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Helping to promote psychological well-being at work: The role of work engagement, work stress and psychological detachment using the job demands-resources model

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Abstract

The job demands-resources model (JD-R model) underpinned the three main aims of this study: to provide support for the JD-R model's account of work engagement and work stress in relation to psychological well-being; to suggest the inclusion of the recovery process, psychological detachment as a theoretical refinement; and to produce comparative, predictive models of psychological well-being at work. 48 employees from an organisation that delivers: education; support and care services participated. The results provide strong support for the JD-R model; provide evidence for the inclusion of psychological detachment as a theoretical refinement; and show psychological detachment and work stress to be the most predictive of psychological well-being in the work place. Study limitations and suggestions for future research are discussed.

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Ethical statement

This study has been carried out in accordance with the ethical principles set out for conducting research with human participants at the University of Plymouth, School of Psychology, Stage 4 Handbook (2010 - 2011, pp. 63 - 68).

Ethical responsibility statement
In line with the ethical principles, it was acknowledged that participants in this study may have perceived themselves as suffering from stress and/or poor psychological well-being in response to their work roles. Therefore, within the experimental debrief it was clearly stated that there are many online resources available, including health and safety websites on stress at work which are there to provide support. Additionally, participants were informed they could talk to their line manager or General Practitioner (GP) should they require continued help and support.

Data collection statement
All of the data reported in this project was collected by the experimenter.

Acknowledgements
I would like to thank my Supervisor, Pam Jacobs for inspiring me to conduct research on a subject I have become passionate about. Also, thank you for providing me with invaluable support and guidance throughout.

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Finally, I would like to thank the individuals whom agreed to take part; your time and effort is much appreciated.

Introduction
Psychological well-being at work has been defined as a positive psychological state that is both affective and purposeful (Robertson & Flint-Taylor, 2008). As suggested within this definition, psychological well-being can be divided into two components: hedonic and eudaimonic. Hedonic well-being refers to experiences of positive mood and emotion. Eudaimonic well-being accounts for the sense of purpose that is required for long term psychological well-being to occur in the presence of positive mood and emotion (Boniwell & Henry, 2007).

At the individual level, psychological well-being has been shown to: improve employee attention, thought processes and action (Fredrickson & Joiner, 2002), increase an employee's ability to problem solve at work whilst relating to others in a more positive manner (Cartwright & Cooper, 2008) and decrease the likelihood of employees interpreting ambiguous information as threatening (Seidlitz & Diener, 1993). As a consequence, employees with good psychological well-being are able to build more of their own personal resources; physical, intellectual and social (Fredrickson & Joiner, 2002). At the organisational level, research has shown psychological well-being in the work place to be predictive of employee retention, organisational profits, customer loyalty, decreased work place accidents (Harter, Schmidt & Hayes, 2002; Harter, Schmidt, Asplund, Kilham & Agrawal, 2010) and decreased levels of sick leave amongst employees (Darr & Johns, 2008).

These thought-provoking findings are consistent with a new approach in occupational research, which holds its roots firmly in the realm of positive psychology; positive organisational behaviour (POB) (Bakker & Schaufeli, 2008). Positive psychology aims 'to catalyze a change in the focus of psychology from pre-occupation only with repairing the worst things in life to also building positive qualities' (Seligman & Csikszentmihalyi, 2000, p. 5; also see Boniwell, 2008). The POB approach simply emphasises just how important it is to develop theories that can be researched and applied in practical settings to improve the psychological well-being of employees in the workplace (Luthams, 2002; Wright, 2003). Research has shown organisations need employees to feel happy and energised so they are fully able to engage in work tasks (Bakker & Schaufeli, 2008).

Work engagement

Kahn (1990) was the first to propose psychological presence as a prerequisite for engagement at work through the expression of physical, cognitive and emotional resources. More recently, work engagement has been defined as a 'positive, fulfilling, work-related state of mind that is characterized by vigor, dedication and absorption' (Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002, p. 74). Vigour refers to high energy work-related behaviour, which persists even in the face of challenge and disappointment. Dedication requires an employee to feel involved and an important part of the work they are undertaking. Such affective states lead to feelings of pride and inspired behaviour (Halbesleben & Wheeler, 2008). Absorption refers to the state of being completely engrossed in a work task. In summary, work engagement is 'true well-being and motivation at work' (Hakanen, Perhoniemi & Toppinen-Tanner, 2008, p. 79).

Work engagement has recently seen a massive boom in interest amongst researchers (Halbesleben & Wheeler, 2008); the literature surging in the last five years (Crawford, LePine & Rich, 2010). Evidence shows work engagement is positively related to employee psychological well-being (Harter, Schmidt & Hayes, 2002; Halbesleben & Wheeler, 2008; Sonnentag, 2003). Engaged employees will have more energy, feel they are an involved and important part of work tasks and be happily engrossed in those work tasks (Harter, Schmidt & Hayes, 2002; Halbesleben & Wheeler, 2008).

Of equal importance are the positive effects that work engagement has at the organisational level. Results from empirical studies have shown work engagement improves work performance (Harter, Schmidt & Hayes, 2002; Salanova, Agut & Peiro, 2005; Xanthopoulou, Bakker, Heuven, Demerouti & Schaufeli, 2008; Sneider, Macey, Barbera & Martin, 2009), decreases staff turnover (Harter, Schmidt & Hayes, 2002; Bakker, Demerouti & Schaufeli, 2005; Saks, 2006; Schaufeli & Bakker, 2004), is related to positive job attitudes in employees (Harter, Schmidt & Hayes, 2002; Schaufeli, Taris & van Rhenen, 2008), increases customer loyalty and satisfaction (Giardini & Frese, 2008; Salanova, Agut & Peiro, 2005) and is further related to pro-work behaviour (Halbesleben & Wheeler, 2008). The combined effect of all the aforementioned benefits means work engagement positively impacts upon an organisation's bottom line (Harter, Schmidt & Hayes, 2002; Harter et al., 2010; Bakker & Bal, 2010).

