in predicting engagement (Schaufeli & Bakker, 2004).

Nevertheless, a recent meta-analysis sheds light on these mixed findings. It suggests that job demands can be appraised either as hindrances or as challenges. Moreover, it proposes that

quantitative demands such as workload and -pressure would primarily be appraised as challenges and thus have a positive influence on engagement (Crawford et al., 2010). In contrast, empirical studies show mostly negative or non-existent (causal) relations (Hakanen et al., 2008; Hallberg, Johansson, & Schaufeli, 2007; Llorens, Bakker, Schaufeli, & Salanova, 2006; Mauno et al., 2007; Schaufeli & Bakker, 2004; Schaufeli et al., 2008; Schaufeli et al., 2009; Van den Broeck et al., 2010). As individual and context characteristics play a role in how job demands are appraised (Crawford et al., 2010), this study argues that retail sales employees would most likely experience quantitative job demands as a hindrance. The limited discretion in behavior and limited organizational support would not be a context in which employees can easily cope with increased demands (Bakker & Demerouti, 2006). Accordingly, the next two hypotheses are formed:

H2a: For retail sales employees, task-related job resources are directly positively associated with work engagement.

H2b: For retail sales employees, quantitative job demands are directly negatively associated with work engagement.

HPWSs, productivity and job characteristics

Lately, scholars have been calling for a more employee-focused approach to the strategic HRM research (Bowen & Ostroff, 2004; Boxall & Macky, 2009; Guest, 1997; Liao, Toya, Lepak, & Hong, 2009; Nishii, Lepak, & Schneider, 2008; Nishii & Wright, 2007; Purcel & Hutchinson, 2007; Wright & Nishii, 2007). In addition, contemporary models have argued that the relations between HPWSs, well-being and productivity traverses through multiple organizational levels (Bowen & Ostroff, 2004; Liao et al., 2009; Nishii & Wright, 2007; Wright & Nishii, 2007). Too often studies have relied on the measurement of HPWS implementation by a single management source, assuming that all employees receive and perceive the same HPWPs (Nishii & Wright, 2007). Instead it seems that the consequences of HPWS implementation result from the perceptions of the employees (Wright & Nishii, 2007). Combining the above, scholars need to take into account variation across and between multiple levels of the organization in terms of perceptions, valuations and attributions of HPWSs.

The HR process model (Wright & Nishii, 2007) takes this variability into account. It proposes that HPWPs are subject to the perceptions of various stakeholders and that their effects emerge from multiple layers of the organization (Wright & Nishii, 2007). Looking at the constructs in the HR process model, the current study uses measures of so-called actual HPWPs: practices as managers perceive them to be implemented. These actual practices would in turn be perceived and evaluated by

employees and accordingly affect their attitudes (Liao et al., 2009; Nishii & Wright, 2007; Nishii et al., 2008). While the current study does not measure these latter perceived HRM practices, it does employ measures of job characteristics and outcomes as rated by employees. In doing so, the current study takes into account individual variation in employee responses to HRM practices.

Empirical studies found the HPWPs used in this study able to influence employees' perceptions of their work environment in two ways. First, the practices provide job resources and create a sense of psychological empowerment (Allen & Lovell, 2003; Aryee, Walumbwa, Seidu, & Otaye, 2012; Butts et al., 2009; Ehrnrooth & Bjorkman, 2012; Seibert, Wang, & Courtright, 2011; Tuckey, Bakker & Dollard, 2012). They enable and stimulate employees to apply a broader range of skills during work (Van Veldhoven & Van de Voorde, 2014). Second, HPWSs influence the work climates as well as the job characteristics employees perceive (Aryee et al., 2012; Bowen & Ostroff, 2004; Snape & Redman, 2010). Combining the above, HPWSs are expected to enrich jobs and increase the amount of task-related job resources employees perceive. For instance, development opportunities could increase the task autonomy and variety while participation practices could increase the task significance retail sales employees perceive.

In contrast, high productivity is expected to decrease the amount of job resources employees have. In the current setting of sales employees, increased productivity is a simple function of demand growth; higher productivity is derived from more and more voluminous check-outs at the register. As part of a large retail organization, the current work-units likely apply an economic, control-oriented approach once high productivity levels are achieved (Porter, 1996). The relationship with the employee is primarily seen as a short-term monetary exchange in which costs are to be minimized and gains maximized (Arthur, 1994). Accordingly, increased productivity will not be (directly) met by staff increases for this cancels the increased returns. This leaves the current staff to meet the additional demand and urged to perform only value-adding tasks. Familiarizing new colleagues, extensive customer service, reorganizing store layout and other non-essential tasks are likely surpassed for direct revenue-generating tasks like working the register and restocking. Obviously, this could limit the discretion and variety in tasks that retail sales employees perceive.

Empirical work on this latter process is scarce. Even though well-performing organizations are expected to invest in employees development and well-being (Schneider et al., 2003; Subramony et al., 2008), it is expected that the current organization operates from a cost-minimization strategy. As explained earlier, this results in limited task-related resources for retail sales employees in high productivity conditions. Altogether, the next two hypotheses were formed regarding this specific retail context.

H3a: For retail sales employees, HPWSs are directly positively associated with task-related job resources.

H3b: For retail sales employees, work-unit productivity is directly negatively associated with task-related job resources.

There might be an additional dark side to HPWSs and productivity (Jensen et al., 2013). As empowerment theory (Spreitzer, 1995), work intensification (Allen & Lovell, 2003; Godard, 2001, 2004) and empirical studies (Butts et al., 2009; Ehrnrooth & Bjorkman, 2012; Van Veldhoven & Van de Voorde, 2014; Wood & Menezes, 2011) suggest, a HPWS brings along additional job demands and signals that additional effort is expected from employees. Additionally, HRM practices geared towards high performance are expected to intensify work, putting greater pressure on employees (Allen & Lovell, 2003; Godard, Godard, 2001, 2004; Green, 2002, 2004; Ramsay et al., 2000). Arguably, a HPWS can lead to more confusion, reduced self-efficacy and less psychological and economical security among employees (Jensen et al., 2013; Wood & Menezes, 2011). There are studies that weaken this claim (Appelbaum et al., 2000; Kalmi & Kauhanen, 2008), but while some workers would welcome the extra pressure, the general consensus points towards negative intensification (Allen & Lovell, 2003). Especially on quantitative job demands like workload and time pressure, HPWSs seem to have a positive influence (Jensen et al., 2013; Kroon et al., 2009; Wood et al., 2012; Van De Voorde et al., 2012). Because context-specific research on the matter is scarce, this positive influence is also expected in this retail setting.

On a similar note, highly productive work-units seem to demand more of their employees, in order to maintain productivity levels (Barker, 1993; Janssen, 2001). Organizations aiming for better financial performance are likely to intensify work, increasing job demands (Gordard, 2001, 2004; Ramsey et al., 2000). This opposes study results of Van Veldhoven (2005) proposing that high productivity actually leads to a lower workload. He suggests productivity might provide additional funds that can be used to buffer job demands. Nevertheless, numerous studies have found positive relations between quantitative job demands and productivity (Bakker, Demerouti, & Verbeke, 2004; Janssen, 2001; Van Veldhoven & Van de Voorde, 2014). Arguably, with the economic climate (CBS, 2014) and a cost-minimization strategy (Porter, 1996), increased productivity in this study's retail setting will not be met by timely staff increases, leaving additional job demands for the current personnel. All in all, both HPWSs and productivity are expected to lead additional quantitative job demands in a retail setting.

H3c: For retail sales employees, HPWSs are positively associated with quantitative job demands

H3d: For retail sales employees, work-unit productivity is positively associated with quantitative job demands.

The mediating role of job characteristics

Lastly, it is expected that job resources and job demands partially mediate the effects of HPWSs and productivity on engagement. Arguably, the jobs resulting from a HPWS – with high discretion, responsibility and variety – are needed in order to provide employees with the opportunity to perform and feel well (Wood et al., 2012). Indeed, development opportunities, workplace participation and enriched job design influence employees' perception of task-related job resources (Boxall & Macky, 2009; Snape & Redman, 2010). As a consequence of this perceived resource gain, employees will likely respond with positive attitudes (Piening, Baluch, & Salge, 2013; Takeuchi, Lepak, Wang & Takeuchi, 2007). This follows the norms of reciprocity (Gouldner, 1960) and the equity theory (Adams, 1965) which suggest that employees perceiving gains due to a HPWS will try to do well for the organization and respond with engagement (Gould-Williams & Davies, 2005; Liden, Wayne & Sparrowe, 2000).

Additionally, literature points at empowerment (Spreitzer, 1995) as a mediating mechanism between HPWSs and employee attitudes (Boxall, Ang, & Bartram, 2011; Butts et al., 2009). Using HPWPs, organizations can empower their employees (Wright & Haggerty, 2005). Work contexts with minimal constraints are formed when a HPWS is implemented. While these facilitate employee empowerment, empowered employees feel a sense of choice in their daily work and tend to show more work motivation (Butts et al., 2009; Spreitzer et al., 1997).

Nevertheless, there is also increasing evidence for negative consequences of employee empowerment (Chan & Lam, 2011; Hartline & Ferrel, 1996; Varca, 2001). Through HR investments, empowered employees can perceive greater workload next to their broader range of tasks (Varca, 2001). Moreover, having more self-determination and meaningful jobs can instigate unexpected demands from sources employees previously did not have to deal with (Chan et al., 2010). All in all, a HPWS could lead to motivating as well as straining indirect effects on work engagement (Demerouti et al., 2001).

Moreover, it is hypothesized that increased productivity indirectly leads to lower engagement levels among employees in two ways. Due to more job demands and less job resources, employees in highly productive work-units would experience less motivation and more strain (Demerouti et al., 2001). Additionally, in these demanding but unresourceful conditions, employees would be less likely to reciprocate with engagement (Adams, 1965; Gouldner, 1960).

The mediating mechanisms proposed above have found varying support in empirical research, mostly with HPWSs as antecedent (Allen, Shore, & Griffeth, 2003; Butts et al., 2009; Jensen et al., 2013; Kehoe & Wright, 2013; Kroon et al., 2009; Snape & Redman, 2010; Van Veldhoven & Van de Voorde, 2014). This current study adds to literature by looking at the positive and negative mediating mechanisms simultaneously. Arguably this provides a more balanced perspective on the HRM-well-being-productivity framework than solely a mutual gains or conflicting outcomes perspective. Seeing that multiple indirect pathways are expected, four partial mediation hypotheses are presented below and added to figure 1. The proposed relations are again expected to apply specificly to retail sales employees due to the context-dependency of the earlier proposed direct effects.

H4a: For retail sales employees, HPWSs positively influence work engagement indirectly via task-related job resources.

H4b: For retail sales employees, work-unit productivity negatively influences work engagement indirectly via task-related job resources.

H4c: For retail sales employees, HPWSs negatively influence work engagement indirectly via quantitative job demands.

H4d: For retail sales employees, work-unit productivity negatively influences work engagement indirectly via quantitative job demands.

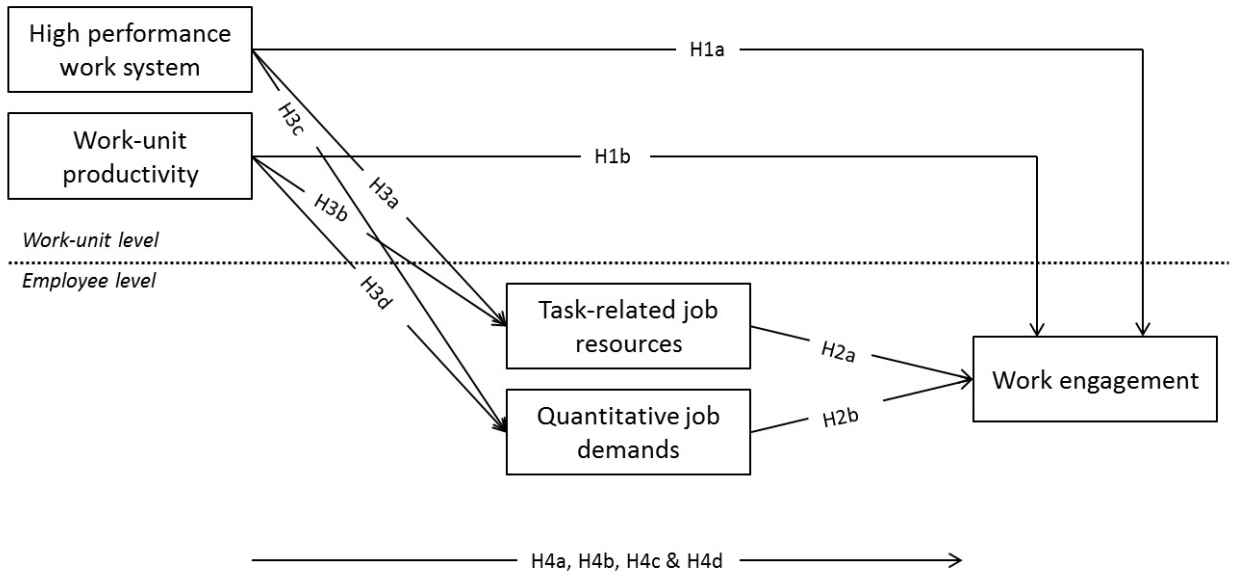

Figure 1: Conceptual model

Methods

Procedure and sample

During the last quarter of 2013, multi-level data were collected at a retail chain in the Netherlands. The cluster-managers, store-managers, sales coaches and sales employees of 293 work-units in 18 clusters of the organization were invited to participate in the study. Employees could voluntarily participate during work hours and received different questionnaires based on their job function. While management items measured work-unit scores, employee items were formulated to measure individual scores. To guarantee anonymity, filled out names were automatically randomized during the collection process. Since management data could be easily traced back to the work-unit, it was additionally guaranteed that no performance appraisal would be attached to the results, in order to decrease the social desirability bias in the data. Furthermore, the organization provided objective performance data of all stores.

Begin 2014, 731 out of 1942 sales employees (37.64%) had filled out the survey. Because up to 22 sales employees worked in a single work-unit (μ = 6.23; *SD* = 2.753) and work-unit generalizability had to be guaranteed to some extent, only data from work-units with over three complete responses of sales employees were used. This resulted in 525 respondents (27.03%) on the individual, employee level. Next, 108 store-managers (50.70%) had completed their questionnaires. Once management and individual employee data were integrated, a complete dataset with 488 sales employees (25.13%) and 108 store-managers (50.70%) in 101 work-units (34.47%) remained. As the latter two percentages suggest, some work-units were led by management personnel in other functions (region-managers or sales coaches).

Of the 488 sales employees 482 were female respondents (98.8%). This is not surprising compared to the 98.51% females in the population. Most of the sales employees in the sample had a lower vocational (MBO) educational background (43.2%). The largest part, 192 employees (39.3%), belonged to the age group between 20 and 30 years old, while the other two age groups consisted of 153 employees (31.4%) younger than 20 years and 143 employees (29.3%) older than 30 years. The respondents were almost evenly divided among the different tenure groups. Eighty-seven employees (17.8%) had worked at the organization less than a year while up to 107 respondents (21.9%) had been employed for over ten years. Details on the other tenure groups are presented in table 1. Furthermore, the majority of the sample had a permanent contract (56.8%) and worked part-time, between eight and 20 hours per week (48.8%). Finally, 308 respondents (63.1%) had obtained a specialized retail diploma during their employment.

Table 1: Demographics of the sales employees in the sample.

Variables	Respondents	(% of total)
Gender		
female	482	98.8%
male	6	1.2%
Education		
primary or secondary	158	32.4%
lower vocational	211	43.2%
higher vocational or academic	119	24.4%
Age		
less than 20 years old	153	31.4%
20 to 30 years old	192	39.3%
older than 30 years	143	29.3%
Tenure		
zero to one years	87	17.8%
one to two years	101	20.7%
two to four years	94	19.3%
four to ten years	99	20.3%
more than ten years	107	21.9%
Contract type		
temporary	211	56.8%
permanent	277	43.2%
Working hours per week		
less than 21	55	11.2%
eight to 21	238	48.8%
21 to 31	135	27.6%
more than 31	60	12.4%
In-company diploma		
none	180	36.9%
specialized retail diploma	308	63.1%

Measures

Work engagement. The level of work engagement of sales employees was measured with a shortened version of the Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003). The nine items measured the extent to which employees feel vigor, dedication and absorption in their job. Respondents were asked to indicate on a seven-point scale ranging from one (never) to seven (always) how frequently statements applied to them. Examples of these statements included “At work, I feel healthy and strong” (Als ik werk voel ik me fit en sterk) and “I am excited about my job” (Ik ben enthousiast over mijn baan). Exploratory factor and reliability analyses of these nine items pointed out that they form one

reliable scale (Cronbach's α = .951) which accounted for 72.77% of the variance in the items. The individual factor loadings can be found in appendix (table A1). The mean score for engagement was standardized to obtain standardized coefficients directly from the analyses (Hox, 2002). In this way the effects of the different variables could be directly compared (Hunter & Hamilton, 2002). The sales employees showed an average engagement score of 5.477 (*SD* = 1.102) on a seven-point scale. Compared to Dutch norms, this average fell right below the upper limit of the 'averagely engaged' category. Its exact position laid around the 74th percentile, meaning the sales employees were fairly engaged (Schaufeli & Bakker, 2003).