However, recall how Kahn's first definition of engagement at work proposed the requirement of individual physical, cognitive and emotional resources (Kahn, 1990). When resources become depleted, emotional exhaustion; a core dimension of burnout

can occur (Maslach, Schaufeli & Leiter, 2001). Subsequently, Maslach and Leiter (1997) proposed work engagement to be the opposite of job burnout. Job burnout has been defined as a 'psychological syndrome that involves a prolonged response to stressors in the workplace. Specifically, it involves the chronic strain that results from an incongruence, or misfit, between the worker and the job' (Maslach, 2003, p. 189).

A recent study has shown work engagement and burnout to exist on a continuum (Demerouti, Mostert & Bakker, 2010). If an employee moves further towards the burnout side of the continuum, not only will they experience decreased work engagement, but they may also be at risk of impaired psychological well-being (Schaufeli & Bakker, 2004). The presence or absence of work stress seems to mediate the continuum and influences whether an employee feels engaged in work tasks or experiences burnout in response to job demands (LePine et al., 2005).

Work stress and work-stressors in response to job demands

Lazarus and Launier (1978) proposed the existence of a person-environmental fit that exists between employees and organisations. It is within this fit that psychological transactions occur between an employee and the organisation for which they work. The level of stress experienced will be dependent on the strength of the employee-organisational fit and the extent to which an employee perceives a job demand as stressful. In the work place, these events are termed work-stressors and if they are continued over a substantial period of time, chronic stress may result (Ogden, 2004; Webster, Beehr & Christiansen, 2010).

Therefore, impaired psychological well-being can be viewed as the consequence of stress induced ill mental health (Faragher, Cooper & Cartwright, 2004). Faragher, Cooper and Cartwright (2004) developed an effective mechanism able to measure factors in the work environment that can negatively impact upon an employee's psychological well-being. These factors are: work relationships, work-life balance, overload, job security, control, resources and communication, pay and benefits and your job (job perceptions). Feelings of stress induced by perceived work stressors can lead to feelings of psychological strain (LePine et al., 2005), which is significantly related to impaired psychological well-being (Taris, Le Blanc, Schaufeli & Scheurs, 2005).

Emotional labour is an example of a high load job demand (Chrisopoulos, Dollard, Winefield & Dormann, 2010) and there is a growing body of evidence, which suggests emotional labour is predictive of impaired psychological well-being at work (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007b). Emotional labour is defined as 'the effort, planning, and control needed to express organizationally desired emotion during interpersonal transactions' (Morris & Feldman, 1996, p. 987). Such transactions require an individual to regulate their automatic, surface acting and deep acting emotions (Martinez-Inigo, Totterdell, Alcover & Holman, 2007), whilst engaging in interpersonal and intrapersonal work tasks.

As a consequence, research has shown how emotional regulation can have a negative impact on psychological well-being, because increased levels of psychological energy are required to regulate emotions (de Jonge & Dormann, 2006; Zapf, 2002; Zapf & Holz, 2006; Bakker, Demerouti & Euwema, 2005). Therefore, any work role which includes emotional labour as a job demand should be balanced by the presence of adequate job resources. This will help ensure negative psychological

transactions are buffered to promote psychological well-being in employees (Chrisopoulos et al., 2010). The job demands-resources model (JD-R model) provides a comprehensive account of how such an interaction occurs in the work place.

The job demands-resources model (JD-R model)

The JD-R model (Demerouti, Bakker, Nackreiner & Schaufeli, 2001; Schaufeli & Bakker, 2004; also see Bakker & Demerouti, 2007; Bakker, Demerouti, de Boer & Schaufeli, 2003; Bakker, Demerouti & Verbeke, 2004) describes how job burnout and work engagement can be produced by two categories of work characteristics that are present in every organisational setting; these are job demands and job resources (Schaufeli, Bakker & Van Rhenen, 2009).

Job demands are physical, social or organisational in their nature and require sustained psychological exertion. The psychological exertion required to complete and engage with job demands is associated with psychological costs. Job demands have recently been further differentiated into job challenges and job hindrances (Crawford, LePine & Rich, 2010). This accounts for the category of job demands that are perceived as positive (job challenges); positive because they present challenges that lead to the acquisition of new skills and feelings of pride and achievement.

Job resources are the physical, social and organisational aspects of a work role that enable an employee to achieve work-related goals and promote personal growth and development, all whilst minimising the associated psychological costs (Xanthopoulou et al., 2007b). Job resources are important because they serve as a mediating force between job demands like emotional labour and work engagement (Schaufeli & Bakker, 2004). Empirical evidence suggests job resources promote work engagement via: positive effects on perceived control at work, increased organisational-based self-esteem (Mauno, Kinnunen & Ruokolainen, 2007), perceived managerial support and perceived resources and communication within the organisation (Hakanen, Bakker & Schaufeli, 2006).

In summary, the JD-R model presents a comprehensive account which is able to explain how psychological well-being is either achieved or impaired at work (Hakanen, Schaufeli & Ahola, 2008). The model predicts job demands will be related to psychological well-being and job resources will be related to work engagement (Demerouti et al., 2001). Moreover, the model predicts that the perception of work stress can occur in response to job demands in the working environment (Demerouti et al., 2001; Bakker, Schaufeli, Leiter & Taris, 2008). Thus the JD-R model suggests employee psychological well-being will be largely attributable to specific work characteristics and the balance that is achieved between job demands and job resources (Schaufeli & Bakker, 2004).