High performance work systems. A total of 28 items measuring HRM activities were rated by management. Sixteen items measured the factual implementation in terms of the coverage of employees by practices. Twelve items measured the evaluated implementation, in terms of the effort and the priority with which practices were implemented. Accordingly, two different measures of a HPWS were used, factual and evaluative.

The factual items differed noticeably from the evaluative items, primarily because they left no room for the emotional appraisal of practices. Conceptually the factual items overlapped with Wright and Boswell's (2002) definition of implemented HRM practices: the programs, processes and techniques that are actually operationalized in work-units. Additionally, factual measures are more accurate measures of actual implemented HRM practices because they tend to vary less between rating sources (employees as opposed to managers) (Beijer, Van Veldhoven, Peccei, & Paauwe, 2014).

Furthermore, items within a measure (factual or evaluative) could be divided along five main categories of HRM practices. These consisted of training and development, recruitment and selection, participation and communication, performance appraisal and remuneration (Posthuma et al., 2013). The relative representation of each HR function per measure can be found in the appendix (table A6).

Note that in seven out of 101 work-units the HPWSs were rated by two managers instead of one. Because there was little variation between scores of the two raters in those specific work-units (see appendix table A7), the mean scores were calculated and used as a measure of HRM in these seven cases. These mean scores proved to be highly reliable (ICC2 > .78; table A7).

Factual HPWS (iHPWS). The measure for factual (implemented) HPWSs was constructed using sixteen items adopted and altered from earlier studies (De Kok, Uhlaner, & Thurik, 2002; Den Hartog & Verburg, 2004; Kroon et al., 2009). The items measured the coverage of HRM practices in five functional areas: learning and development (four items), performance appraisal (four items), communication and participation (three items), recruitment and selection (three items) and remuneration (two items). Prior

to all items, the management respondents were asked to indicate on a five-point scale ranging from one (none of the employees in this unit) to five (all of the employees in this unit) how many employees were covered by a certain HRM practice. An example of an item for learning and development was "Regular training and development (at least once per year)" (Regelmatige training en opleding (minstens eens per jaar). An example of an item for performance appraisal was "A formal performance appraisal system" (Een formeel beoordelingssysteem). A complete list of all the practices (table A2) as well as the representation of the HRM functions in the questionnaire (table A6) can be found in the appendix.

Exploratory factor analysis showed that only the item "Salary increase based on individual performance" (Salarisstijging op basis van individuele performance) had a factor loading below guidelines (.292 < .30). Nevertheless, the item did not decrease the reliability of the scale (Cronbach's α if deleted = .811) and the scale itself was highly reliable (Cronbach's α = .818) and in agreement with all norms (Pallant, 2007). The variations in factor loadings were taken into account using SPSS's function to compute a weighted factor score based on regression coefficients. This weighted factor score related strongly to the factor score to which each of the sixteen items contributed evenly (r = .965; p < .001). The latter would have explained 29.80% in the variation of the items. Individual factors loadings (table A2) and the relative representation of each HRM function in the weighted factor score (table A6) can be found in the appendix. The managers scored an average of 3.462 (*SD* = 0.570) on the five-point scale for iHPWS. This indicated that 79.12% of the managers argued to implement a HPWS covering over half of their employees (iHPWS > 3). Unfortunately, no benchmarks or norm scores were available.

Evaluated HPWS (eHPWS). The items for this construct are adapted from a range of previous studies (Allen et al., 2003; Macky & Boxall, 2007; Pare & Tremblay, 2007; Snell & Dean, 1992; Sun, Aryee, & Law, 2007; Wright et al., 2005). The twelve items covered the same five functional areas of HRM as the factual construct. Learning and development made up the larger part (four items), followed by performance appraisal (three items), communication and participation (two items), recruitment and selection (one item) and remuneration (one item). Nevertheless, the items seemed to measure a more subjective appraisal of HPWPs, regarding the effort, priority and fairness with which certain HRM practices are implemented in their store. Prior to all items, respondents were asked to indicate their agreement with statements on a five-point scale ranging from one (totally disagree) to five (totally agree). An example of an item for learning and development was "In this store, a lot is invested in training employees" (Er wordt veel geld geïnvesteerd in het trainen van medewerkers in deze winkel). An example of an item for performance appraisal is "In this store, performance appraisal is based on measurable results" (Beoordelingen zijn in deze winkel gebaseerd op meetbare resultaten). A complete

list of all the practices (table A3) as well as the representation of the HRM functions in the questionnaire (table A6) can be found in the appendix.

Exploratory factor analysis showed that the one item regarding remuneration – "Employees earn as much as they are worth compared to their colleagues in this store" (Medewerkers verdienen wat ze waard zijn in vergelijking met salrissen van collega's in deze winkel) – had a low factor loading (.132). Further analysis showed that the item indeed lowered the scale's reliability slightly (Cronbach's α .810 > .786). Nevertheless, it was decided to keep the scale intact to ensure proper comparison with prior studies and the other HPWS measure, as well as to ensure that all five HRM functions were represented in the measure. Moreover, the variations in factor loadings was taken into account by using SPSS's function to compute a weighted factor score based on regression coefficients. This weighted factor correlated strongly with the factor score to which each of twelve items contributed evenly (r = .986; p < .001). The latter would have explained 33.27% of the variance in the items. Individual factors loadings (table A3) and the relative representation of each HR function in the weighted factor score (table A6) can be found in the appendix. The managers evaluated their HPWS with a 3.702 (*SD* = 0.444) on a five-point scale on average. This indicated that around 94.31% of the managers evaluated that he/she implemented a HPWS with some additional effort (eHPWS > 3). Unfortunately, no benchmarks or norm scores were available.

Work-unit productivity. Objective performance measures were provided by the organization. The *revenue per employee worked hour* was calculated by taking the revenue over the last quarter of 2013 and dividing it by the total number of worked hours by sales employees during that period. Explicitly the figures of the last quarter were selected because they resembled the financial figures during the timeframe in which the survey data were collected. Additionally, the obtained key performance indicator was considered most suitable because it takes account the variation in size between work-units. This is in line previous studies (Piening et al., 2013; Van Veldhoven & Van de Voorde, 2014).

Due to confidentiality issues, exact financial numbers could not be presented. Nevertheless, it can be presented that the standard deviation amounted to just fewer than 24% of the average revenue per employee per hour. The 95% confidence interval can thus be calculated to run from 52% to 148% of the mean productivity. Before analysis, work-unit productivity was standardized to prevent small coefficients due to its large scale and in order to compare coefficients (Hox, 2002; Hunter & Hamilton, 2002).

Task-related job resources. Job variety is one of five frequently mentioned task-related job resources (Hackman & Oldham, 1976). This study operationalized task-related job resources measured by a shorter version of the VBBA scale for job variety (Van Veldhoven & Meijman, 1994; Van Veldhoven, Meijman, Boersen, & Fortuin, 2002). It represents the extent to which a job offers a set of tasks that uses the multitude of skills a person has, and as such also requires a certain complexity in job tasks (Grant & Ashford, 2008). The used scale consisted of four items. Respondents were asked to indicate to how frequently statements applied to them on a four-point scale ranging from one (never) to four (always). An example of an item was "Does your job require creativity?" (Is voor je werk creativiteit vereist?). Another example was "Is your work varied?" (Is je werk gevarieerd?).

Exploratory factor analysis showed that the items formed one scale which accounted for 61.27% of the variance in the items. Moreover, reliability analysis showed the scale to be reliable with a Cronbach's α equal to .786. The individual factor loadings can be found in the appendix (table A4). Since no inter-group variation in the slopes was expected nor analyzed, the sum score of the job variety items was standardized to simplify the interpretation of the intercept (Enders & Tofighi, 2007; Hofmann & Gavin, 1998) and to compare the relative weight of the coefficients (Hox, 2002; Hunter & Hamilton, 2002). The average sales employee indicated to experience variety in his/her job sometimes up to often. An average job variety of 2.791 (*SD* = 0.576) on a four-point scale was reported. This score laid around the 35th percentile compared to the general Dutch norm and around the 39th percentile of the norm in the Dutch food/non-food retail sector (SKB, 2014). Seemingly, the job variety experienced by this sample was slightly lower than one would expect.

Quantitative job demands. This variable was operationalized using the six items of a shortened version of the VBBA scale of pace and amount of work (Van Velhoven & Meijman, 1994; Van Veldhoven et al., 2002). It measures the extent to which respondents feel pressure in the performance of their work activities. Respondents were asked to indicate on a four-point scale ranging from one (never) to four (always) how frequently statements applied to them. Examples of these statements are "Do you have to hurry?" (Moet u zich haasten?) and "Do you have too much work to do?" (Heeft u veel werk te doen?).

Exploratory factor analysis showed that these six items formed one factor for work pressure, accounting for 58.68% of the variance in the items. Moreover, the Cronbach's α of .855 indicated that the items formed a reliable scale. Only the first item ("Do you have too much work to do?" (Heeft u veel werk te doen?)) slightly reduced the reliability (Cronbach's α if deleted = .857). Nevertheless, the decrease was deemed acceptable to guarantee comparison with prior studies (Pallant, 2007). The

individual factor loadings can be found in the appendix (table A5). Because no inter-group slope variation was expected, the mean of the items was standardized to simplify interpretation of the intercept (Enders & Tofighi, 2007; Hofmann & Gavin, 1998) and the relative strength of coefficients (Hox, 2002; Hunter & Hamilton, 2002). The sales employees indicated to experience work pressure only at some times. They reported an average work pressure of 2.044 (*SD* = 0.564) on a four-point scale. This was reasonably lower than the Dutch norm and especially lower than the experienced work pressure in the food/non-food retail sector of the Netherlands. Respectively, this current sample resided at either the 8th or the 5th percentile (SKB, 2014) indicating a notably low work pressure.

Control variables. In order to test the hypotheses, individual-level control variables were included. Below, the effects of control variables in similar studies are discussed. While some studies suggest including second-level control variables (Bakker et al., 2006; Kroon et al., 2009; Snape & Redman, 2010; Wood et al., 2012), little were available in the data of the current study. Moreover, because the employees in the sample were almost all women and age and tenure were strongly correlated, only education, age and working hours were incorporated as covariates in the analyses.

Gender. As seen in earlier studies, male employees tended to experience more autonomy (Van Veldhoven & Van de Voorde, 2014) but feel less empowered (Boxall et al., 2010) and engaged (Bakker et al., 2006; Bal et al., 2013; Mauno et al., 2007). Nevertheless, due to the little variation in the sample (98.8% women), gender is not controlled for in the analyses.

Education. Measured by the highest attained educational degree, highly educated employees seemed to experience less vigor (Van Veldhoven & Van de Voorde, 2014) but more absorption (Mauno et al., 2007). In contrast, a study by Bakker and colleagues found that the level of education was negatively related to dedication but positively to vigor (Bakker et al., 2006). Arguably, education has differing effects on the sub-dimensions of work engagement. Moreover, educated employees seem to show less affective attitudes in general (Bal et al., 2013; Boxall et al., 2010). Maybe because employees with higher educational backgrounds tend to experience higher job demands (Kroon et al., 2009). Since education is an ordinal variable, two dummy variables were created to measure the level of education: one for employees with a high education (higher vocational or academic) and one for employees with a relatively low education (primary and secondary school). For both dummy variables the referent category was formed by employees with a lower vocational education.

Age. Older employees felt more empowered and experienced a lower workload (Ehrnrooth & Björkman, 2012). In contrast, another study suggests older workers experience more work pressure (Gould-Williams & Davies, 2005). Nevertheless, they seem to feel more work engagement than their

younger counterparts (Bal et al., 2013). This latter finding was additionally confirmed for the engagement dimension of vigor (Van den Broeck et al., 2008). Due to its ordinal nature in the current data, two dummy variables were created: one for employees under the age of 20 and one for employees older than 29 years. The referent category for both groups was formed by employees age 20 to 29.

Tenure. Tenure was found negatively related to productivity (Ehrnrooth & Björkman, 2012). While some studies have found the opposite (Jensen et al., 2013), Nishii and colleagues argued that senior employees tend to evaluate a HPWS less favorable (Nishii et al., 2008). Consequently, they might perceive job resources or demands differently. On the same note, some studies have found that tenure was negatively related to work engagement (Bakker et al., 2006). Maybe, because senior workers experience more work pressure (Gould-Williams & Davies, 2005). Nevertheless, to prevent possible multicolliniearity effects between age and tenure, tenure was excluded from the analyses.

Working hours. Even though less often included as control variable, the current study expects the number of working hours to have a significant effect on the included variables. Studies show that working hours can have a negative effect on the different forms of well-being (Dembe, Erickson, Delbos, & Banks, 2005; Spector et al., 2004). Moreover it seems logical that those employees who work more hours experience more of the HPWSs and the increased productivity. Accordingly, full-time employees could experience stronger effects. All in all, the number of working hours was included as dummy variable in the analyses, with 1=over 21 hours per week and 0=less than 21 hours per week, resembling a part-time (60.0%) versus full-time (40.0%) division of the sample.

Analyses

After erroneous values were transformed into system missings, the data's suitability for factor analysis was assessed. All Bartlett's tests of sphericity (Bartlett, 1954) were found to be significant ($p < .05$) and KMO indexes (Kaiser, 1970) scored above .6 indicating factor analyses to be appropriate for these data (Pallant, 2007; Tabachnick & Fidell, 2007). The number of factors per scale was based on the Kaiser-criterium (Kaiser, 1960) in combination with the output of the Scree-plots (Catell, 1966) as advised by Cramer (2003). However, for the HPWS measures, one-factor solutions were enforced in order to obtain a system scores.

Consequently, the validity and reliability of the scales were verified in SPSS. Scales were considered reliable if the Cronbach's α exceeded .70 as is recommended for scales representing minor individual decisions (DeVellis, 2003; Pallant, 2007; Van den Brink & Mellenbergh, 1998). Single items in a scale were regarded an addition if they contributed to the reliability of the scale, correlated properly

with the other items (corrected item total correlation > .30) and contributed to the scale's reliability (Evers, Van Vliet-Mulder, & Groot, 2000; Pallant, 2007). If not, improved reliability due to exclusion of items was weighted against comparison with prior research. Since no severe reliability issues arose, all items were included.

To test the twelve hypotheses a two-level mediation model as shown in figure 1 needed to be run because employees were nested in work-units and thus not statistically independent (Snijders & Bosker, 1994). Because antecedents laid on the second level of analysis and the mediators and dependent variable on the first, a 2-1-1, cross-level, lower mediation model was needed (Mathieu & Taylor, 2007). The intraclass correlation coefficients, depicting the amount of variance explained by grouping structure (Hox, 2002), were calculated using Raudenbush's formula (1993). This meant the level-two variance component (τ^2) needed to be obtained by dividing the mean squares between groups minus the mean squares within groups by the average group size (*Nj* = 4.83). Next, the ICC1 could be computed by relating the level-two variance component to the total amount of variance in both levels (table 2). For engagement the obtained ICC1 values were slightly lower than normal (5% to 21% in Bakker et al., 2006), as were those of job demands (17% in Morrison, Payne, & Wall, 2003; 24% in Van Yperen & Snijders, 2000). Especially regarding job variety the current ICC1 values are at a noteworthy low compared to other studies (41% in Birnbaum, Farh, & Wong, 1986; 82% in Oliver, Bakker, Demerouti, & De Jongh, 2005). Nevertheless, even these low values imply that multi-level analysis was appropriate (ICC1 > .05 as in Heck, Thomas, & Tabata, 2013; Hox, 2002).

Table 2: ANOVA outcomes per variable, including intraclass correlations.

	MSW	**MSB**	**F**	**sig**	**τ^2**	**ICC1**
Job variety	0.908	1.358	1.496	0.004	0.093	9.31 %
Work pressure	0.837	1.632	1.951	0.000	0.165	16.44%
Work engagement	0.936	1.249	1.335	0.029	0.065	6.49%

Formula's: ICC1 = (τ^2/ (MSW + τ^2)). τ^2 = (MSB – MSW)/*Nj* (Raudenbusch, 1993). *Nj* = 4.83.

Three sets of MIXED models were conducted in SPSS, with job variety, work pressure and work engagement as dependent variables. Later, the same equations were run in MLwiN v2.02, providing the same estimates as SPSS with only minor differences in the variance components (see appendix B). As advised, the maximum likelihood function was left unrestricted (full information), including regression coefficients and variance components, rather than only the latter (Kreft & De Leeuw, 1998). This function was chosen in order to compare fixed effects in nested models (Heck, Thomas, & Tabata, 2013; Hox, 2002). In theory, this function may lead to downward biased, less accurate estimates of variance

components (Bryk & Raudenbush, 1992; Hox, 2002). However, in practice, the differences are minimal with large samples as this one and accordingly similar variance patterns will emerge (Hox, 2002; Snijders & Bosker, 1994). To verify whether more complex models better fitted the data, the log-likelihood statistic (-2LL) and the change in number of parameters (degrees of freedom = *df*) were used to perform chi-squared (χ^2) tests. Additionally, proportional reductions in variance components (PRV) were calculated, as well as *R*-squared changes in individual and mean group scores (Snijders & Bosker, 1994).

To test whether work-unit variables and job characteristics influenced work engagement, first, a model with randomly varying intercepts was run (M1). Consequently, one could inspect whether the intercept varied significantly between groups. Next, the control variables were entered in a second model (M2). In the third model, HRM and work-unit productivity were added (M3). Lastly, job variety and work pressure were included in a final model (M4).

To test the effects of HPWSs and work-unit productivity on the job characteristics, first a model with a random intercept effect was run (M1). Secondly, the control variables were added (M2). Lastly, the HPWS and productivity measures were added in a third model (M3). This analysis was performed twice: with job variety and with work pressure as dependent variables.

Afterwards, MacKinnon and colleagues guidelines for mediation (MacKinnon, Fairchild, & Fritz, 2007) were consulted before advancing to the Sobel-tests (Sobel, 1982). Even though recently the Sobel-test (Sobel, 1982) has received criticism regarding its lack of power (Hayes, 2009), this current sample was large enough on both levels to warrant enough statistical power (Fritz & MacKinnon, 2007).

Additionally, it was inspected how the different models affected the distributions of variance components. Using ANOVA models, the distribution of variance between the two levels was analyzed for a model without any predictors. Next, using the same model steps as in the MIXED models, it was explored how HPWSs, productivity and job characteristics could shift the distribution of the variance (between the two levels) and could model the variance in the individual and mean group scores.

Results

Descriptive statistics and correlations

Table 3 shows the means, standard deviations and correlations at the individual level of analysis. While the measures of HPWSs showed a high correlation (r = .492; p < .01), only the factual measure (iHPWS) seemed to show a significant correlation with productivity (r = -.121; p < .01). Both measures of HPWSs seemed unrelated to job variety and work pressure. Productivity, however, was positively related to

Table 3: Means, standard deviations and correlations.

	μ	σ	1	2	3	4	5	6	7	8	9	10	11
1. Factual iHPWS[1, 2]	0.000	1.000	(.821)										
2. Evaluated eHPWS[1, 2]	0.000	1.000	.492**	(.786)									
3. Productivity[1, 2]	0.000	1.000	-.121**	.030	(n.a.)								
4. Job variety[1]	0.000	1.000	.050	.004	-.110*	(.786)							
5. Work pressure[1]	0.000	1.000	-.034	-.063	.191**	.001	(.855)						
6. Work engagement[1]	0.000	1.000	.067	.031	-.077	.495**	-.055	(.951)					
7. Low education[3]	0.324	0.468	-.042	-.096*	.070	.039	.075	.050	(n.a.)				
8. High education[3]	0.244	0.430	.060	.035	-.043	-.150**	-.068	-.286**	-.042	(n.a.)			
9. Age (20- years)[4]	0.314	0.464	.001	.026	.059	-.072	-.226**	-.122**	-.023	-.393**	(n.a.)		
10. Age (30+ years)[4]	0.293	0.456	-.078	-.048	-.081	.117**	.183**	.255**	-.045	.033	-.065	(n.a.)	
11. Working hours[5]	0.400	0.490	-.042	-.051	.020	.150**	.190**	.079	.072	.228**	-.303**	-.435**	(n.a.)

Note: Cronbach's α of scales between brackets. First-level sample size = 488. Second-level sample size = 101.

[1] Higher values equal higher scores on the construct.

[2] Significance tests do not take into account reduced sample on the second level.

[3] Dummy variables with medium education as referent group.

[4] Dummy variables with age 20 to 29 years as referent group.

[5] Dummy variables with less than 21 hours per week as referent group.

* $p < .05$ (two-tailed) ** $p < .01$ (two-tailed)

work pressure (r = .191; p < .01) and negatively related to job variety (r = -.110; p < .05). Work engagement was only related to job variety (r = .495; p < .01). One should note that these correlations did not take into account that the work-unit characteristics resided at the second level and came from a smaller sample.

Model and hypothesis tests

The conceptual model entailed the direct effects of work-unit productivity, two measures of HPWSs and two job characteristics on work engagement. Moreover, it was expected that productivity and HPWSs had direct effects on the job characteristics. With job variety and work pressure being hypothesized to have a respective positive and negative influence on work engagement, it was expected that there were additional indirect effects of HPWSs and work-unit productivity on work engagement. To test twelve hypotheses, three series of nested MIXED models were run in SPSS and checked using MLwiN v2.02. Subsequently, six Sobel-tests (Sobel, 1982) were conducted to verify potential mediation effects, proposed by hypotheses 4a to 4d. Finally, variance at the two levels was investigated further. All these are presented below in the same order as the theoretical framework.

Work engagement on HPWS, work-unit productivity and job characteristics

To test hypothesis 1a, 1b, 2a and 2b, regarding the direct effects of HPWSs, work-unit productivity, job variety and work pressure on work engagement, four nested models were run consecutively as can be seen in table 4. In the first model (-2LL = 1379.295), the intercept was inserted as a random factor so that it could vary between groups (work-units). This explained only 0.35% of the variance in the engagement of individuals. It seemed the differing intercepts per work-unit explained little variance on both levels, with the first- and second-level proportional reductions in variance (PRV) being under one percent. Moreover, this model showed that there was significant unexplained variance on the individual employee level (σ^2 = 0.932; p < .001) but not on a work-unit level (τ^2 = 0.065; p > 0.05). This hinted that there was little predictive potential for the work-unit variables. The ICC1 confirmed this, showing that only 6.52% of the total variance resided at the second level.

In the second model, the individual differences were entered as control variables. This model explained 12.25% of the variance in individual engagement, 9.79% of variance in the mean engagement scores of groups and predicted engagement significantly better than model 1 (χ^2 = 63.119; df = 5; p < .001). There was a large proportional reduction in the individual variance component, but it remained significant (σ^2 = 0.813; p < .001). Because the second-level variance component changed minimally (τ^2 = 0.065; p < .05), the ICC1 rose to 7.40% for relatively more of the total variance resided at the second

level than in the previous model. Regarding effects, the model indicated a significantly higher work engagement in the age group above 30 as compared to the referent group (B = 0.317; p < .01) and a lower work engagement for the highly educated compared to medium educated sales employees (B = -0.566; p < .001).

The third model presented the addition of the work-unit variables, two indicators of HPWSs and one for work-unit productivity. This model did not explain significantly more variance in work engagement than the previous model (χ^2 = 5.015; df = 3; p > .05), indicating that the work-unit variables did not account for much variance in work engagement. This is represented in the small increases in both R-squared values. The level-one variance component rose a little compared to model 2 (σ^2 = 0.816; p < .001), which is normal when adding second-level predictors (Snijders & Bosker, 1994). The level-two component did decrease with 23.10%, but due to the already small amount of second-level variance the absolute decrease was minimal (τ^2 = 0.050; p > .05). Of the total variance, 5.77% still resided at the second level after the addition of the work-unit variables. Regarding effects, the direct effects of these work-unit variables on work engagement were all insignificant, modelling only an additional 5.56% of variance in the mean group scores and an additional 1.20% of variance in individual scores. This is not surprising, since they could only explain variance residing at the second level which was minimal already. It seemed that work engagement was primarily an individual construct that could hardly be predicted by work-unit variables. Regarding the effect sizes in model 3, the effects of the control variables remained significant. Additionally a higher work engagement was found for those employees who worked more than 21 hours per week, as compared to those who worked less (B = 0.196; p < .05).

In the last model, the job characteristics were added. This model is a significantly better model for predicting work engagement (χ^2 = 120.665; df = 2; p < .001), explaining almost 33% of variance in the individual scores and almost 50% of variance in the mean group scores on work engagement. Compared to the empty model large PRV values were found: 28.39% for the level-one variance component and a stunning 98.46% for the level-two component. Only 0.15% of the total variance resided at the second level after this model step, indicating that job characteristics can account for almost all variance in mean group scores. In terms of effects, job variety was strongly positively related to work engagement (B = 0.438; p < .001) while work pressure had a negative effect (B = -0.109; p < .01). Regarding control variables, only the difference in engagement due to hours per week became insignificant.

In conclusion, there were still no significant effects of the work-unit variables in model 4, leading to the rejection of hypotheses 1a and 1b. There are likely no direct effects of HPWSs and work-unit productivity on work engagement in the population. In contrast, hypothesis 2a and 2b were confirmed.

There is evidence for a positive effect of job variety on engagement and a negative effect of work pressure on engagement in the population. See table 4 for the tested models.

Table 4: Predicting work engagement.

	Model 1	***Model 2***	***Model 3***	***Model 4***
-2LL	1379.295	1316.176***	1311.161	1190.496***
χ^2		63.119	5.015	120.665
df	2	5	3	2
Estimates of fixed effects				
Intercept	0.011 (0.051)	0.059 (0.115)	0.053 (0.144)	0.081 (0.099)
Low education[1]		-0163 (0.100)	-0.156 (0.100)	-0.147 (0.088)
High education[1]		-0.566 (0.121)***	-0.577 (0.120)***	-0.486 (0.106)***
Age (20- years)[2]		-0.110 (0.114)	-0.100 (0.113)	-0.120 (0.101)
Age (30+ years)[2]		0.317 (0.113)**	0.313 (0.113)**	0.262 (0.101)*
Hours per week[3]		0.190 (0.099)	0.196 (0.098)*	0.113 (0.088)
Factual iHPWS			0.079 (0.055)	0.062 (0.044)
Evaluated eHPWS			0.008 (0.055)	0.002 (0.043)
Work-unit productivity			-0.061 (0.048)	0.007 (0.039)
Job variety				0.438 (0.038)***
Work pressure				-0.109 (0.040)**
Estimates of variance components				
1st: individual (σ^2)	0.932 (0.066)***	0.813 (0.059)***	0.816 (0.059)***	0.670 (0.049)***
2nd: work-unit (τ^2)	0.065 (0.037)	0.065 (0.036)	0.050 (0.035)	0.001 (0.023)
Intraclass coefficient	6.52%	7.40%	5.77%	0.15%
Estimated modelled variance[4]				
R^2_1	0.35%	12.25%	13.45%	32.94%
R^2_2	0.26%	9.79%	15.35%	45.98%
1st level PRV (σ^2)	0.39%	13.10%	12.78%	28.39%
2nd level PRV (τ^2)	-0.11%	-0.11%	22.99%	98.46%

Note: effect values are unstandardized parameter estimates, with standard errors between brackets.

[1] Dummy variables with medium education as referent group.

[2] Dummy variables with age 20 to 29 years as referent group.

[3] Dummy variables with less than 21 hours per week as referent group.

[4] Proportional reductions in unexplained variance compared to no predictor model (table 2).

* $p < .05$ (two-tailed) ** $p < .01$ (two-tailed) *** $p < .001$ (two-tailed)

Job variety on HPWS and work-unit productivity

In the first model with job variety as dependent variable (*-2LL* = 1376.161), the intercept was inserted as a random factor so that it could vary between work-units. Table 5 shows that the varying intercepts did not explain much variance in the individual scores of job variety (ΔR^2_1 = 0.38%) nor the group means (ΔR^2_2 = 1.46%). There remained significant unexplained variance on the individual employee level (σ^2 =

0.908; $p < .001$) as well as on a work-unit level ($\tau^2 = 0.089$; $p < .05$). The ICC1 decreased compared to the empty model (table 2) because the varying intercepts only reduced the level-two component.

Table 5: Predicting job variety.

	Model 1	***Model 2***	***Model 3***
-2LL	1376.161	1356.653***	1351.151
χ^2		19.508	5.502
df	2	5	3
Estimates of fixed effects			
Intercept	0.008 (0.053)	-0.077 (0.121)	-0.081 (0.119)
Low education[1]		-0.031 (0.104)	-0.023 (0.104)
High education[1]		-0.178 (0.126)	-0.196 (0.125)
Age (20- years)[2]		-0.043 (0.118)	-0.034 (0.118)
Age (30+ years)[2]		0.165 (0.117)	0.152 (0.118)
Hours per week[3]		0.244 (0.103)*	0.249 (0.102)*
Factual iHPWS			0.057 (0.059)
Evaluated eHPWS			-0.018 (0.060)
Work-unit productivity			-0.105 (0.052)*
Estimates of variance components			
1st: individual (σ^2)	0.908 (0.065)***	0.869 (0.063)***	0.870 (0.063)***
2nd: work-unit (τ^2)	0.089 (0.041)*	0.090 (0.042)*	0.047 (0.040)
Intraclass coefficient	8.93%	9.38%	5.13%
Estimated modelled variance[4]			
R^2_1	0.38%	4.17%	8.37%
R^2_2	1.46%	3.98%	19.20%
1st level PRV (σ^2)	-0.05%	4.25%	4.14%
2nd level PRV (τ^2)	4.52%	3.44%	49.58%

Note: effect values are unstandardized parameter estimates, with standard errors between brackets.
[1] Dummy variables with medium education as referent group.
[2] Dummy variables with age 20 to 29 years as referent group.
[3] Dummy variables with less than 21 hours per week as referent group.
[4] Proportional reductions in unexplained variance compared to no predictor model (table 2).
* $p < .05$ (two-tailed) ** $p < .01$ (two-tailed) *** $p < .001$ (two-tailed)

In the second model, the individual differences were entered as control variables. This model did not predict job variety better than the previous one ($\chi^2 = 19.508$; $df = 5$; $p < .001$). It explained only 4.17% of the individual variance in job variety and 3.98% of variance in group means. While 4.25% of within-group variability was modelled, the level-two variance component slightly increased compared to model 1. Therefore, the ICC1 increased from 8.93% to 9.38%. Moreover, the model showed that employees who worked 21 hours or more per week perceived significantly more job variety than those who worked less than 21 hours ($B = 0.244$; $p < .05$).

In the third model, the work-unit variables were added as predictors of job variety. Nevertheless, the model was not significantly better at predicting job variety (χ^2 = 5.502; *df* = 3; *p* > .05). The individual *R*-squared rose to a total of 8.37% and almost 20% of mean group scores could be predicted. Compared to the previous model, the second-level variance component had decreased by nearly half and became insignificant (τ^2 = 0.047; *p* > .05). This indicated that there is likely no more variance left in the job variety of the population that could be predicted by work-unit variables. The ICC1 indicated that 5.31% of the variance in job variety of this sample still resided at the second level. Regarding the direct effects, no significant influences of HPWSs on job variety were found. The results did confirm the negative effect of work-unit productivity on job variety (*B* = -0.105; *p* < .05). Additionally, the higher job variety for employees with over 21 working hours per week remained significant.

In conclusion, hypothesis 3a was rejected because no significant effects of iHPWS and eHPWS were found. Nevertheless, hypothesis 3b was confirmed with the significant effect of productivity on job variety. Model 4 (table 5) showed work-unit variables accounted for almost half of the second-level variance and explained an additional 15.22% in group mean scores and 4.20% in individual job variety.

Work pressure on HPWS and work-unit productivity

With work pressure as dependent variable hypotheses 3c and 3d were tested. The first model presented the addition of randomly varying intercepts between work-units (*-2LL* = 1363.810). This model predicted a small 0.14% of the variance in individual work pressure, which entirely resided at the second-level (PRV values, table 6). Nevertheless, after this model step almost 16% of the variance in work pressure still resided at the work-unit level. Moreover, there was significant unexplained variance left at both the individual level (σ^2 = 0.841; *p* < .001) as well as on a work-unit level (τ^2 = 0.159; *p* < .05).