Despite this comprehensive account, the JD-R model provides no explanation for how depleted resources are recovered. According to the model, job demands are simply buffered by adequate job resources. However, even work engagement depletes natural resources (Kahn. 1990) which suggests there is a flaw in the model in the absence of a recovery explanation. Psychological detachment strengthens that flaw with a strong account that is able to explain how employees restore their personal resources and ultimately maintain their psychological well-being.

Psychological detachment as a resource restorer

Individuals are continually faced with psychological demands in the work place. Such demands deplete a pool of natural resources within the body and brain and recovery processes intervene to rebuild these resources through resource restoration (Binnewies, Sonnentag & Mojza, 2010; Sonnentag & Fritz, 2007; Beal, Weiss, Barros & MacDermid, 2005). Meijman and Mulder (1998) defined the process of recovery as a mechanism which reverses the negative consequences of job demands.

Psychological detachment is one of four validated recovery processes. The remaining three are: mastery, control and relaxation (Sonnentag & Fritz, 2007; see also Parkinson & Totterdell, 1999; Smith, 2005; Sarang & Telles, 2006; Pelletier, 2004; Griffin, Fuhrer, Stansfeld & Marmot, 2002). Research has suggested psychological detachment as the most important for increasing psychological well-being (Brosschot, Gerin & Thayer, 2006). This is because it is the only recovery process that requires an individual to *psychologically* switch-off from work-related tasks. Individuals with higher levels of psychological detachment are therefore more likely to be more recovered when returning to work and have improved psychological well-being as a result (Binnewies, Sonnentag & Mojza, 2010; Kuhnel, Sonnentag & Westman, 2009).

Therefore, a potential consequence that may occur when continued job demands are placed on already depleted resources in the absence of recovery is impaired psychological well-being (Hockey, 1993). When an individual tries to compensate for their sub-optimal state, they exert more energy for a task compared to an individual who is performing with optimal resources for the same task. This compensation requires further exertion which further depletes personal resources. Longer periods of recovery time and more recovery experiences are needed to reverse the negative impact on personal resources. Binnewies, Sonnentag and Mojza (2009) illustrated this with a study that demonstrated how individual perceptions of job demands changed in accordance with recovered states. The results showed that when an individual feels recovered, they perceive a work task as less demanding and less stressful. In contrast, when an individual does not feel recovered, they perceive the same work task as more demanding and more stressful.

A longitudinal study on psychological detachment and psychological well-being provided strong evidence in support of Binnewies, Sonnentag and Mojza (2009). The study also found psychological detachment to be a moderator between job demands and psychological well-being. Individuals with decreased levels of psychological detachment over a 12 month period were significantly more likely to experience burnout and impaired psychological well-being, compared to individuals who had achieved psychological detachment (Sonnentag, Binnewies & Mojza, 2010).

These findings suggest psychological detachment exists alongside job demands, job resources and work-stressors at the centre of the work engagement; burnout continuum (Demerouti, Mostert & Bakker, 2010). The inclusion of psychological detachment into the framework of the JD-R model would provide an even more comprehensive account of how employees either become engaged in their work or experience burnout in response to job demands.

For example, impaired psychological well-being originates when individuals are confronted with high load job demands. In response, psychological energy is mobilised via sympathetic activation, which in turn releases a sufficient amount of

extra-effort potential that enables the individual to meet job demands (Hockey, 1997). This extra activation further depletes resources (Zohar, Tzischinski & Epstein, 2003; McEwan, 1998) and increases the likelihood that job demands will be perceived as stressful. Perceived stress can lead to impaired psychological well-being (Bakker & Demerouti, 2007). To overcome this, depleted resources need to be restored through psychological detachment (Binnewies, Sonnentag & Mojza, 2010; Sonnentag & Fritz, 2007; Beal et al., 2005). The recovered psychological state is significantly related to good psychological well-being (Binnewies, Sonnentag & Mojza, 2009; Sonnentag, Binnewies & Mojza, 2010). If psychological detachment is not achieved, burnout may result (Maslach, Schaufeli & Leiter, 2001).

Thus psychological detachment accounts for the missing piece in the JD-R model because it provides a viable explanation about exactly how an employee rebuilds their psychological resources. Job resources buffer job demands but they do not restore personal resources. Psychological detachment restores resources indebted to both work stress and work engagement.

Study aims and hypotheses

This study had three main aims; firstly, to contribute to the POB literature by providing additional research on the predictive powers of the JD-R model. Thus the goal is to replicate past research by recruiting individuals who work in emotionally demanding work roles; testing the following hypotheses:

Hypothesis 1: Employees with high levels of work engagement will demonstrate good psychological well-being.

Hypothesis 2: When job demands are perceived as challenges rather than hindrances, stress will be minimised and employees will demonstrate good psychological well-being as a result.

Secondly, this study will propose psychological detachment as a theoretical refinement within the existing framework of the JD-R model:

Hypothesis 3: Employees, who psychologically detach from work in out-of-work time, will experience a period of resource restoration and demonstrate good psychological well-being.

The final goal of this study will be to provide comparative, predictive models to examine which is most predictive of good psychological well-being in the workplace: work engagement, work stress or psychological detachment.