The second model, in which individual differences were added as covariates, modelled work pressure significantly better than the previous model (χ2 = 54.989; df = 5; p < .001). All the explained variance resided in the individual scores, with the model explaining 7.72% of the individual variance in work pressure. In spite of Snijders and Bosker's formula's (1994) to prevent negative variance modelling, the increase in the second-level variance component was so large that the current model would have explained a negative 4.48% of the mean group scores on work pressure. This major increase in the second-level variance component indicated that the covariates only modelled within-group variability in work pressure and no between-group variability. Even though it is not unusual that a decrease in individual-level variance is balanced by an increase in second-level, between group variance (τ^2) (Snijders & Bosker, 1994), this current increase was of such a magnitude that it caused negative

explained variance of mean work-unit scores and increased the ICC1 value to 22.08%. Regarding effects, the model showed that employees' age had a significant influence on work pressure. Younger employees perceived significantly less work pressure (B = -0.346; p < .01) while older employees perceived significantly more work pressure (B = 0.264; p < .05) compared to employees between 20 and 29 years old. Moreover, employees who worked 21 hours or more per week experienced significantly more pressure than those who worked less hours (B = 0.305; p < .01).

Table 6: Predicting work pressure.

	Model 1	***Model 2***	***Model 3***
-2LL	1363.810	1308.821***	1296.096***
χ^2		54.989	15.725
df	2	5	3
Estimates of fixed effects			
Intercept	-0.007 (0.059)	-0.125 (0.118)	-0.112 (0.116)
Low education[1]		0.047 (0.099)	0.032 (0.098)
High education[1]		-0.006 (0.119)	0.006 (0.118)
Age (20- years)[2]		-0.346 (0.111)**	-0.342 (0.111)**
Age (30+ years)[2]		0.264 (0.110)*	0.286 (0.110)**
Hours per week[3]		0.305 (0.096)**	0.290 (0.095)**
Factual iHPWS			0.044 (0.065)
Evaluated eHPWS			-0.065 (0.066)
Work-unit productivity			0.207 (0.057)**
Estimates of variance components			
1st: individual (σ^2)	0.841 (0.060)***	0.720 (0.052)***	0.722 (0.052)***
2nd: work-unit (τ^2)	0.159 (0.050)**	0.204 (0.053)***	0.156 (0.046)**
Intraclass coefficient	15.90%	22.08%	17.77%
Estimated modelled variance[4]			
R^2_1	0.14%	7.72%	12.32%
R^2_2	1.43%	-4.48%	9.61%
1st level PRV (σ^2)	-0.52%	13.94%	13.70%
2nd level PRV (τ^2)	3.48%	-23.84%	5.30%

Note: effect values are unstandardized parameter estimates, with standard errors between brackets.
[1] Dummy variables with medium education as referent group.
[2] Dummy variables with age 20 to 29 years as referent group.
[3] Dummy variables with less than 21 hours per week as referent group.
[4] Proportional reductions in unexplained variance compared to no predictor model (table 2).
* *p* < .05 (two-tailed) ** *p* < .01 (two-tailed) *** *p* < .001 (two-tailed)

With the work-unit variables added as predictors of work pressure, the third model fitted the data significantly better than its predecessor (χ^2 = 15.725; *df* = 3; *p* < .001). This most complex model accounted for 12.32% of the variance of individual experienced work pressure and a small 10% of the

variance in mean group scores. All the variance this model step explained came from the second-level as can be seen in the changes in the PRV values. In terms of direct effects, neither one of the measures for HPWSs had a significant effect on employees' perception of work pressure. In contrast, the productivity of work-units showed a positive influence (B = 0.207; p < .01). The influence of the individual differences did not change noteworthy.

Concluding, the results provided evidence for the rejection of hypothesis 3c and the confirmation of hypothesis 3d. No effects of iHPWS and eHPWS on work pressure were found, contrary to expectations. Regarding work-unit productivity, hypothesis 3d expecting a positive influence on work pressure was confirmed. See table 6 for the tested models.

Mediation via job characteristics

Four hypotheses were formed with regard to mediation effects. Prior to using Sobel-tests (Sobel, 1982) the requirements for mediation by MacKinnon and colleagues were consulted (MacKinnon, Fairchild, & Fritz, 2007). These prescribe that in order for mediation to occur (1) the independent variable needs to be significantly related to the mediator and (2) the mediator needs to be significantly related to the dependent variable. Because there were no significant direct effects of iHPWS or eHPWS on either job variety or work pressure (M3, tables 5 and 6), hypotheses 4a and 4c could be rejected immediately. Nevertheless, the results of the Sobel-tests can be found in the appendix (tables A8 and A9).

Work-unit productivity did show significant effects on job variety and work pressure (M3, tables 5 and 6), meeting MacKinnon and colleagues' first requirement. With the significant effects of both job characteristics on work engagement in mind (M4, table 4), the requirements for mediation effects of work-unit productivity were met (MacKinnon et al., 2007).

Accordingly, the two Sobel-tests presented in table 7 were conducted. From the details, one can deduct that work-unit productivity had a negative indirect effect on work engagement via job variety (B = -0.045; z = -1.99; p < .05) and via work pressure (B = -0.023; z = -2.18; p < .05). This indirect effect is supposed to be evidence of partial mediation for two reasons. First, a direct effect of productivity on engagement was absent (M3, table 4) so there was no c' coefficient to be reduced to insignificance by controlling for job characteristics. Second, the two indirect effects – via either job characteristic – suggest that neither mediator completely explained the relationship between productivity and engagement but that there were, at least, two simultaneous pathways. This backs the partial mediation hypotheses and accordingly hypotheses 4b and 4d were confirmed.

Table 7: Sobel-test for mediation of work-unit productivity.

via	Job variety	Work pressure
Unstandardized coefficients		
X → M	-0.105 (0.052)	0.207 (0.057)
M → Y	0.438 (0.038)	-0.109 (0.040)
z-value	-1.99	-2.18
Unstandardized indirect effect	-0.045*	-0.023*
p-value (two-tailed)	.047	.029

* $p < .05$ (two-tailed)

Variance analysis

A complication in multi-level analysis is that the addition of predictors to a model does not necessarily decrease the unexplained variance at a certain level (Snijders & Bosker, 1994). This becomes especially clear after the second step in modelling work pressure (table 6). The addition of the control variables to the second model did decrease the individual variance component but actually increased the variance component of the second-level quite significantly (M2, tables 6 and 11). The second-level variance component (τ^2) had increased with 23.84% as compared to the empty model. Nevertheless, additional calculations would show that the model explained individual work pressure scores significantly better while its prediction of mean group scores only decreased slightly. This illustrates that even though the proportional reductions in variance, such as presented in table 8, can be quite informative and are easily calculated, they only take changes in variance at one level into account, irrespective of changes in the other. Therefore, Snijders and Bosker (1994) suggest using more complex calculations to more accurately illustrate the explanatory power of model steps on individual and group scores.

Table 8: Proportional reductions in variance on the 1st and 2nd level per model step.

	Job variety		Work pressure		Work engagement	
	PRV(1st)	*PRV(2nd)*	*PRV(1st)*	*PRV(2nd)*	*PRV(1st)*	*PRV(2nd)*
M1: random intercepts	-0.05%	4.52%	-0.52%	3.48%	0.39%	-0.11%
M2: control variables	4.25%	3.44%	13.94%	-23.84%	13.10%	-0.11%
M3: work-unit variables	4.14%	49.58%	13.70%	5.30%	12.78%	22.99%
M4: job characteristics	n.a.	n.a.	n.a.	n.a.	28.39%	98.46%

The results of these more complex calculations, taking into account variance at different levels and work-unit size, are presented in table 9. This table displays the first-level (R^2_1) and second-level (R^2_2) modelled proportions of variance. R^2_1 reflects the total proportional reduction in variance due to the addition of the variables in the model step (Snijders & Bosker, 1994). In other words, how much of the score on the dependent variable would be explained by the model if a random sales employee was

drawn from a random work-unit from the sample. R^2_2 displays the proportional reduction in the prediction error of the group mean on the dependent variable when a random work-unit is drawn from the sample (Snijders & Bosker, 1994). In other words: the amount of variance in the mean score of a work-unit that can be explained by the model.

Table 9: Cumulated modelled variance on 1st and 2nd level per model step.

	Job variety		**Work pressure**		**Work engagement**	
	R^2_1	R^2_2	R^2_1	R^2_2	R^2_1	R^2_2
M1: random intercepts	0.38%	1.46%	0.14%	1.43%	0.35%	0.26%
M2: control variables	4.17%	3.98%	7.72%	-4.48%	12.25%	9.79%
M3: work-unit variables	8.37%	19.20%	12.32%	9.61%	13.45%	15.35%
M4: job characteristics	n.a.	n.a.	n.a.	n.a.	32.94%	45.98%

Formulas: $R^2_1 = 1 - var(Yij - Xij\beta)/var(Yij)$; $R^2_2 = 1 - var(Yj - Yj\beta)/var(Yj)$; $var(Yij - Xij\beta) = \sigma^2 + \tau^2$; $var(Yj - Yj\beta) = \sigma^2/Nj + \tau^2$; Nj = 4.83 (Snijders & Bosker, 1994).

Most importantly, table 9 shows that work-unit variables like iHPWS, eHPWS and productivity were not exceptional in predicting individual scores. This is one of the consequences of the earlier found low ICC1-values (table 2) combined with the fact that second-level variables can only model second-level variance (Snijders & Bosker, 1994). As displayed in table 10, the additional R^2_1 of their model step (M3) was only 3.82% for job variety and 4.46% for work pressure. Regarding work engagement, the work-unit variables appeared almost useless, explaining only an additional 0.85%. This latter finding is not surprising. Adding work-unit variables as predictors of engagement (M3, tables 4 and 11) decreased the already tiny second-level variance component with just 23.08%, from $\tau^2 = .065$ (M2, table 4) to $\tau^2 = .050$ (M3, table 4). While the small second-level component suggests engagement is quite an individually determined state of mind, the small decrease suggests that there are other (work-unit) factors predictive of engagement, rather than only HPWSs and work-unit productivity.

In predicting mean group scores the work-unit characteristics seemed more useful. Increases in the second-level explained variance (ΔR^2_2) ranged between 5.30% for work engagement and 13.76% for job variety (M3, table 10). While similar assumptions could be deducted from table 8, these displayed variance component reductions do not take into account the increase in the other-level component thus providing a misleading representation of explanatory power.

Job characteristics, evaluated by the individual employee, seemed effective at explaining variance at both levels. The fourth model in the prediction of work engagement could account for an additional 6.89% of the variance in individual scores and 20.58% of the variance in group means (table 10). The second-level PRV suggested that only 1.56% of the second-level variance component remained

after the four model steps (table 8). This indicated that the differences in covariates, work-unit variables and job characteristics could account for almost all variance in group engagement scores. Ultimately, the most complex model could predict 32.94% of the engagement score of a random sales employee and 45.98% of the mean engagement of a random group (M4, table 9).

Table 10: Additional modelled variance on 1st and 2nd level per model step.

	Job variety		**Work pressure**		**Work engagement**	
	ΔR^2_1	ΔR^2_2	ΔR^2_1	ΔR^2_2	ΔR^2_1	ΔR^2_2
M1: random intercepts	0.38%	1.46%	0.14%	1.43%	0.35%	0.26%
M2: control variables	3.80%	2.52%	7.59%	-5.90%	11.89%	9.53%
M3: work-unit variables	3.82%	13.76%	4.46%	12.65%	0.85%	5.30%
M4: job characteristics	n.a.	n.a.	n.a.	n.a.	6.89%	20.58%

Formulas: $R^2_1 = 1 - var(Yij - Xij\beta)/var(Yij)$; $R^2_2 = 1- var(Yj - Yj\beta)/var(Yj)$; $var(Yij - Xij\beta) = \sigma^2 + \tau^2$; $var(Yj - Yj\beta) = \sigma^2/Nj + \tau^2$; $Nj = 4.83$ (Snijders & Bosker, 1994).

Conclusion and discussion

This study aimed to provide insights into the relations between HRM, productivity and well-being in a retail setting. Using a multi-levelled approach, it was investigated to what extent characteristics of work-units, like its objective productivity and the implementation and evaluation of HPWSs rated by managers, were able to predict the work engagement sales employees experienced. Moreover, a closer look was taken at a cross-level mediational effect via job characteristics in terms of the job variety and the work pressure perceived by employees.

The engagement of sales employees was found to be quite individually determined. None of the work-unit variables had a significant direct effect on work engagement. As variance analysis showed, the work unit-variables were merely useful in predicting the mean work-unit scores. Nevertheless, employee-evaluated job variety had a positive influence on individual engagement while work pressure had a negative influence. While it was additionally expected that there were indirect effects of HPWSs and work-unit productivity on work engagement, evidence was only found for those of productivity. Measured objectively by the average revenue per employee, productivity had a negative effect on job variety and a positive effect on work pressure. Given the effects of the job characteristics on work engagement, Sobel-tests (Sobel, 1982) showed that productivity had two negative indirect effects on engagement: one via job variety and one work pressure. This confirmed the hypothesized partial mediation, since two simultaneous negative pathways were unveiled.

All in all, this study provided evidence for the skeptical as well as the pessimistic perspective on the HRM-well-being-productivity framework in a retail setting. HRM and happiness well-being seemed to be totally unrelated while productivity came at the cost of well-being via its influence on the perceived job characteristics. Figure 2 summarizes the found relationships.

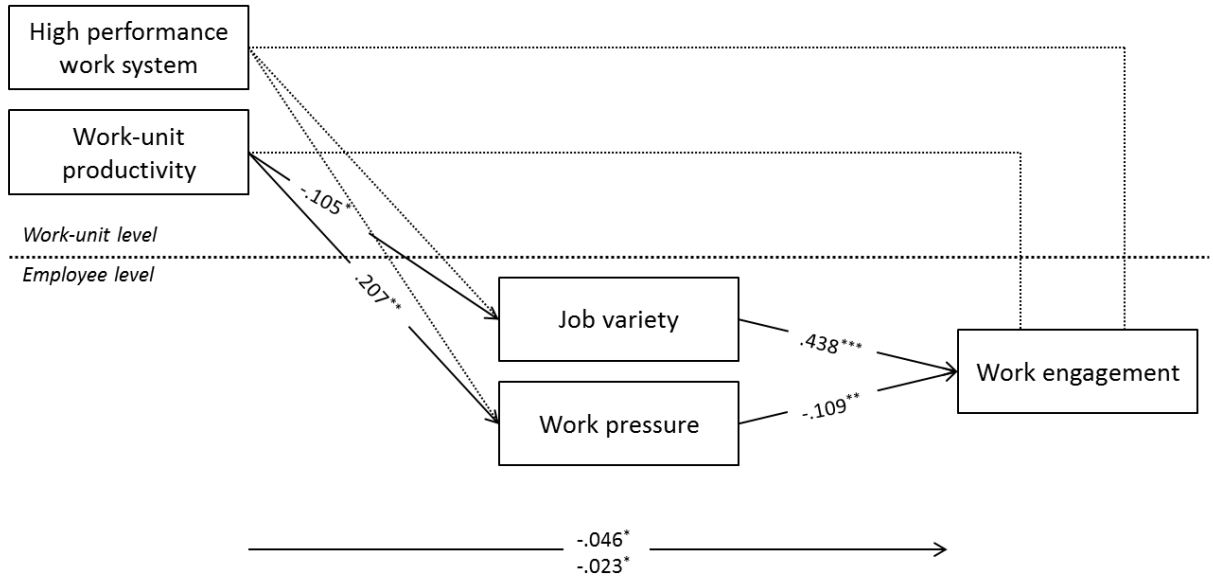

Figure 2: Conceptual model with significant unstandardized coefficients.

Work-unit variables and engagement

Against expectations, no direct effects were found of HPWSs on work engagement. Two weighted factor scores were computed from practices rated by store-managers. Neither one of them was found to significantly influence employee engagement. This led to the rejection of hypothesis 1a. It thus seems that in this retail setting, the regular use of training and development practices or formal performance appraisal did not increase the vigor, dedication and absorption employees experienced in their work. This challenges the positive link between HPWSs and happiness well-being usually found in literature (Van de Voorde et al., 2012). The absence of an effect provides evidence for neither a positive nor a pessimistic view (Peccei, 2004) on the role of HRM in the HRM-well-being-productivity framework. Nevertheless, it is fully in line with a third view of HRM called the skeptical perspective (Peccei, 2004). According to this view, HRM does not necessarily have a significant impact, possibly due to contingencies, ineffective implementation or a multitude of cancelling effects (Peccei, 2004).