Method

Participants

205 community support workers, support workers, teachers and teaching assistants were recruited as participants from a registered charitable organisation. Employees worked in one of two organisational settings with individuals on the autistic spectrum: Group A; Community team (30) which consisted of community support workers and Group B; School team (175), consisting of teachers, teaching assistants and support workers. Services provided by employees included: support, education, training, short

breaks and residential care. Biographic data recorded included age and gender. Demographic data recorded included occupation.

Materials

Materials included: an invitation to take part in the study (see Appendix A), a brief (see Appendix B), debrief (see Appendix C) and questionnaire (see Appendix D). The questionnaire consisted of items from, a shortened-stress evaluation tool (ASSET) (Faragher, Cooper & Cartwright, 2004), the Utrecht work engagement scale (UWES) (Schaufeli, Bakker & Salanova, 2006) and the psychological detachment sub-scale from the recovery experience questionnaire (Sonnentag & Fritz, 2007). Other materials included self-seal envelopes and a collection box.

Design and Procedure

Individual study packs were designed and created. Each study pack consisted of: an informative letter, a brief, a questionnaire and debrief contained within an un-sealed, self-seal envelope for return to the experimenter. Each study pack was marked with corresponding participant numbers on the questionnaire and debrief.

The invitation to take part in the study introduced the researcher and the purpose of the study. Study instructions were then clearly stated:
1. Read brief, 2. Complete questionnaire, 3. Place the completed questionnaire into the envelope and seal it, 4. Read debrief. The letter also informed employees their organisation would receive a copy of the completed report and that it should be made available to them.

The brief ensured compliance with pre-participation ethical requirements. This included an overview of the study, as an examination of the relationship between job perceptions and psychological well-being. Participants were informed of the participation requirement to be aged 18 or over and that participation was voluntary. The brief assured anonymity and confidentiality; written consent was not required to further ensure anonymity. Participants were informed completion of the questionnaire was equivalent to written consent.

The questionnaire combined three previously validated scales; ASSET (Faragher et al., 2004), UWES (Schaufeli et al., 2006) and the psychological detachment sub-scale from the recovery experience questionnaire (Sonnentag & Fritz, 2007).

ASSET is a diagnostic tool which aims to identify levels of work stress in an organisation. It examines sources of work stress and provides a framework in which normative data can be analysed to enable the proactive management of work stress (Cartwright & Cooper, 2008). There were two scales within ASSET relevant to this study: perceptions of your job (work stress) and your health. There were eight work-stressors included as sub-scales: work-relationships (Example item, “My line manager/supervisor is forever finding fault with what I do”); work-life balance (Example item, “My work interferes with my home and personal life”); overload (Example item, “I am given unmanageable workloads”); job security (Example item, “My job is likely to change in the future”); control (Example item, “I have little control over many aspects of my job”); resources and communication (Example item, “ I do not feel I am informed about what is going on in this organisation”); your job (Example item, “My job involves the risk of actual physical violence) and pay and benefits (Example item, “My pay and benefits are not as good as other people doing the same work or similar”). Items were

rated on a six-point likert scale ranging from “Strongly disagree” to “Strongly agree”. The ‘your health’ scale consisted of two sub-scales: physical health (Example item, “Lack of appetite or over-eating”) and psychological well-being (Example item, “Feeling or becoming angry with others too easily”). Your health items were rated on a four-point likert scale ranging from “Never” to “Often”. Two items were excluded from this scale because they were only relevant to individuals who smoke and consume alcohol.

UWES is an organisational work engagement scale which is based on a positive psychological framework and focused on optimal functioning and psychological well-being. It is a tool that enables the measurement of strengths and psychological capacities of employees in order to develop and manage talent and performance at work (Schaufeli & Bakker, 2003). UWES consisted of three sub-scales: vigour (Example item, “At my work, I feel bursting with energy”); dedication (Example item, “I am proud of the work that I do”) and absorption (Example item, “When I am working, I forget everything else around me”). Items were rated on a seven-point likert scale from “Never” to “Always: Everyday”.

The recovery experience questionnaire examines work-detachment i.e. the individual ability to recover from stress experienced in the work place (Sonnentag & Fritz, 2007). The scale consisted of four sub-scales: psychological detachment, relaxation, mastery and control. Consistent with the aims of this study to focus on psychological well-being, just one of the sub-scales was incorporated into the questionnaire: psychological detachment. Example items included, “I forget about work” and “I get a break from the demands of work”. Each item was rated on a seven-point likert scale from “Never” to “Always”.

The debrief thanked participants for taking part in the study and ensured compliance with post-participation ethical requirements. This included a more detailed description of the study aims compared to the information provided in the brief. This extra information informed participants of how it is believed decreased work-engagement in periods of “time-off” enables psychological recovery. Psychological recovery is thought to improve and maintain work-engagement which in turn promotes psychological well-being. The debrief further informed participants of their right to withdraw their data and a mechanism for doing so was provided that once again ensured anonymity and confidentiality. The advised mechanism asked participants to email the experimenter with their individual participant number and “withdraw my data” in the subject box. Moreover, participants were assured that no explanation would be required should they decide to do so. Additionally, it was noted that if participants were aware of feelings of stress and considered themselves to have poor psychological well-being, help was available from their line managers or general practitioner (GP). Participants were provided with the opportunity to contact the experimenter should they have any questions or comments about the study. The debrief was concluded with contact details for the experimenter and participants were again thanked for their time.

Employing a between-subjects design, participants were categorised into two groups for data collection purposes; group A (community team) and group B (school team).

Ethical approval was granted (see Appendix E) and written consent requested (see Appendix F) and provided from the organisation (see Appendix G) before data collection took place.