In line with a contingency approach towards strategic HRM (Appelbaum et al., 2000; Datta et al., 2005) it is argued that the effectiveness of a HPWS depends on the work context in which it is

implemented. It could be that the measured practices do not trigger involvement, commitment or well-being in the current retail setting. The low levels of work pressure and job variety compared to other Dutch (retail) organizations (SKB, 2014) or the already fairly engaged workforce (Schaufeli & Bakker, 2003) might explain why the HPWSs did not have the positive effects they normally have in other settings. The sales employees might not have let additional task-related resources or fewer quantitative work demands affect their levels of engagement.

Moreover, recent meta-analysis has found a division in terms of goals of HRM practices. Jiang and colleagues found that HRM practices can be divided in skill-enhancing, motivation-enhancing and opportunity-enhancing practices. These sets of practices differ in terms of the strength of their positive effects on employee motivation (Jaing et al., 2012). Even within work-units, employees can differ in their perception of HRM and thus respond differently. This notion finds support in recent work on HRM attributions (Nishii et al., 2008), in work climate theory (Bowen & Ostroff, 2004) as well as in a case study in which the workforce held polarized attitudes towards HRM (Allen & Lovell, 2003). While some employees would be quite keen on HPWPs, others find them frustrating and stressful. All of the above could have created a variation in work engagement scores coupled to the same work-unit HPWS score, reducing the latter's explanatory power.

Additionally, two issues arise regarding the current measures for HPWSs. First, one could question whether management ratings are appropriate to measure the construct of HPWSs. Rather than letting managers rate the extent to which they implemented HRM practices, it might be more appropriate to use employee evaluations of those practices (Wright & Nishii, 2007). Especially seeing that those ratings are used to predict individually determined (low ICC1) outcomes such as work engagement. It is not unlikely that a manager perceived to implement regular training for his subordinates while many of those subordinates might have perceived to receive too little development opportunities. Especially subjective evaluations of HPWPs – such as eHWPS – would be susceptible to variations between rater groups (Beijer et al., 2014).

As a second issue, the insignificant effects could be the result of methodological issues, for instance measurement error. Combining the sixteen (or twelve) items regarding different HR functions into one system score might have caused invalidity to arise. A score of 3 on iHPWS could have had various meanings. One example is that all sixteen practices were implemented for half of the work-units employees. However, it could also have meant that training and development was implemented for all employees while absolutely no performance appraisal took place. One can think of numerous other ways to interpret any score on either measure of HPWS. Furthermore, taking into account that training

and development practices might have had a positive influence on engagement while performance appraisal could have had a negative effect, distinction between the functions of HRM in a HPWS would have been a better option. This could have prevented the negation of effects and could have provided more elaborate insights into the relations. Additional methodological issues will be elaborated on later.

While hypothesis 2a expected a positive influence of productivity on work engagement, no significant effect was found. This seems to indicate that, unlike prior assumptions (Paauwe & Boselie, 2005), employees did not necessarily enjoy their jobs more when they were part of a well-performing work-unit. The expectations regarding the positive effect were partly based on the principles of social exchange theory and the norms of reciprocity (Gouldner, 1960). Nevertheless it cannot be assumed that well-performing work-units actually shared their success with sales employees. Like Subramony and colleagues (2005) suggest there would not have been a reciprocal attitudinal effect (i.e. higher engagement) if organizational successes were not shared with employees or if the employees did not perceive sharing. Arguably, increased productivity might have been too distant an indicator for actual employee investments or other ways of success sharing.

On a different note, contrary to expectations, there even was a small negative effect of productivity on engagement in model 4 (table 4). This suggests that if engagement would have had more second-level variance, productivity might have had a negative influence. Accordingly, it can be expected that productivity would have had a negative effect on more collective, shared motivational outcomes. Nevertheless, the found effect turned near-zero after adding job characteristics to the model, which is elaborated on later in the mediation section of this discussion.

Finally, as table 8 displays, work-unit variables are only capable of decreasing the second-level variance (Snijders & Bosker, 1994). Unfortunately, a quite limited amount of variance in engagement scores resided at the second-level in this sample (table 2). Since the absolute amount of second-level variance did not increase after controlling for individual characteristics (M2; table 4), there was very little variance in engagement left to be predicted by work-unit variables. It seems that work engagement was quite an individually determined state of mind, affected mainly by factors independent of the work-unit. This resulted in the minimal explained variance in individual engagement scores by HPWSs and productivity (table 10). Nevertheless, the work-unit variables were able to decrease the second-level variance component by a noteworthy 23.08% (calculated from table 4).

To conclude, it was argued that work-unit productivity might be unable to predict attitudes because it might be a too distant proxy in the theorized causal chain. Furthermore, multiple possible

causes for the absence of an effect of HPWSs were discussed earlier. For instance (1) that the specific HRM practices are not effective in the current setting, (2) that the current measures do not reflect employees' perceptions of said practices or (3) that employees make different attributions as to the reasons for HPWS implementation causing cancelling effects. Nevertheless, variance analysis provided better insights in the exact potential of work-unit variables as predictors of work engagement. The fact that engagement was a very individually determined state of mind, independent of the work-unit, is argued to have been the most likely explanation for the found insignificant effects. This especially applies to the cases of iHPWS and productivity, which both seemed to have at least some effect in the current sample (M3, table 4). Arguably, on other more shared motivational constructs like the satisfaction with the work-unit or organizational citizenship behavior, iHPWS might have a positive influence while productivity might have a negative influence. In spite of this all, both hypothesis 1a and 1b were rejected.

Job characteristics and engagement

As expected, hypothesis 2a and 2b were confirmed, indicating a positive and negative effect of job variety and work pressure respectively. First, the variety sales employees perceived to have in their set of tasks showed a strong positive association with their engagement. These results have been found quite consistently in previous studies. Variety in ones work would expand the roles employees perceive to have (Macey & Schneider, 2008) and foster their intrinsic as well as extrinsic motivation (Schaufeli & Bakker, 2004). Moreover, employees with a varying job would feel a willingness to dedicate themselves vigorously to the task at hand (Meijman & Mulder, 1998; Schaufeli & Bakker, 2004; Schaufeli et al., 2009). Macey and Sneider (2008) even propose that attention to a wider range of tasks can be seen as a facet of engagement behavior. The above as well as the results (M4, table 4) are in line with the widely validated motivational process of the JDR model (Demerouti et al., 2001).

Simultaneously, a negative influence of work pressure on work engagement was witnessed. In line with the JDR model (Demerouti et al., 2001) a straining process seemed to be in place, in this case not affecting employee burnout but rather employees motivation. While the negative effect of work pressure was less significant than the positive effect of job variety (t = 11.253 > 2.725), it is surely noteworthy because it contradicts two earlier assumptions of scholars.

First of all, it weakens the claim that demands are irrelevant when predicting engagement (Schaufeli & Bakker, 2004). Employees who felt that they had little time to complete their work, who felt a need to rush and hurry, experienced less vigor, dedication and absorption in their work. As table 4 (M4)

showed, this measure of quantitative demands was able to explain a significant amount of variance in employees' work engagement; be it at the individual or the work-unit level.

Second, contrary to recent beliefs (Crawford et al., 2010) but in line with expectations, work pressure was found to be a job hindrance rather than a job challenge in this current setting. Instead of promoting mastery, personal growth or other benefits, employees in this current sample likely perceived work pressure as a source of stress hindering growth, learning and goal attainment. Work pressure might have especially decreased the vigor facet of engagement. The effort it might have cost to deal with the heightened demands could have drained employees' energy (Cavanaugh et al., 2000; Lepine et al., 2004; Van den Broeck et al., 2010). Maybe due to the specific work context (Crawford et al., 2010) sales employees under extensive work pressure tried to detach themselves cognitively and emotionally from their work resulting in passive, disengaging behavior (Harter et al., 2002).

All in all, hypotheses 2a and 2b were both confirmed for sales employees in this retail setting. The two job characteristics accounted for a noteworthy amount of individual variance in engagement and considerable variance in the mean scores of work-units up and above the explanatory power of the control and work-unit variables (table 10). Moreover, in the most complex model (M4, tables 4 and 8), the second-level variance component of work engagement was almost entirely accounted for. This suggests that job characteristics are especially useful in explaining the differences in engagement levels between the work-units.

Work-unit variables and job characteristics

Four hypotheses were formed regarding the effects of HPWSs and work-unit productivity on the job characteristics job variety and work pressure. Using insights from psychological empowerment (Spreitzer, 1995) and work climate theory (Bowen & Ostroff, 2004), hypothesis 3a predicted that a HPWS would increase the job variety. In contrast, hypothesis 3b proposed that, due to an increase in customer demand and a focus on value-adding tasks, productivity would lead to less variety. Additionally, drawing from empowerment theory (Spreitzer, 1995), work intensification literature (e.g. Godard, 2004), the organizations competitive strategy and pessimistic results regarding HPWS outcomes (e.g. Jensen et al., 2013; Ramsey et al., 2010) hypothesis 3c and 3d expected the work-unit variables to increase work pressure.

While no significant effect of HPWSs on job variety were found, productivity indeed had a negative effect on the variety sales employees experienced in their work (table 4). This led to the rejection of

hypothesis 3a and the confirmation of hypothesis 3b. Better evaluated and more frequently implemented HPWPs did not have a significant effect on the job variety employees experienced. Even though managers perceived to invest more funds and effort in for instance rigorous training, this did not influence the variety of work activities sales employees argued to have.

One of the reasons might be that employees were not getting the meaning, competence and self-determination (Spreitzer, 1995) that HPWSs are expected to provide. Additional training or participation in decision-making might not have provided sales employees with a sense of empowerment. Another cause could have been the differing perceptions of HPWSs by employees. Literature suggests that while managers would perceive to put a lot of effort into HRM practices, employees might not agree (Wright & Nishii, 2007). Additionally, employees might have viewed differing psychological climates rather than a strong shared organizational climate. While some employees might have felt that the practices empowered them, other might have perceived them as interventions to coerce more effective work behavior (Nishii et al., 2008). All in all, employees in HPWSs did not experience more diverse opportunities and challenges in their daily work activities.

The influence of work-unit productivity on sales employees' job variety was significantly negative. A higher revenue per employee in a work-unit led to those employees perceiving significantly less variety in their work. The earlier stated rationale behind this was that high productivity could only be achieved by more sales and customers in this study its work context. More sales and customers would have meant a relative shift towards value-adding tasks like working the register and restocking the store. In less productive stores, employees could spend their time on a larger diversity of tasks, like welcoming customers, training their sales skills, familiarizing new employees or improving store layout. As expected, a highly productivity work environment thus provided less diversity in work tasks.

On work pressure, no significant influence of HPWSs was found. In contrast, productivity had a significantly positive influence on the work pressure sales employees experienced. This led to the rejection of hypothesis 3c and the confirmation of hypothesis 3d. Even though it was expected that a HPWS would intensify work, leading to higher perceptions of workload and -pressure, this was not the case in the population. Sales employees of whom the manager reported to implement more and better HPWPs, did not perceive to be in more of a hurry at work. Maybe because the employees did not feel like their manager implemented more HPWPs: the rating groups' perceptions of the extent of HPWS implementation might have differed (Wright & Nishii, 2007). On a similar note, the insignificant effects could be a result of different appraisals and attributions of HPWSs between sales employees (Nishii et al.,

2008). While some employees might have welcomed the extra knowledge, opportunities, rewards and influence HPWPs provided, others might have attributed these gains to a higher goal of the organization to exploit them. Different evaluations of HPWSs within work-units could have led to near-zero correlations between HPWS and work pressure.

The productivity of work-units had a significant positive effect on the work pressure of sales employees. In line with expectations, the amount of work- and time pressure employees' experienced was higher in work-units that earned relatively high revenues. One possible explanation is that the highly productive work-units wanted to maintain the high performance levels and thus asked more of their employees (Barker, 1993). Not only might work have been more intense in those highly productive settings (Godard, 2004), but especially in a retail setting, higher productivity would have immediately implied extra workload for sales employees (Janssen, 2001).

Another explanation for the found effects might come from an economical perspective. In times of recession in the Dutch retail market (CBS, 2014) work-units that achieved high revenues could not have simply hired new employees to restore task variety or to relieve the additional pressure. Staff increases would have negated the increase in productivity. Doing so would have been atypical behavior for cost-minimizing organizations (Arthur, 1994), decreasing their competitive advantage (Porter, 1996) so desperately needed in the economic climate at that time (CBS, 2014).

One should note that, as all hypotheses indicated, the found effects may very well be context-specific. Arguably, higher productivity in different settings, for instance a law firm, could be caused by wealthier clients or larger cases rather than a plain increase in volume. These former causes would not necessarily indicate a lesser diversity of tasks as was theorized for the current retail setting. The same goes for the effect of productivity on work pressure, which might very well be a by-product of the retail organizations competitive strategy. Additionally, high performance work systems might only have effects in certain work contexts. As contingency perspectives argue, effectiveness of HPWSs might depend on various factors including but not limited to the organizations strategy (Arthur, 1994), sector characteristics (Appelbaum et al., 2000; Arthur, 1994; Datta et al., 2005; Den Hartog & Verburg, 2004), job design (Appelbaum et al., 2000) and national culture (Den Hartog & Verburg, 2004). Accordingly, it should be considered that the found (absence of) effects might not be generalizable to populations other than the Dutch retail sector or even sales employees of this specific retail organization.

In conclusion, only the direct effects of work productivity were confirmed. Seeing the limited variance residing at the second level for both job variety and work pressure (table 2), it is actually quite

remarkable that any hypothesis was confirmed. Especially for job variety, the low ICC1 value seemed to a result of the specific sample (Birnbaum et al., 1986; Oliver et al., 2005). Would the used job characteristics have been more work-unit dependent – more collective, more shared – significant effects of iHPWS and eHPWS might have been found. Again, this indicates that the insignificant results might be sample-specific. Finally, the large decreases in second-level variance due to the work-unit variables should be mentioned. It was shown that the work-unit characteristics could reduce the variance residing at the second level by almost half for job variety and a quarter for work pressure (calculations from tables 5 and 6).

Negative indirect effects of work-unit productivity

Following the requirements for mediation (MacKinnon et al., 2007), hypotheses 4a and 4c could be rejected immediately because no significant effects of HPWSs on work characteristics were found. Since HPWSs did not affect job variety and work pressure, a significant indirect effect of HPWSs on work engagement via them was precluded. This is in line with a skeptical view (Peccei, 2004) on the role of HRM in the HRM-well-being-productivity framework: neither a positive nor a negative influence was present. Possible explanations were elaborated on earlier.

In contrast, evidence was found for the indirect effects of work-unit productivity on work engagement, as hypothesized by 4b and 4d. First of all via job variety. It was expected that an increase in productivity would lead to less perceived variety because employees would have to focus primarily on a small set of value-adding tasks. This would decrease their engagement because it would, among others, limit their sources of intrinsic and extrinsic motivation. Indeed, higher productivity led to lower variety which, in turn, lowered the work engagement. It seemed that employees in a highly productive work-unit perceived to get fewer resources from the organizations and thus had a harder time dedicating themselves to their job and working with lavish spirit.

Second, there was a negative indirect effect via work pressure. As expected by hypothesis 4d, employees were fairly less engaged in highly productive work-units because these environments yielded a higher time pressure and workload. This is not an unexpected finding seeing that high productivity is obviously associated with a higher workload (Janssen, 2001) which in turn leads to lower motivation, health and energy (Demerouti et al., 2001). Sales employees might feel less affectivity to and energetic in their job due to the increased demands posed of them. They might perceive to get little in return for the additional effort, possibly leading to negative reciprocation (Adams, 1965; Gouldner, 1960).

Otherwise, they might be drained of energy due to the additional demands placed on their shoulders leading to less feelings of vigor (Varca, 2001).

Both found indirect effects are in line with the pessimistic view that productivity comes at the cost of well-being (Peccei, 2004); that financial performance and employee well-being are two opposite outcomes (Van de Voorde et al., 2012). Moreover, the existence of two simultaneous indirect pathways (M4, table 4) in the absence of a direct effect (M3, table 4) suggested that mediation was partial. The effect of productivity on engagement did not go fully through one mediating variable.

No significant indirect effects were found for either measure of a HPWS via either of the two job characteristics. Seemingly, a HPWS did not have any effect in the current setting. Of all the reasons named before, again the limited variation residing at the second-level seems the most serious. If ICC1-values would have been higher, as in other studies (e.g. Birnbaum et al., 1986; Oliver et al., 2005), there could have been stronger effects of HPWSs on the job characteristics, possibly leading to significant indirect effects. Another explanation could lay in the methodological issues elaborated on below. All in all, only hypothesis 4c and 4d were confirmed, referring to the partially mediated, indirect, negative effects of productivity on work engagement via work pressure and via job variety.