Group A: a 30 minute slot was kindly granted to the experimenter at a staff development day, where all members of the community team were present (30). The experimenter greeted the employees and introduced the purpose of the study; as an investigation into the relationship between the way employees perceive their work roles and their psychological well-being. Employees were informed their help would be much appreciated and that if they had any questions, the experimenter would be happy to help. No employees refused participation. Study packs were then distributed. Participants read the introductory letter and the brief before completing the questionnaire. On completion of the questionnaire, participants sealed them in the envelopes provided and read the debrief. All questionnaires were collected.

Group B: 175 study packs were placed in the school staff room alongside a collection box. Questionnaires were collected after a period of three weeks.

Results

The overall response rate was 23% (n = 48). Group one achieved a 100% response rate (n = 30), whilst Group two achieved a 10% response rate (n = 18). Of those who responded, 77% were female (n = 37) and 23% male (n = 11). 13% were age 18-25 (n = 6); 41% were age 26-35 (n = 20); 27% were age 36-45 (n = 13); 15% were age 46-55 (n = 7) and 4% were aged 56 and over (n = 2). 29% of participants were Teachers (n = 7) and Teaching Assistants (n = 7) and 71% were Support Workers (n = 34).

The reliability of the scales was tested using Cronbachs's alpha. Work stress, your health, UWES and the psychological detachment sub-scale as a combined scale were found to be reliable (75 items; α = .87).

Work stress was found to be highly reliable (37 items; α = .91). Within work stress, there were 8 work-stressor sub-scales: work-relationships consisted of 8 items (α = .82); work-life balance consisted of 4 items (α = .62); overload consisted of 4 items (α = .67); job security consisted of 4 items (α = .55); control consisted of 4 items (α = .82); resources and communication consisted of 4 items (α = .67); your job consisted of 8 items (α = .55) and pay and benefits consisted of only one item so no reliability score could be obtained. The bench mark for reliability (α = .70) was not achieved for some of the work stress sub-scales. It is likely the low reliability was due to the small sample (n = 48). However, the majority of the scales were reliable.

Your health was found to be highly reliable (17 items; α = .92). Your health included 2 sub-scales: psychological well-being consisting of 11 items (α = 90) and physical health, consisting of 6 items (α = .78).

UWES was found to be highly reliable (17 items; α = .91). UWES included 3 sub-scales: vigour, consisting of 6 items (α = .74); dedication, consisting of 5 items (α = .85) and absorption, consisting of 6 items (α = .76).

The psychological detachment sub-scale was also found to be reliable (4 items; α = .84).

Table 1: Mean scores (M) and standard deviations (SD) of scales and sub-scales: Means corresponded to likert scales in questionnaire. A higher mean = increased work stress; increased reports of poor health; increased work-engagement and increased psychological detachment

	M	SD
Work-stressors	2.30	.66
Work relationships	1.71	.87
Work-life balance	2.75	1.11
Overload	1.92	.94
Job security	2.01	.83
Control	2.51	1.09
Resources and communication	2.16	.96
Your job	2.41	.63
Pay and benefits	2.94	1.42
Physical health	1.52	.70
Psychological well-being	1.33	.65
UWES	3.99	.79
Vigour	3.77	.81
Dedication	4.42	.98
Absorption	3.77	.89
Psychological detachment	3.27	1.32

The greatest work-stressors appeared to be work-life balance (*M* = 2.75) and pay and benefits (*M* = 2.94). The lowest; overload (*M* = 1.92) and work-relationships (*M* = 1.71). In the UWES, dedication seemed to be the strongest sub-scale (*M* = 4.42). Interestingly, vigour and absorption produced the same mean (*M* = 3.77); their slight difference lying in the variation of responses given (*SD* = .08) (Table 1). Further analysis in the form of Pearson's correlations will demonstrate the strength of the relations between work-stressors, work engagement, psychological detachment and psychological well-being (Table 2).

Table 2: The Pearson's correlations obtained between each of the scales and sub-scales: * = p<.05; ** =p<.001

	Psychological Health	Psychological detachment	Vigour	Dedication	Absorption	Work engagement
Psychological detachment	-.44**	-	-	-	-	-
Work engagement	-.12	-.18	-	-	-	-
Absorption	.07	-.33*	-	-	-	-
Dedication	-.11	-.12	-	-	-	-
Vigour	-.30*	-.02	-	-	-	-
Work stress	.54**	-.32**	-.47**	-.22	-.12	-.23*
Work-relationships	.40**	-.44**	-.20	-.54	-.03	-.14
Work-life balance	.32*	-.22	-.35*	-.02	-.07	-.19
Overload	.61**	-.42**	-.07	.07	-.28	.11
Job security	.16	.11	-.51**	-.32*	-.29*	-.42**
Control	.53**	-.20	-.49**	-.33	-.30*	-.42**
Resources and communication	.40**	-.34*	-.37**	-.29	-.10	-.28
Your job	.36*	-.24	-.33*	-.24	-.15	-.27
Pay and benefits	.19	-.04	-.22	-.01	.05	-.06

This study is concerned with how psychological well-being is related to work-stressors, work engagement and psychological detachment. Thus only the relevant correlations will be described; those correlated with the dependent variable; psychological well-being.

Table 2 shows work engagement was not significantly related to psychological well-being as an inclusive scale (r = -.12, p>.05). However the sub-scale vigour produced a significant negative correlation (r = -.30, p<.05). Dedication (r = -.11, p>.05) and absorption (r = .07, p>.05) were not found to be significantly related.

A highly significant negative correlation was found between psychological detachment and psychological well-being (r = -.44, p<.001).