Limitations and future research implications

A first limitation of this study was the cross-sectional nature of the data, which prevents conclusions regarding causality between the constructs. Even though based on theoretical predictions, the dynamic nature of the mediational processes should be interpreted tentatively because they might not represent the actual processes adequately. On a same note, the relationships between HPWSs, productivity and employee attitudes are often found to be reciprocal (Piening et al., 2013). Motivated employees are known to have a biased perception of their environment (Paauwe & Boselie, 2005). Accordingly, it is not unlikely that engaged employees would have perceived a more resourceful work environment and were thus more productive. Other time-related issues can be found in the realization as well as the depreciation of effects. For instance, it can take up to several years before effects of HPWSs become visible in the organization (Piening et al., 2013). Moreover, while HPWSs are frequently received positively by employees, this tends to become less over time as employees get used to them (Godard, 2004). Additionally, the effects of HPWSs are shown to fluctuate over time (Allen & Lovell, 2003). All in all, future research should try to combine the current multi-level design with a longitudinal design, for example by creating multiple measurement intervals.

Secondly, the sample was taken from only one organization which limits the generalizability of results to other organizations, let alone in non-retail sectors. First of all, no effects of HPWSs might have been found because work-units within the same organization are potentially quite alike in terms of the adopted HRM practices (Hitt, Beamish, Jackson, & Mathieu, 2007). In the current retail organization, supposedly applying strict guidelines and budgets regarding HRM, quite different effects of HPWSs were found than in similar study at a hospital (Van Veldhoven & Van de Voorde, 2014). Future studies are advised to draw samples from more organizations, possibly in different sectors. Effects sizes might increase in power due to the potentially larger variation in scores and the larger sample. Moreover, a larger and more diverse sample would improve the generalizability of the results to other organizations. On a related note, not all employees per work-unit, nor all work-units of the organization, participated in the current study. While 27.03% of the sales employees and 50.70% of the managers seem adequate response ratings, there might have been some self-selection (Mohr & Zoghi, 2008). Participation was voluntary, so it is likely that only those store-managers who valued HRM highly and only those sales employees who were highly engaged participated in the study. These forms of range restriction might have decreased the effect strengths. Additionally, because all employees were aware that they participated in a study, they might have provided biased answers to the questionnaire, trying to score well as an employee or work-unit. Social desirability might have been an issue. Moreover, the limited amount of employees per work-unit (minimum of three) affected the relative variance that resided within and between work-units. More respondents per work-units would have provided better insights into the explanatory power of work-unit variables as it would have become more evident whether there was consensus or disagreement within and between work-units.

Regarding the constructs, the current study used conceptualizations of high performance work systems rather than bundled practices or individual practices. While this is not unheard of, the use of weighted factor solutions accounting for varying factor loadings is quite different from the standard index and scale scores recommended by mainstream HPWS literature. Even though this was explicitly chosen for due to methodological issues, the representation of the various HRM functions in the measures differed quite radically (see appendix table A6). For example, remuneration practices had a very limited influence on both system scores due to its low factor loadings and little items. This might have affected the results and has decreases this study's comparability with other studies. Future research could better use measures with a larger number of items per functional area of HRM. With separate scales for the different functions (remuneration, training, appraisal, etcetera) and a combined scale for the whole system, one would gain more valid insights in the actual effects of a HWPS and of the

various HRM functions. Regarding job characteristics, it is recommended that future studies implement a larger variety of job resources and job demands. Since especially task-related resources are appointed as determinants of employee attitudes (Halbsleben, 2010), feedback, autonomy, task significance and task identity (Hackman & Oldham, 1976) would be welcome additions to the current conceptual model. Moreover, it would be interesting to see the effects of job challenges, next to those of job hindrances, on engagement.

Lastly, the work-unit variables employed in the current study were able to explain little variance, arguably because the operationalized mediators and outcomes were quite individually determined. This seems sample-specific, especially for job variety, in comparison to other studies (Birnbaum et al., 1986; Oliver et al., 2005). While, in the current study aggregation was precluded due to low reliability, it would be interesting for future studies to employ both individual and collective perceptions of job characteristics. On a same note, employees seem to share large parts of their views of and attitudes towards the organization (Piening et al., 2013). Accordingly, scholars are advised to add collective perceptions and attitudes when investigating the HRM-well-being-productivity framework (Bowen & Ostroff, 2004; Harter et al., 2002). These second-level constructs would be able to explain differences above and beyond individual-level predictors (Piening et al., 2013). Moreover, in line with HR process theory (Wright & Nishii, 2007), future studies should add individual perceptions of HPWPs next to the current management evaluations in order to shed light on the similarities and differences in terms of evaluations and effects.

Practical implications

The findings of this study suggest that, in this specific retail setting, management perceptions of HPWS implementation were not predictive of individual work engagement. Moreover, neither the frequency nor the effort with which management argued to implement HRM practices was related to employee perceptions of job variety and work pressure. This can have several implications for the ways in which organizations implement and measure HRM. Worst case scenario, it might be that the currently implemented HPWPs do not effect job characteristics or work engagement. In that case, the current set of practices should be drastically altered in order to increase its effectiveness and impact. A less negative and more likely implication might lay in the differing perceptions between rater groups, within rater groups and between the practices being rated. As an example, it is likely that employees perceive HRM practices differently from each other and from their managers. Moreover, some employees might attach more value to training than to performance appraisal. Bottom line, organizations should consider

employing multiple measures. They should assess how HRM is perceived by raters in different functions and levels of the organizations. Additionally, they should uncover the attributions and evaluations employees in different contexts make regarding the goals of different HRM practices. Only then, organizations can truly assess the added value of their HRM practices and systems.

Regarding work-unit productivity the expected negative processes were indeed found. Work seemed to be more intense in highly productive contexts and at the same time, employees in these work contexts perceived to have fewer resources. A simplistic calculation shows that a 24% increase in revenue per employee led to a 5.63% increase in workload and a 2.17% decrease in job variety (see appendix table A10). Although the consequent decrease in work engagement was limited, the changes in the job characteristics are quite noteworthy with the already high levels of work pressure in mind (Integron, 2014). It will be hard for line-managers to guarantee high productivity while making sure the personnel does not burnout due to increased and prolonged job demands. Especially in these rough economic times in which cost containment and workforce reduction are part of the leading strategies in retail, it is important that organizations remain legitimately viable as well. Even though employees are often referred to as resources they should be considered all but disposable. The trade-off between financial performance and well-being should be handled with decency and care. Since job characteristics are shown to play a role in creating the bridge between the productivity of a work-unit and the happiness of its employees, organizations would be wise to invest the financial gain of increased productivity in maintaining resourceful work environments.

References

Adams, J. S. (1965). Inequity in social exchange. *Advances in Experimental Social Psychology, 2*(1), 267-299. Retrieved on 15-07-2014 from http://tinyurl.com/lnkau9p

Allan, C., & Lovell, K. (2003). The effects of high performance work systems on employees in aged care. *Labour & Industry: a journal of the social and economic relations of work, 13*(3), 1-17. Retrieved 15-07-2014 from the first author.

Allen, D. G., Shore, L. M., & Griffeth, R. W. (2003). The role of perceived organizational support and supportive human resource practices in the turnover process. *Journal of Management, 29*(1), 99-118. doi: 10.1177/014920630302900107

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. (2000). *Manufacturing competitive advantage: The effects of high performance work systems on plant performance and company outcomes.* Ithaca, NY: Cornell University Press.

Arthur, J. B. (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal, 37*(3), 670-687. Retrieved on 15-07-2014 from http://www.jstor.org/stable/256705.

Aryee, S., Walumbwa, F. O., Seidu, E. Y., & Otaye, L. E. (2012). Impact of high-performance work systems on individual-and branch-level performance: test of a multilevel model of intermediate linkages. *Journal of Applied Psychology, 97*(2), 287-300. doi: 10.1037/a0025739

Bakker, A. B., & Demerouti, E. (2006). The job demands-resources model: State of the art. *Journal of Managerial Psychology, 22*(3), 309-328. doi 10.1108/02683940710733115

Bakker, A. B., & Leiter, M. P. (Eds.). (2010). *Work engagement: A handbook of essential theory and research*. New York, NY: Psychology Press.

Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management, 43*(1), 83-104. doi: 10.1002/hrm.20004

Bakker, A. B., Van Emmerik, H., & Euwema, M. C. (2006). Crossover of burnout and engagement in work teams. *Work and Occupations, 33*(4), 464-489. doi: 10.1177/0730888406291310

Bal, P. M., Kooij, D. T., & De Jong, S. B. (2013). How do developmental and accommodative HRM enhance employee engagement and commitment?. The role of psychological contract and SOC strategies. *Journal of Management Studies, 50*(4), 545-572. Retrieved on 15-07-2014 from http://tinyurl.com/msrlal9

Barker, J. R. (1993). Tightening the iron cage: Concertive control in self-managing teams. *Administrative Science Quarterly, 38*(3), 408-437. doi: 10.2307/2393374

Bartlett, M. S. (1954). A note on the multiplying factors for various χ 2 approximations. *Journal of the Royal Statistical Society. Series B (Methodological), 16*(2), 296-298. Retrieved 15-07-2014 from http://www.jstor.org/stable/2984057

Becker, B., & Gerhart, B. (1996). The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal, 39*(4), 779-801. Retrieved 15-07-2014 from http://www.jstor.org/stable/256712

Beijer, S. E., Van Veldhoven, M. J. P. M., Peccei, R.E. & Paauwe, J. (2014). Comparing line management and employee reports of implemented HR practices in work units. In Beijer, S. E., *HR practices at work: Their conceptualization and measurement in HRM research* (unpublished dissertation). Tilburg: Tilburg University.

Birnbaum, P. H., Farh, J. L., & Wong, G. Y. (1986). The job characteristics model in Hong Kong. *Journal of Applied Psychology, 71*(4), 598-605. Retrieved on 15-08-2014 from http://tinyurl.com/pfzwk4o.

Boselie, P., Dietz, G., & Boon, C. (2005). Commonalities and contradictions in HRM and performance research. *Human Resource Management Journal, 15*(3), 67-94. doi: 10.1111/j.1748-8583.2010.00164.x

Bowen, D. E., & Ostroff, C. (2004). Understanding HRM-firm performance linkages: The role of the "strength" of the HRM system. *Academy of Management Review, 29*(2), 203-221. doi: 10.5465/AMR.2004.12736076

Boxall, P., & Macky, K. (2007). High-performance work systems and organizational performance: Bridging theory and practice. *Asia Pacific Journal of Human Resources, 45*(3), 261-270. doi: 10.1177/1038411107082273.

Boxall, P., & Macky, K. (2009). Research and theory on high-performance work systems: Progressing the high-involvement stream. *Human Resource Management Journal, 19*(1), 3-23. doi: 10.1111/j.1748-8583.2008.00082.x

Boxall, P., Ang, S. H., & Bartram, T. (2011). Analyzing the 'black box' of HRM: Uncovering HR goals, mediators, and outcomes in a standardized service environment. *Journal of Management Studies, 48*(7), 1504-1532. doi: 10.1111/j.1467-6486.2010.00973.x

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage

Butts, M. M., Vandenberg, R. J., DeJoy, D. M., Schaffer, B. S., & Wilson, M. G. (2009). Individual reactions to high involvement work processes: investigating the role of empowerment and perceived organizational support. *Journal of Occupational Health Psychology, 14*(2), 122-136. doi: 10.1037/a0014114

Cattel, R.B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*(2), 245-276. doi: 10.1207/s15327906mbr0102_10

Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An empirical examination of self-reported work stress among US managers. *Journal of Applied Psychology, 85*(1), 65-74. doi: 10.1037/0021-9010.85.1.65

CBS (2014). *Detailhandel; omzetontwikkeling index 2010 = 100.* Retrieved on 15-07-2014 from http://statline.cbs.nl/StatWeb/publication/?.DM=SLNL&PA=81804ned

Chan, K. W., & Lam, W. (2011). The trade-off of servicing empowerment on employees' service performance: examining the underlying motivation and workload mechanisms. *Journal of the Academy of Marketing Science, 39*(4), 609-628. doi 10.1007/s11747-011-0250-9

Chan, K. W., Yim, C. K., & Lam, S. S. (2010). Is customer participation in value creation a double-edged sword?. Evidence from professional financial services across cultures. *Journal of Marketing, 74*(3), 48-64. Retrieved on 15-07-2014 from http://tinyurl.com/pf9neum

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. doi: 10.1111/j.1744-6570.2010.01203.x

Combs, J., Liu, Y., Hall, A., & Ketchen, D. (2006). How much do high-performance work practices matter?. A meta-analysis of their effects on organizational performance. *Personnel Psychology, 59*(3), 501-528. doi: 10.1111/j.1744-6570.2006.00045.x

Cramer, D. (2003). *Advanced quantitative data analysis*. Philidelphia, PA: McGraw-Hill International.

Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout: a theoretical extension and meta-analytic test. *Journal of Applied Psychology, 95*(5), 834-848. doi: 10.1037/a0019364

Datta, D. K., Guthrie, J. P., & Wright, P. M. (2005). Human resource management and labor productivity: does industry matter?. *Academy of Management Journal, 48*(1), 135-145. doi: 10.2307/20159645

De Kok, J. M., Uhlaner, L. M., & Thurik, A. R. (2002). *Human resource management within small and medium-sized firms: Facts and explanations.* Zoetermeer: EIM, Business & Policy Research/Erasmus University Rotterdam.

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268. doi: 10.1207/S15327965PLI1104_01

Deephouse, D. L. (1999). To be different, or to be the same?. It's a question (and theory) of strategic balance. *Strategic Management Journal, 20*(2), 147-166. Retrieved on 15-07-2014 from http://tinyurl.com/myzbo3r

Dembe, A. E., Erickson, J. B., Delbos, R. G., & Banks, S. M. (2005). The impact of overtime and long work hours on occupational injuries and illnesses: New evidence from the United States. *Occupational and Environmental Medicine, 62*(9), 588-597. doi: 10.1136/oem.2004.016667

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. doi. 10.1037//0021-9010.86.3.499

Den Hartog, D. N., & Verburg, R. M. (2004). High performance work systems, organizational culture and firm effectiveness. *Human Resource Management Journal, 14*(1), 55-78. doi: 10.1111/j.1748-8583.2004.tb00112.x

DeVellis, R. F. (2003). *Scale development: Theory and applications (2nd ed.).* Thousand Oaks, CA: Sage.

Ehrnrooth, M., & Björkman, I. (2012). An integrative HRM process theorization: Beyond signalling effects and mutual gains. *Journal of Management Studies, 49*(6), 1109-1135. doi: 10.1111/j.1467-6486.2012.01055.x

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12*(2), 121-138. doi: 10.1037/1082-989X.12.2.121

Evers, A. V. A. M., van Vliet-Mulder, J. V., & Groot, C. D. (2000). *Documentatie van tests en test research in Nederland.* Amsterdam: Boom Test Uitgevers

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218-226. doi: 10.1037/0003-066X.56.3.218

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18*(3), 233-239. doi: 10.1111/j.1467-9280.2007.01882.x

Godard, J. (2001). High performance and the transformation of work?. The implications of alternative work practices for the experience and outcomes of work. *Industrial and Labor Relations Review*, *54*(4), 776-805. doi: 10.2307/2696112

Godard, J. (2004). A critical assessment of the high-performance paradigm. *British Journal of Industrial Relations, 42*(2), 349-378. doi: 10.1111/j.1467-8543.2004.00318.x

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. American Sociological Review, *25*(2), 161-178. Retrieved on 15-07-2014 from http://www.jstor.org/stable/2092623

Gould-Williams, J., & Davies, F. (2005). Using social exchange theory to predict the effects of HRM practice on employee outcomes: An analysis of public sector workers. *Public Management Review, 7*(1), 1-24. doi: 10.1080/1471903042000339392

Grant, A. M., & Ashford, S. J. (2008). The dynamics of proactivity at work. In B. M. Staw & A. P. Brief (Eds.), *Research in organizational behavior* (Vol. 28). New York: Elsevier.