Work stress was also found to be significantly correlated with poor psychological well-being as an inclusive scale (r = .54, p<.001). Four of the eight work-stressor sub-scales were correlated with psychological well-being to the p<.001 level: work-relationships (r =.40); overload (r = .61); control (r = .53) and resources and communication (r = .40). Two were correlated to the p<.05 level; work-life balance (r =.32) and your job (r = .36). Job security (r = .16, p>.05) and pay and benefits (r = .19, p>.05) were not significantly related to psychological well-being.

Backwards multiple linear regression was applied to create two comparative, predictive models with three main goals. These were to a). Discover the most predictive scales of psychological well-being, b). Discover the most predictive sub-scales of psychological well-being and c). Discover the model that would best account for the most variance when predicting psychological well-being.

It is important to note that although psychological detachment was a sub-scale in the recovery experience questionnaire, for the purpose of analysis, the construct was treated as both a scale and sub-scale due to its great importance within this study. Psychological detachment was therefore included in both predictive models.

The work stress, work engagement and psychological detachment scales, were entered into the multiple linear regression backwards elimination analysis as independent variables. The dependent variable was psychological well-being.

Table 3: Multiple linear regression backwards elimination model of scales most predictive of psychological well-being

Predictor	Standardised beta	Sig.
Work stress	.45	.00
Psychological detachment	-.29	.03

A normal probability plot of the residuals (unexplained error), again checked the data for the assumption of normality. A normal distribution was found in the form of a random scatter (see Appendix H). Thus the model produced was consistent with the assumption of normality. The model predictor variables explained 34% of the variance (Adjusted R square = .34). An ANOVA showed the model to be significant; F (2, 47) = 13,054, p<.05.

Work engagement was eliminated from the model as shown in Table 3. Work-stressors had the greatest standardised beta and was thus the most predictive of psychological well-being to the p<.001 level. Psychological detachment was also found to be highly predictive of psychological well-being with a negative standardised beta to the p<.05 level. Therefore, work-stressors and psychological detachment were shown to be the most predictive of psychological well-being at work.

A predictive backwards multiple linear regression model was produced with the goal to find the most predictive sub-scales of psychological well-being. The work-stressors sub-scales: work-relationships; work-life balance; overload; job security; control; resources and communication; your job and pay and benefits, in addition to the work engagement sub scales: vigour; dedication and absorption and psychological detachment were entered into the multiple linear regression backwards elimination analysis as independent variables. Again, the dependent variable was psychological well-being.

Table 4: Multiple linear regression backwards elimination model of sub-scales most predictive of psychological well-being.

Predictor	Standardised beta	Sig.
Overload	.36	.01
Control	.30	.04
Vigour	-.41	.06
Absorption	.37	.08

A normal probability plot of the residuals (unexplained error) checked the data for the assumption of normality. A normal distribution was found in the form of a random scatter (see Appendix H). Thus the model produced was consistent with the assumption of normality. The model predictor variables explained 46% of the variance (Adjusted R square = .46). An ANOVA showed the model to be significant to the p<.05; F (4, 46) = 10,769, p<.05.

All but four of the sub-scales entered into the analysis were eliminated (Table 4); two work-stressors and two work engagement sub-scales were included in the predictive model. The work engagement sub-scales vigour and absorption were not shown to be significant predictors of psychological well-being; their significance exceeded the p>.05 level. Despite this, they scored the greatest standardised beta which suggests they are heavily weighted in the overall predictive power of the model. The work-stressor, overload scored the third greatest standardised beta and was the most significant predictor of psychological well-being to the p<.01 level. Finally, the work-stressor, control scored a slightly smaller standardised beta and was shown to be significant predictor of psychological well-being to the p<.05 level.

The two comparison models (see Tables 3 and 4) show that sub-scale items were the most predictive of psychological well-being, accounting for 12% more of the variance compared to scales alone (for raw data and analysis, see Appendix H).

Discussion

This study had three main aims; firstly, to contribute to the POB literature by providing additional research on the predictive powers of the JD-R model. Secondly, to propose psychological detachment, as a theoretical refinement within the JD-R model to supplement job resources. The final aim of this study was to produce comparative, predictive models to discover which was most predictive of psychological well-being at work: work engagement, work stress or psychological detachment.

Work engagement, psychological well-being and suggestions for future research

With respect to the first aim of this study, no significant correlation was found to exist between work engagement and psychological well-being, which would suggest *Hypothesis 1 (Employees* with high levels of work engagement will demonstrate good psychological well-being) should be rejected. However, on further analysis of the work engagement sub-scales, an interesting relationship was discovered between vigour and psychological well-being; a significant negative correlation. This suggests employees who have impaired psychological well-being are unable to approach work tasks with high energy. This is consistent with the findings of Schaufeli et al., 2002).

Recent literature which is able to explain these findings has been provided by Robertson and Cooper (2010), whom argued current definitions of work engagement to be too narrow; narrow because they target organisational benefits such as commitment and citizenship rather than employee psychological well-being. This is evident in the UWES (Schaufeli, Bakker & Salanova, 2006) because the constructs: vigour, dedication and absorption simply highlight the aspects of work engagement that drive positive employee behaviour (narrow engagement). They do not include any measures of psychological well-being, which should be expected in line with the POB movement (Bakker & Schaufeli, 2008; Guest & Conway, 2004). Therefore, the results found in this study provide support for Robertson and Cooper's (2010) proposal for a broader conceptualisation of work engagement; full engagement.