Grant, A. M., Christianson, M. K., & Price, R. H. (2007). Happiness, health, or relationships?. Managerial practices and employee well-being tradeoffs. *The Academy of Management Perspectives, 21*(3), 51-63. Retrieved on 15-07-2014 from http://tinyurl.com/lwqezgb

Green, F. (2002). Why has work effort become more intense?. *Industrial Relations: A Journal of Economy and Society, 43*(4), 709-741. doi: 10.1111/j.0019-8676.2004.00359.x

Green, F. (2004). Work intensification, discretion, and the decline in well-being at work. *Eastern Economic Journal, 30*(4), 615-625. Retrieved on 15-07-2014 from http://tinyurl.com/nmsc4hx

Guest, D. E. (1997). Human resource management and performance: A review and research agenda. *International Journal of Human Resource Management, 8*(3), 263-276. doi: 10.1080/095851997341630

Guest, D. E. (1999). Human resource management - the workers' verdict. *Human Resource Management Journal, 9*(3), 5-25. doi: 10.1111/j.1748-8583.1999.tb00200.x

Guest, D. E. (2011). Human resource management and performance: still searching for some answers. *Human Resource Management Journal, 21*(1), 3-13. doi: 10.1111/j.1748-8583.2010.00164.x

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*(2), 250-279. doi: 10.1016/0030-5073(76)90016-7

Hakanen, J. J., Schaufeli, W. B., & Ahola, K. (2008). The job demands-resources model: A three-year cross-lagged study of burnout, depression, commitment, and work engagement. *Work & Stress, 22*(3), 224-241. doi: 10.1080/02678370802379432

Halbesleben, J.R. (2010). A meta-analysis of work engagement: Relationships with burnout, demands, resources, and consequences. In Bakker, A. B. & Leiter, M. P. (eds.). *Work engagement: A handbook of essential theory and research.* New York, NY: Psychology Press.

Hallberg, U. E., Johansson, G., & Schaufeli, W. B. (2007). Type A behavior and work situation: Associations with burnout and work engagement. *Scandinavian Journal of Psychology, 48*(2), 135-142. doi: 10.1111/j.1467-9450.2007.00584.x

Harter, J. K., Schmidt, F. L., Asplund, J. W., Killham, E. A., & Agrawal, S. (2010). Causal impact of employee work perceptions on the bottom line of organizations. *Perspectives on Psychological Science, 5*(4), 378-389. doi: 10.1177/1745691610374589

Harter, J.K., Schmidt, F.L. & Hayes, T.L. (2002). Business-unit level relationship between employee satisfaction, employee engagement, and business outcomes: a meta-analysis. *Journal of Applied Psychology, 87*(2), 268-79. doi: 10.1037//0021-9010.87.2.268

Hartline, M. D., & Ferrell, O. C. (1996). The management of customer-contact service employees: an empirical investigation. *The Journal of Marketing, 60*(4), 52-70. Retrieved on 15-07-2014 from http://tinyurl.com/mmv63uo

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*(4), 408-420. doi:10.1080/03637750903310360

Heck, R. H., Thomas, S. L., & Tabata, L. N. (2013). *Multilevel and longitudinal modeling with IBM SPSS.* New York, NY: Routledge.

Hitt, M. A., Beamish, P. W., Jackson, S. E., & Mathieu, J. E. (2007). Building theoretical and empirical bridges across levels: Multilevel research in management. *Academy of Management Journal, 50*(6), 1385-1399. doi: 10.2307/20159480

Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management, 24*(5), 623-641. doi: 10.1177/014920639802400504

Hox, J. J. (2002). *Multilevel analysis: Techniques and applications.* New York, NY: Psychology Press.

Hunter, J. E., & Hamilton, M. A. (2002). The advantages of using standardized scores in causal analysis. *Human Communication Research, 28*(4), 552-561. doi: 10.1111/j.1468-2958.2002.tb00823.x

Integron (2014). *Report: Werkdruk in Nederland 2014.* Retrieved on 15-08-2014 from http://www.integron.nl/images/pdf/rapporten/Werkdruk-in-Nederland-2014-Integron.pdf

Jackson, S. E., Schuler, R. S., & Jiang, K. (2014). An aspirational framework for strategic human resource management. *The Academy of Management Annuals, 8*(1), 1-56. doi:10.1080/19416520.2014.872335

Jackson, S. E., Schuler, R. S., & Rivero, J. C. (1989). Organizational characteristics as predictors of personnel practices. *Personnel Psychology, 42*(4), 727-786. doi: 10.1111/j.1744-6570.1989.tb00674.x

Janssen, O. (2001). Fairness perceptions as a moderator in the curvilinear relationships between job demands, and job performance and job satisfaction. *Academy of Management Journal, 44*(5), 1039-1050. Retrieved on 15-07-2014 from http://tinyurl.com/qd5wyzb

Jensen, J. M., Patel, P. C., & Messersmith, J. G. (2013). High-Performance Work Systems and Job Control Consequences for Anxiety, Role Overload, and Turnover Intentions. *Journal of Management, 39*(6), 1699-1724. doi: 10.1177/0149206311419663

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes?. A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal, 55*(6), 1264-1294. doi: 0.5465/amj.2011.0088

Jiang, K., Takeuchi, R., & Lepak, D. P. (2013). Where do we go from here?. New perspectives on the black box in strategic human resource management research. *Journal of Management Studies, 50*(8), 1448-1480. doi: 10.1111/joms.12057

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*(1), 141-151. doi: 10.1177/001316446002000116

Kaiser, H. F. (1970). A second generation little jiffy. *Psychometrika, 35*(4), 401-415. Retrieved on 15-07-2014 from http://tinyurl.com/ozjtuqo

Kalmi, P., & Kauhanen, A. (2008). Workplace innovations and employee outcomes: Evidence from Finland. *Industrial Relations: A Journal of Economy and Society, 47*(3), 430-459. doi: 10.1111/j.1468-232X.2008.00528.x

Kehoe, R. R., & Wright, P. M. (2013). The impact of high-performance human resource practices on employees' attitudes and behaviors*. Journal of Management, 39*(2), 366-391. doi: 10.1177/0149206310365901

Kreft, I. G., & De Leeuw, J. (1998). *Introducing multilevel modeling.* London: Sage.

Kroon, B., Van de Voorde, K., & van Veldhoven, M. J. P. M. (2009). Cross-level effects of high-performance work practices on burnout: Two counteracting mediating mechanisms compared. *Personnel Review, 38*(5), 509-525. Retrieved on 15-07-2014 from http://tinyurl.com/ncn852y

Legge, K. (1998). The morality of HRM. In Mabey, C., Skinner, D., & Clark, T., (eds.), *Experiencing human resource management.* London: Sage

LePine, J. A., LePine, M. A., & Jackson, C. L. (2004). Challenge and hindrance stress: relationships with exhaustion, motivation to learn, and learning performance. *Journal of Applied Psychology, 89*(5), 883-891. doi: 10.1037/0021-9010.89.5.883

Liao, H., Toya, K., Lepak, D. P., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology, 94*(2), 371-391. doi: 10.1037/a0013504

Liden, R. C., Wayne, S. J., & Sparrowe, R. T. (2000). An examination of the mediating role of psychological empowerment on the relations between the job, interpersonal relationships, and work outcomes. *Journal of Applied Psychology, 85*(3), 407-416. doi: 10.1037/0021-9010.85.3.407

Llorens, S., Bakker, A. B., Schaufeli, W., & Salanova, M. (2006). Testing the robustness of the job demands-resources model. *International Journal of Stress Management, 13*(3), 378-391. doi: 10.1037/1072-5245.13.3.378

Macey, W. H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology, 1*(1), 3-30. Retrieved on 15-07-2014 from http://tinyurl.com/ovwdsph

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology, 58*(1), 593-614. doi: 10.1146/annurev.psych.58.110405.085542

March, J. G., & Sutton, R. I. (1997). Crossroads-organizational Performance as a dependent variable. *Organization Science, 8*(6), 698-706. Retrieved on 15-07-2014 from http://www.jstor.org/stable/2635165

Mathieu, J. E., & Taylor, S. R. (2007). A framework for testing meso-mediational relationships in organizational behavior. *Journal of Organizational Behavior, 28*(2), 141-172. doi: 10.1002/job.436

Mauno, S., Kinnunen, U., & Ruokolainen, M. (2007). Job demands and resources as antecedents of work engagement: A longitudinal study. *Journal of Vocational Behavior, 70*(1), 149-171. doi: 10.1016/j.jvb.2006.09.002

Meijman, T.F. & Mulder, G. (1998). Psychological aspects of workload. In Drenth, P.J., Thierry, H., & de Wolff, C.J. (Eds), *Handbook of work and organizational psychology* (2nd ed. 5-33). Erlbaum: Hove.

Mohr, R. D., & Zoghi, C. (2008). High-involvement work design and job satisfaction. *Industrial and Labor Relations Review, 61*(3), 275-296. Retrieved 15-07-2014 from http://www.jstor.org/stable/25249148

Morgeson, F. P., Delaney-Klinger, K., & Hemingway, M. A. (2005). The importance of job autonomy, cognitive ability, and job-related skill for predicting role breadth and job performance. *Journal of Applied Psychology, 90*(2), 399-406. doi: 10.1037/0021-9010.90.2.399

Morrison, D., Payne, R. L., & Wall, T. D. (2003). Is job a viable unit of analysis? A multilevel analysis of demand-control-support models. *Journal of Occupational Health Psychology, 8*(3), 209-219. doi: 10.1037/1076-8998.8.3.209

Nishii, L. H. & Wright, P. M. (2007). *Variability within organizations: Implications for strategic human management* (CAHRS Working Paper #07-02). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. Retrieved on 18-08-2014 from http://digitalcommons.ilr.cornell.edu/cahrswp/467

Nishii, L. H., Lepak, D. P., & Schneider, B. (2008). Employee attributions of the "why" of HR practices: Their effects on employee attitudes and behaviors, and customer satisfaction. *Personnel Psychology, 61*(3), 503-545. doi: 10.1111/j.1744-6570.2008.00121.x

Oliver, J., Bakker, A. B., Demerouti, E., & De Jong, R. D. (2005). Projection of own on others' job characteristics: Evidence for the false consensus effect in job characteristics

information. *International Journal of Selection and Assessment, 13*(1), 63-74. doi: 10.1111/j.0965-075X.2005.00300.x

Paauwe, J. (2009). HRM and performance: achievements, methodological issues and prospects. *Journal of Management studies, 46*(1), 129-142. doi: 10.1111/j.1467-6486.2008.00809.x

Paauwe, J., & Boselie, P. (2005). HRM and performance: what next?. *Human Resource Management Journal, 15*(4), 68-83. doi: 10.1111/j.1748-8583.2005.tb00296.x

Paauwe, J., Wright, P., & Guest, D. E., (2012). *HRM and performance: achievements and challenges.* West Sussex: John Wiley & Sons.

Pallant, J. (2007). *SPSS survival manual, 3rd edition.* Philadelphia, PA: Open Press University, McGraw-Hill International

Paré, G., & Tremblay, M. (2007). The influence of high-involvement human resources practices, procedural justice, organizational commitment, and citizenship behaviors on information technology professionals' turnover intentions. *Group and Organization Management, 32*(3), 326-357. doi: 10.1177/1059601106286875

Peccei, R. E. (2004). *Human resource management and the search for the happy workplace.* ISBN: 978-905892-059-1. Retrieved 15-07-2014 from http://hdl.handle.net/1765/1108

Peccei, R. E., Van de Voorde, K. & Van Veldhoven, M. J. P. M., (2012). HRM well-being and performance. In Guest, D. E., Paauwe, J., & Wright, P. (eds.), *HRM and performance: achievements and challenges.* West Sussex: John Wiley & Sons.

Piening, E. P., Baluch, A. M., & Salge, T. O. (2013). The relationship between employees' perceptions of human resource systems and organizational performance: Examining mediating mechanisms and temporal dynamics. *Journal of Applied Science, 98*(6), 926-947. Retrieved on 15-07-2014 from http://tinyurl.com/m5ux3b3

Pitariu, A. H., & Ployhart, R. E. (2010). Explaining change: Theorizing and testing dynamic mediated longitudinal relationships. *Journal of Management, 36*(2), 405-429. doi: 10.1177/0149206308331096

Porter, M. E. (1996). What is strategy?. In Mazzucato, M. (2002). *Strategy for business.* London: Sage

Posthuma, R. A., Campion, M. C., Masimova, M., & Campion, M. A. (2013). A high performance work practices taxonomy integrating the literature and directing future research. *Journal of Management, 39*(5) 1184-1220. doi: 10.1177/0149206313478184

Purcell, J., & Hutchinson, S. (2007). Front-line managers as agents in the HR-performance causal chain: theory, analysis and evidence. *Human Resource Management Journal, 17*(1), 3-20. doi: 10.1111/j.1748-8583.2007.00022.x

Ramsay, H., Scholarios, D., & Harley, B. (2000). Employees and high-performance work systems: Testing inside the black box. *British Journal of Industrial Relations, 38*(4), 501-531. doi: 10.1111/1467-8543.00178

Raudenbusch, S.W. (1993). Hierarchical linear models and experimental design. In Edwards, L. (eds.), *Applied analysis of variance in behavioral science* (459-496). New York, NY: Marcel Dekker.

Rousseau, D. M. (1995). *Psychological contracts in organizations: Understanding written and unwritten agreements.* Thousand Oaks, CA: Sage.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*(1), 54-67. doi:10.1006/ceps.1999.1020

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of Management Journal, 53*(3), 617-635. doi: 10.5465/AMJ.2010.51468988

Schaufeli, W. B., & Bakker, A. B. (2003). *UWES-utrecht work engagement scale: Test manual.* Unpublished Manuscript: Department of Psychology, Utrecht University.

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, 25*(3), 293-315. doi: 10.1002/job.248

Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior, 30*(7), 893-917. doi: 10.1002/job.595

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 on 15-07-2014 from http://tinyurl.com/lygbe65

Schaufeli, W. B., Taris, T. W., & Van Rhenen, W. (2008). Workaholism, burnout, and work engagement: Three of a kind or three different kinds of employee well-being?. *Applied Psychology, 57*(2), 173-203. doi: 10.1111/j.1464-0597.2007.00285.x

Schneider, B., Hanges, P.J., Smith, D.B., & Salvaggio, A.N. (2003). Which comes first: Employee attitudes or organizational financial and market performance?. *Journal of Applied Psychology, 88*(5), 836–851. doi: 10.1037/0021-9010.88.5.836

Seibert, S. E., Wang, G., & Courtright, S. H. (2011). Antecedents and consequences of psychological and team empowerment in organizations: A meta-analytic review. *Journal of Applied Psychology, 96*(5), 981-1003. doi: 10.1037/a0022676

SKB (2014). *Referentiegegevens werkdruk en afwisseling in het werk in 2008 en 2012.* Amsterdam: SKB Vragenlijst Services.

Snape, E., & Redman, T. (2010). HRM practices, organizational citizenship behaviour, and performance: A multi-level analysis. *Journal of Management Studies, 47*(7), 1219-1247. doi: 10.1111/j.1467-6486.2009.00911.x

Snell, S. A., & Dean, J. W. (1992). Integrated manufacturing and human resource management: A human capital perspective. *Academy of Management Journal, 35*(3), 467-504. Retrieved on 15-07-2014 from http://www.jstor.org/stable/256484

Snijders, T. A. B., & Bosker, R. J. (1994). Modeled variance in two-level models. *Sociological Methods & Research, 22*(3), 342-363. doi: 10.1177/0049124194022003004

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology, 13*(1), 290-312. Retrieved on 15-07-2014 from http://www.jstor.org/stable/270723

Spector, P. E., Cooper, C. L., Poelmans, S. A., Allen, T. D., O'Driscoll, M. P., Sanchez, J. I., Siu. O. L., Dewe, P., Hart, P. & Lu, L. (2004). A cross-national comparative study of work-family stressors, working hours and well-being: China and Latin America versus the Anglo world. *Personnel Psychology, 57*(1), 119-142. doi: 10.1111/j.1744-6570.2004.tb02486.x

Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics, 87*(3), 355-374. Retrieved on 15-07-2014 from http://www.jstor.org/stable/1882010

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 38*(5), 1442-1465. Retrieved on 15-07-2014 from http://www.jstor.org/stable/256865

Spreitzer, G. M., Kizilos, M. A., & Nason, S. W. (1997). A dimensional analysis of the relationship between psychological empowerment and effectiveness satisfaction, and strain. *Journal of Management, 23*(5), 679-704. doi: 10.1177/014920639702300504

Subramony, M., Krause, N., Norton, J., & Burns, G. N. (2008). The relationship between human resource investments and organizational performance: A firm-level examination of equilibrium theory. *Journal of Applied Psychology, 93*(4), 778-788. doi: 10.1037/0021-9010.93.4.778

Sun, L. Y., Aryee, S., & Law, K. S. (2007). High-performance human resource practices, citizenship behavior, and organizational performance: A relational perspective. *Academy of Management Journal, 50*(3), 558-577. doi: 10.2307/20159873

Tabachnick, B. G., & Fidell, L. S. (2007). Multivariate analysis of variance and covariance. In Hartman, S., (eds), *Using multivariate statistics* (243-310). Boston, MA: Allyn & Bacon

Takeuchi, R., Lepak, D. P., Wang, H., & Takeuchi, K. (2007). An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. *Journal of Applied Psychology, 92*(4), 1069-1083. doi: 10.1037/0021-9010.92.4.1069

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. doi: 10.1037/a0025942

Van de Voorde, K., Paauwe, J., & Van Veldhoven, M. (2012). Employee well-being and the HRM-organizational performance relationship: A review of quantitative studies. *International Journal of Management Reviews, 14*(4), 391-407. doi: 10.1111/j.1468-2370.2011.00322.x

Van den Brink, W. P., & Mellenbergh, G. J. (1998). *Testleer en testconstructie.* Meppel: Boom Koninklijke Uitgevers.

Van den Broeck, A., De Cuyper, N., De Witte, H., & Vansteenkiste, M. (2010). Not all job demands are equal: Differentiating job hindrances and job challenges in the job demands–resources model. *European Journal of Work and Organizational Psychology, 19*(6), 735-759. doi: 10.1080/13594320903223839

Van den Broeck, A., Vansteenkiste, M., De Witte, H., & Lens, W. (2008). Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work and Stress, 22*(3), 277-294. doi: 10.1080/02678370802393672

Van Veldhoven, M. J. P. M. (2005). Financial performance and the long-term link with HR practices, work climate and job stress. *Human Resource Management Journal, 15*(4), 30-53. doi: 10.1111/j.1748-8583.2005.tb00294.x

Van Veldhoven, M. J. P. M., & Meijman, T. F. (1994*). Het meten van psychosociale arbeidsbelasting met een vragenlijst: De vragenlijst beleving en beoordeling van de arbeid (VBBA).* Nederlands Instituut voor Arbeidsomstandigheden NIA (TNO).

Van Veldhoven, M. J. P. M., Meijman, T. F., Broersen, J. P. J., & Fortuin, R. J. (2002). *Handleiding VBBA. Onderzoek naar de beleving van psychosociale arbeidsbelasting en werkstress met behulp van de vragenlijst beleving en beoordeling van de arbeid.* Amsterdam: SKB Vragenlijst Services.

Van Veldhoven, M. J. P. M., & Van de Voorde, K (2014). *Connecting HRM and performance to work engagement: The mediating role of job demands and resources.* Poster session presented at international HRM meeting in London.

Van Yperen, N. W., & Snijders, T. A. (2000). A multilevel analysis of the demands-control model: Is stress at work determined by factors at the group level or the individual level?. *Journal of Occupational Health Psychology, 5*(1), 182-190. doi: 10.1037/1076-8998.5.1.182

Vanhala, S., & Tuomi, K. (2006). HRM, company performance and employee well-being. *Management Revue, 17*(3), 241-255. Retrieved on 15-07-2014 from http://tinyurl.com/m84fr3r

Varca, P. E. (2001). Service representatives, job control, and white-collar blues. *Journal of Services Marketing, 15*(4), 257-269. doi: 10.1108/EUM0000000005505

Wagner, R., & Harter, J. K. (2006). *12: The elements of great managing.* New York, NY: Gallup Press.

Wall, T. D., & Wood, S. J. (2005). The romance of human resource management and business performance, and the case for big science. *Human Relations, 58*(4), 429-462. doi: 10.1177/0018726705055032

Wood, S. J., & de Menezes, L. M. (2011). High involvement management, high-performance work systems and well-being. *The International Journal of Human Resource Management, 22*(7), 1586-1610. doi: 10.1080/09585192.2011.561967

Wood, S. J., & Wall, T. D. (2007). Work enrichment and employee voice in human resource management-performance studies. *The International Journal of Human Resource Management, 18*(7), 1335-1372. doi: 10.1080/09585190701394150

Wood, S. J., Van Veldhoven, M. J. P. M., Croon, M., & de Menezes, L. M. (2012). Enriched job design, high involvement management and organizational performance: The mediating roles of job satisfaction and well-being. *Human Relations, 65*(4), 419-445. doi: 10.1177/0018726711432476

Wright, P. M., & Boswell, W. R. (2002). Desegregating HRM: A review and synthesis of micro and macro human resource management research. *Journal of Management, 28*(3), 247-276. doi: 10.1177/014920630202800302

Wright, P. M. & Haggerty, J. J. (2005). *Missing variables in theories of strategic human resource management: Time, cause, and individuals* (CAHRS Working Paper #05-03). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. Retrieved on 18-08-2014 from http://digitalcommons.ilr.cornell.edu/cahrswp/3

Wright, P. M. & Nishii, L. H. (2007). *Strategic HRM and organizational behavior: Integrating multiple levels of analysis* (CAHRS Working Paper #07-03). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. Retrieved on 18-08-2014 from htttp://digitalcommons.ilr.cornell.edu/cahrswp/468

Wright, P. M., Gardner, T. M., Moynihan, L. M., & Allen, M. R. (2005). The relationship between HR practices and firm performance: Examining causal order. *Personnel Psychology, 58*(2), 409-446. doi: 10.1111/j.1744-6570.2005.00487.x

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology, 82*(1), 183-200. doi: 10.1348/096317908X285633

Appendix A

Table A1: Factor loadings for the explorative factor analysis of the work engagement scale.

Scale	Work engagement
Op mijn werk bruis ik van de energie.	.793
Als ik werk voel ik mij fit en sterk.	.851
Ik ben enthousiast over mijn baan.	.890
Mijn werk inspireert mij.	.876
Als ik 's morgens opsta heb ik zin om aan het werk te gaan.	.859
Wanneer ik heel intensief aan het werk ben, voel ik mij gelukkig.	.802
Ik ben trots op het werk.	.876
Ik ga helemaal op in mijn werk.	.842
Mijn werk brengt mij in vervoering.	.820
KMO	*.935*
Bartlett's sphericity significance	*.000*
Eigenwaarde	*6.443*
Cronbach's α	*.951*

Table A2: Factor loadings for the explorative factor analysis of the iHPWS scale.

Scale	Factual high performance work system
Regelmatige training en opleiding (minstens eens per jaar).	.447
Regelmatige e-learnings en workshops (minstens eens per jaar).	.589
Doorgroeimogelijkheden naar soortgelijke functies.	.506
Interne promotie (getalenteerde medewerkers kunnen doorgroeien naar beter betaalde functies)	.433
Regelmatig werkoverleg in het team.	.583
Mogelijkheden voor inspraak en het doen van suggesties.	.742
De mogelijkheid om zelf onderling taken te verdelen.	.380
Een formeel beoordelingssysteem.	.626
Jaarlijkse evaluatie van individuele prestaties in een beoordelingsgesprek.	.650
Beoordeling van prestatie meerdere keren gedurende het jaar in een gesprek.	.699
Gezamenlijk overeengekomen prestatiedoelen.	.706
Sollicitatiegesprekken voor het selecteren van nieuwe medewerkers.	.451
Selectie van nieuwe medewerkers op basis van hun verkoopkwaliteiten.	.489
Informatie en instructie over het zes-stappen verkoopmodel voor nieuwe medewerkers.	.534
Hogere salarissen in vergelijkbare banen dan bij concurrenten.	.356
Salarisstijgingen op basis van individuele prestaties.	.292
KMO	*.731*
Bartlett's sphericity significance	*.000*
Eigenwaarde	*4.769*
Cronbach's α[1]	*.818*

[1] Based on the reliability analysis of the unweighted scale in SPSS.

Table A3: Factor loadings for the explorative factor analysis of the eHPWS scale.

Scale	**Evaluated high performance work system**
In deze winkel wordt er veel moeite gedaan om de juiste kandidaat voor een functie te selecteren.	.574
Er wordt veel moeite gedaan voor de werving van nieuwe medewerkers in deze winkel.	.501
Er wordt veel geld geïnvesteerd in het trainen van medewerkers in deze winkel.	.516
Medewerkers in deze winkel worden voldoende mogelijkheden voor training en ontwikkeling geboden.	.711
Er wordt niet veel prioriteit gegeven aan het trainen van medewerkers in deze winkel.	.601
Er worden uitgebreide trainingsprogramma's aangeboden aan medewerkers in deze winkel.	.635
Medewerkers in deze winkel hebben duidelijke doorgroeimogelijkheden in de organisatie.	.626
Er wordt veel geïnvesteerd in het meten van prestaties van medewerkers in deze winkel.	.485
Beoordelingen zijn in deze winkel gebaseerd op meetbare resultaten.	.600
Beoordelingen van prestaties van medewerkers in deze winkel zijn eerlijk en correct.	.628
In mijn winkel worden suggesties van medewerkers regelmatig opgevolgd.	.690
Medewerkers verdienen wat ze waard zijn in vergelijking met salarissen van collega's in deze winkel.	.132
KMO	*.762*
Bartlett's sphericity significance	*.000*
Eigenwaarde	*3.992*
Cronbach's α[1]	*.761*

[1] Based on the reliability analysis of the unweighted scale in SPSS.

Table A4: Factor loadings for the explorative factor analysis of the job variety scale.

Scale	**Job variety**
Is voor je werk creativiteit vereist?	.704
Is je werk gevarieerd?	.521
Vraagt je werk een eigen inbreng?	.718
Heb je in je werk voldoende afwisseling?	.826
KMO	*.653*
Bartlett's sphericity significance	*.000*
Eigenwaarde	*2.416*
Cronbach's α	*.786*

Table A5: Factor loadings for the explorative factor analysis of the work pressure scale.

Scale	**Work pressure**
Heb je veel werk te doen?	.638
Moet je extra hard werken om iets af te krijgen?	.848
Moet je je haasten?	.848
Heb je te maken met een achterstand in je werkzaamheden?	.783
Heb je problemen met het werktempo?	.704
Heb je problemen met de werkdruk?	.747
KMO	*.823*
Bartlett's sphericity significance	*.000*
Eigenwaarde	*3.512*
Cronbach's α	*.855*

Table A6: Approximated presence of HR functions in the HPWS measures.

	Training & development	Performance evaluation	Communication & participation	Recruitment & selection	Remuneration
iHPWS items	4	4	3	3	2
% of system score	25.00%	25.00%	18.75%	18.75%	12.50%
% of weighted system score[1]	21.59%	20.62%	33.47%	15.59%	8.73%
eHPWS items	5	3	1	2	1
% of system score	41.67%	25.00%	8.33%	16.67%	8.33%
% of weighted system score[1]	47.11%	26.09%	9.63%	14.90%	2.23%

[1] Computed from the component score coefficient matrices.

Table A7: ANOVA output of HPWS weighted factor scores resembling intra-work-unit differences.

	MSW	MSB	F	sig	τ^2	ICC1	ICC2
iHPWS weighted factor score	0.176	1.058	5.995	.009	0.825	82.48 %	83.36%
eHPWS weighted factor score	0.225	1.054	4.683	.018	0.775	77.53%	78.65%

Note: The average number of managers per workgroup equals 1.069.

Table A8: Sobel-test for mediation of iHPWS.

via	Job variety	Work pressure
Unstandardized coefficients		
X → M	0.057 (0.059)	0.044 (0.065)
M → Y	0.438 (0.038)	-0.109 (0.040)
z-value	0.963	-0.657
Unstandardized indirect effect	0.025	0.005
p-value (two-tailed)	.336	.511

Table A9: Sobel-test for mediation of eHPWS.

via	Job variety	Work pressure
Unstandardized coefficients		
X → M	-0.018 (0.060)	-0.065 (0.066)
M → Y	0.438 (0.038)	-0.109 (0.040)
z-value	-0.230	0.926
Unstandardized indirect effect	0.008	0.008
p-value (two-tailed)	.764	.354

Table A10: Estimated effects of productivity increase.

	on	Job variety	Work pressure
SD productivity[1] (*p.16*)		24.00%	24.00%
SD job characteristic[1] (*p.17*)		20.64%	27.59%
Standardized regression coefficient (*c*) of productivity		-.105	.204
Estimated effect of SD increase in productivity[1]		2.17%	5.63%

[1] Calculated by SD/μ.

[2] Calculated by $SD_y * c_{xy}$.

Appendix B

Table B1: Multi-level hierarchical regressions of work engagement in MLwiN v2.02

	Model 1	***Model 2***	***Model 3***	***Model 4***
-2LL	1379.295	1316.176	1311.150	1190.493
Estimates of fixed effects				
Intercept	0.011 (0.051)	0.059 (0.115)	0.053 (0.114)	0.081 (0.099)
Low education[1]		-0.163 (0.100)	-0.156 (0.100)	-0.147 (0.088)
High education[1]		-0.566 (0.121)	-0.577 (0.120)	-0.486 (0.106)
Age (20- years)[2]		-0.110 (0.114)	-0.100 (0.113)	-0.120 (0.101)
Age (30+ years)[2]		-0.317 (0.113)	0.313 (0.113)	0.263 (0.101)
Hours per week[3]		0.190 (0.099)	0.196 (0.098)	0.113 (0.088)
Factual iHPWS			0.079 (0.055)	0.062 (0.044)
Evaluated eHPWS			0.008 (0.056)	0.003 (0.043)
Work-unit productivity			-0.061 (0.048)	0.007 (0.039)
Job variety				0.438 (0.038)
Work pressure				-0.109 (0.040)
Estimates of covariance parameters				
1st: individual (σ^2)	0.932 (0.066)	0.813 (0.058)	0.816 (0.058)	0.670 (0.047)
2nd: work-unit (τ^2)	0.065 (0.038)	0.065 (0.035)	0.050 (0.032)	0.001 (0.020)

Note: effect values are unstandardized parameter estimates, with standard errors between brackets.

[1] Dummy variables with medium education as referent group.

[2] Dummy variables with age 20 to 29 years as referent group.

[3] Dummy variables with less than 21 hours per week as referent group.

Table B2: Multi-level hierarchical regressions of job variety in MLwiN v2.02

	Model 1	***Model 2***	***Model 3***
-2LL	1376.163	1356.655	1351.147
Estimates of fixed effects			
Intercept	0.008 (0.053)	-0.077 (0.121)	-0.081 (0.119)
Low education[1]		-0.031 (0.104)	-0.023 (0.104)
High education[1]		-0.178 (0.126)	-0.196 (0.125)
Age (20- years)[2]		-0.043 (0.118)	-0.034 (0.118)
Age (30+ years)[2]		0.165 (0.117)	0.152 (0.118)
Hours per week[3]		0.244 (0.103)	0.249 (0.102)
Factual iHPWS			0.057 (0.059)
Evaluated eHPWS			-0.018 (0.060)
Work-unit productivity			-0.105 (0.052)
Estimates of covariance parameters			
1st: individual (σ^2)	0.908 (0.065)	0.869 (0.062)	0.870 (0.062)
2nd: work-unit (τ^2)	0.089 (0.041)	0.090 (0.042)	0.074 (0.038)

Note: effect values are unstandardized parameter estimates, with standard errors between brackets.
[1] Dummy variables with medium education as referent group.
[2] Dummy variables with age 20 to 29 years as referent group.
[3] Dummy variables with less than 21 hours per week as referent group.

Table B3: Multi-level hierarchical regressions of work pressure in MLwiN v2.02

	Model 1	***Model 2***	***Model 3***
-2LL	1363.810	1308.822	1296.102
Estimates of fixed effects			
Intercept	-0.007 (0.059)	-0.125 (0.118)	-0.112 (0.116)
Low education[1]		0.047 (0.099)	0.032 (0.098)
High education[1]		-0.006 (0.119)	0.006 (0.118)
Age (20- years)[2]		-0.346 (0.111)	-0.342 (0.111)
Age (30+ years)[2]		0.264 (0.110)	0.286 (0.110)
Hours per week[3]		0.305 (0.096)	0.289 (0.095)
Factual HPWS			0.044 (0.065)
Evaluated HPWS			-0.065 (0.066)
Work-unit productivity			0.207 (0.057)
Estimates of covariance parameters			
Residual (σ^2)	0.841 (0.060)	0.720 (0.052)	0.822 (0.052)
Intercept (τ_{00})	0.159 (0.049)	0.204 (0.052)	0.156 (0.045)

Note: effect values are unstandardized parameter estimates, with standard errors between brackets.
[1] Dummy variables with medium education as referent group.
[2] Dummy variables with age 20 to 29 years as referent group.
[3] Dummy variables with less than 21 hours per week as referent group.