Full engagement predicts narrow work engagement will only be high when psychological well-being is high. Similarly, low work engagement will occur when psychological well-being is low (Robertson & Cooper, 2010). Full engagement simply incorporates employee psychological well-being as a component within work engagement, producing a new, broader account of the phenomena. A recent study of 10,000 employees across 12 organisations showed narrow work engagement was actually enhanced by inclusive measures of employee psychological well-being (Robertson & Birch, 2010), providing strong support for full engagement.

This explains why work engagement was not found to be explicitly related to psychological well-being, because work engagement will only occur as a consequence of good psychological well-being and *vice versa*. The constructs appear to be independent of one another. This further explains why vigour was negatively related to work engagement because as proposed by Robertson and Cooper (2010), when psychological well-being is low, motivation will be heavily influenced by low energy in affected employees.

However, the JD-R model does account for full engagement because it explains how an employee becomes unable to engage in their work; through job demands that are perceived as work-stressors in addition to inadequate job resources. Thus the model provides a pro-active account because it suggests job resources should be made available in the workplace to prevent impaired psychological well-being. Such implementation will carve the way for work engagement. Therefore, the JD-R model sufficiently incorporates both narrow work engagement and employee psychological well-being (full engagement). This suggests *Hypothesis 1* can be accepted in part, because one of the three work engagement sub-scales was significantly related to psychological well-being at work. Moreover, the current findings support the theoretical framework of the JD-R model.

With respect to future research, Bakker et al., (2008) suggest continued research on work engagement, will enlighten researchers to the true meaning of work at the individual level, exposing the true impact of job demands and job resources. It would be especially interesting to investigate whether work engagement could be trained into employees. Such a study would directly examine whether or not work engagement as a theory can facilitate practical interventions. Furthermore, if work engagement can facilitate new interventions, can the POB framework be integrated into management training and the personal routines of employees (Hakanen, Perhoniemi & Toppinen-Tanner, 2008)?

Work stress, psychological well-being and suggestions for future research

As an inclusive scale, work stress was found to be significantly related to psychological well-being. Within the eight work stress sub-scales measured, work relationships, overload, control and resources and communication produced a highly significant correlation with psychological well-being. Work-life balance and job perceptions were found to be significantly related to psychological well-being. No relationship was found to exist between job security and pay and benefits. In sum, six of the eight sub-scales were significantly related to psychological well-being. All relationships were positive.

The findings on work stress and psychological well-being provide strong support for one of the main assumptions within the JD-R model; the assumption that work stress develops when job demands are high and job resources are low. If job demands are not buffered by job resources, work stress will be perceived (Demerouti et al., 2001; Bakker et al., 2008). This can lead to psychological strain (LePine et al., 2005) and burnout may result. Burnout is significantly related to impaired psychological well-being (Maslach, Schaufeli & Leiter, 2001; Taris et al., 2005). In contrast, when job demands are perceived as challenges rather than hindrances, stress will be minimised and employees will demonstrate good psychological well-being (*Hypothesis 2*). This is consistent with Crawford, LePine and Rich (2010).

However, within the JD-R model, the mediating relationship between job demands and job resources are assumed to occur independently of the type of work role and the type of job demands (Demerouti et al., 2001). Despite this claim, research has shown the job demand, emotional labour actively increases perceptions of work stress (Pugliesi, 1999) and job resources are therefore more important in buffering the negative consequences of emotional labour. For example, Xanthopoulou et al., (2007a) found job resources were stronger buffers for emotional demands and

burnout compared to actual physical workload and burnout. The most significant resources were work relationships, control and resources and communication. All three of these were found to be highly significant in this study which provides support for Xanthopoulou et al., (2007a). Therefore, it seems emotional labour requires specific job resources to buffer associated consequences.

In summary, although this study provides evidence in support of the JD-R model, the model requires refinement. This is not unreasonable because the model is fairly new and covers an enormous area within the work stress and psychological well-being literature. The JD-R model assumes job demand type is irrelevant (Demerouti et al., 2001). Alternative findings suggest otherwise (Xanthopoulou et al., 2007a) and further research should address this. Further research on job demands like emotional labour is vital for individuals who work in the public sector as support workers or teachers etc. This is because often, emotional labour cannot be reduced (Chrisopoulos et al., 2010). Therefore, the presence of adequate job resources should be regarded with the upmost importance in organisations where emotional labour is prominent. This will help to promote psychological well-being in employees.

Therefore, future research should look to refine the JD-R model by addressing differing requirements of job demands like that of emotional labour. This would allow for the development of demand-specific resources that could be applied through practical interventions with the aim to improve psychological well-being.

Psychological detachment, psychological well-being and suggestions for future research

Psychological detachment produced a highly significant negative correlation in relation to psychological well-being. This suggests employees who achieve psychological detachment outside of work recover psychologically and successfully achieve resource restoration. This is consistent with the existing literature (Binnewies, Sonnentag & Mojza, 2010; Sonnentag & Fritz, 2007; Beal et al., 2005). Subsequently, *Hypothesis 3* (Employees, who psychologically detach from work in out of work time, will experience a period of resource restoration and will demonstrate good psychological well-being) can be accepted.

Meijman and Mulder (1998) defined the process of recovery as a mechanism which reverses the negative consequences of job demands. Further research has validated psychological detachment as a sound recovery process (Sonnentag & Fritz, 2007; Parkinson & Totterdell, 1999; Smith, 2005; Sarang & Telles, 2006; Pelltier, 2004; Griffin et al., 2002). Moreover, research has suggested psychological detachment to be the most important recovery process due to its positive implications for employee psychological well-being (Brosschot, Gerin & Thayer, 2006). Therefore, not only do the current findings strengthen the existing literature, they provide support for the inclusion of psychological detachment as a theoretical refinement to the JD-R model consistent with the aims of this study.

Thus, psychological detachment should be included into the JD-R model because when employees are faced with job demands that are not buffered by adequate job resources, they are more likely to take their work home with them (psychologically). If an employee is psychologically attached to work whilst at home, with no work tasks to complete, they will find it extremely difficult to psychologically detach (Sonnentag

& Bayer, 2005). Strained reactions in response to work stress can accumulate and increase the likelihood of impaired psychological well-being (Meijman & Mulder, 1998).

Psychological detachment provides an excellent account of how 'psychological costs' are reversed. Job resources only buffer the negative effects of job demands; psychological detachment has the power to fully alleviate these effects in out-of-work hours. It can therefore be inferred that adequate job resources at work, paired with psychological detachment outside of work, provide an even more comprehensive account of how employees either maintain psychological well-being, or develop impaired psychological well-being as a consequence of work stress.

However, psychological detachment is a new phenomenon and more research is needed to further validate the suggested positive effects. Sonnentag and Bayer (2005) have suggested psychological detachment should be core element in recovery respite. This can only be achieved with a larger body of evidence. The implications for this phenomenon are so great, researchers should do everything in their power to push psychological detachment as a core recovery process. This will help to promote psychological well-being in employees (Binnewies, Sonnentag & Mojza, 2009).

Comparative predictive models of psychological well-being

The final aim of this study was to produce comparative, predictive models of the scales (work engagement, work stress and psychological detachment) and their sub-scales to examine firstly, which scales and sub-scales were most predictive of psychological well-being and secondly, which model (scale or sub-scale) accounted for the most variance when predicting psychological well-being at work. This work will help weigh the importance of each psychological construct within the JD-R model for promoting psychological well-being at work.

The scales, work engagement, work stress and psychological detachment were entered into the first predictive model. Work engagement was eliminated; consistent with the correlations obtained earlier in the analysis. Work stress was found to be the most significant predictor of psychological well-being and psychological detachment was found to be the second. Together, work stress and psychological detachment accounted for 33 percent of all variance when predicting psychological well-being. These findings provide further support for the inclusion of psychological detachment into the JD-R model because those who are able to psychologically detach out-of-work are significantly more likely to have good psychological well-being. It seems theoretically sound that psychological detachment and job resources would work together to buffer job demands and restore depleted resources.

The sub-scale comparison model provided further evidence in support of the significant correlations that were found in earlier analyses of the results. All sub-scales for work engagement and work stress were entered into the analysis in addition to psychological detachment which was considered both a scale and sub-scale for the purpose of this study. Only four sub-scales remained in the model; two of which were not found to be statistically significant; those were the work engagement sub-scales: vigour and absorption. Two work-stressors: control and overload, were found to be significant predictors of psychological well-being. This

provides further evidence for the JD-R model because it suggests work stress does arise when job demands are perceived as stressful; specifically lack of control and unmanageable workloads.

Methodological limitations and further suggestions for future research

It is important to note that no concrete conclusions can be drawn about direct causal relationships between psychological well-being and work engagement, work stress and psychological detachment. All inferences were based on correlations and their theoretical role within the JD-R model framework.

Therefore, the main focus of this study was to examine the theoretical relations between work engagement, work stress and psychological detachment on psychological well-being using the JD-R model. As a consequence, this study did not control for biographic and demographic variation. Future research could replicate this study and control for these potentially confounding variables. This is especially important due to the fact that females were overrepresented (78 percent), which means the current findings are not necessarily representative of working males.

Additionally, the response rate for this study was quite low (23 percent), which resulted in a relatively small sample size (n = 48). This was reflected in the poor reliability obtained in five of the eight work stress sub-scales: work-life balance, overload, resources and communication, your job and job security. Therefore the results in this study should be interpreted with caution because the study is essentially underpowered due to a skewed sample. It would be useful if future research replicated this study using a larger sample to improve the reliability. However, a possible explanation for the low response rate could be found in research conducted by Barr, Spitzmuller and Stuebing (2008). The study illustrated how employees who perceive themselves as having high levels of stress are less likely to participate in organisational surveys. Subsequently, work stress may be higher than it was possible to report with the data obtained. To overcome this, researchers should develop methods that encourage the most vulnerable individuals in the workplace to participate in such studies. This will ensure knowledge of what constitutes an adequate job resource is gained.

A further methodological issue within this study is that self-report scales were applied as a means to obtain objective measures. There remains a general consensus in the literature that self-report measures are sometimes subject to the social desirability bias (Edwards, 1953). The bias is particularly salient in occupational research because employees feel their responses are being judged by employers. It is thought these judgements may affect potential career opportunities such as promotion for example (Whyte, 1956). At present, there is little known about how these biases can be controlled to further validate research (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). However, the present study design may have minimised the potential for social desirability bias because anonymity and confidentiality were emphasised throughout. All participants were assured their item scores could not be traced back to them personally. This will have maximised the validity of the responses obtained, strengthening the research findings and their contribution to the existing literature.

Conclusion

This study provides strong support for the JD-R model. However, it seems that refinement is required to account for specific job demands in the workplace with respect to the provision of the correct job resources, as demonstrated with the job demand, emotional labour. This study further supports the inclusion of psychological detachment as a theoretical refinement to the JD-R model to complement job resources on the work engagement; burnout continuum. The comparative, predictive models of psychological well-being show that work stress and psychological detachment are significant predictors of psychological well-being in employees. However, the work-stressors control and overload, accounted for more of the variance. Finally, it is important to remember that this study has methodological limitations. Future research has been suggested as a means to overcome the aforementioned limitations.

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