THE MODERATING ROLE OF CONSCIENTIOUSNESS IN THE RELATIONS BETWEEN WORK ENGAGEMENT AND JOB CHARACTERISTICS

By

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ABSTRACT
This study investigated the possibility of moderation, confounding and direct effects of Conscientiousness on the relationships between job characteristics and work engagement. The job demands-control-support model was used to operationalise the job characteristics. The interaction effects of this model were also investigated. The objectives of this study were pursued by means of moderated hierarchical multiple regression analysis. The results showed that control moderated the effects of demands on work engagement. The study also found that support moderated the effects of control on work engagement. The results provided evidence for a three-way interaction between demands, control and support. Conscientiousness was shown to influence work engagement directly but no significant evidence was found for the confounding and moderating effects of Conscientiousness on the relationship between job characteristics and work engagement.

Keywords: active job environment, Conscientiousness, job demands, job control, job strain, social support, work engagement
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CHAPTER 1: INTRODUCTION

1.1 Background

It is often noted that certain employees are more productive and more dedicated to the task at hand than their counterparts (Macey & Schneider, 2008). These employees also seem to have a near endless supply of energy and are often so intently focused on their work that they fail to notice the end of the working day (Macey & Schneider, 2008). Although it is possible to mistake these employees for workaholics they actually lack the obsession that most workaholics possess (Schaufeli, Taris, & Van Rhenen, 2008). Instead, they can be described as engrossed in or engaged with their work.

These employees are clearly different in some fundamental way. Questions must therefore be raised about the factors that enable these employees to be more productive and dedicated and to have seemingly endless supplies of energy. It is possible that the job characteristics of their jobs play a role. It is also possible that these employees possess a distinct personality type (Langelaan, Bakker, Van Doornen & Schaufeli, 2006). A further possibility is that the employees’ jobs are designed in a way that allows them to use their personality traits to the fullest potential. Yet another possibility is that a specific personality trait might be responsible for this engaged behaviour, Conscientiousness is an example of a possible personality trait that might be responsible for engaged behaviour, as conscientious people are usually highly organised and persistent in finishing projects (Burger, 2004).

It seems most likely that an interaction between the specific job characteristics and the employees’ personalities is responsible for the employees’ engagement. This research study attempted to understand how these employees differ from ordinary employees. The aim of the study was thus to investigate whether the level of an employee’s Conscientiousness, had an effect on the relationship between the job characteristics and the employee’s level of engagement. In considering the role of Conscientiousness in the relationship between job characteristics (for example, job demands and job control) and outcomes (for example, work engagement) several questions arose.

The first question focused on whether Conscientiousness would have a direct effect on engagement, independent of the influence of job characteristics. The second question looked at whether Conscientiousness would confound the relationship between job characteristics and work engagement. The third question centered on whether Conscientiousness would moderate the effects of job characteristics on work engagement. In the following sections job
characteristics, work engagement and Conscientiousness are discussed separately. The links between the three constructs are also discussed.

1.2 Layout of chapters

The following layout was used for presenting the content of this study. The first chapter introduced the topic and the possible questions that was answered in the study. The second chapter will introduce the previous literature on the various variables of the topic and the links between these variables. In the third chapter the research method that was followed will be explained. The instruments used will also be explained in the third chapter. The result will be discussed in the fourth chapter and the fifth chapter contains the discussion, conclusion and recommendation for future research.
CHAPTER 2: LITERATURE STUDY

2.1 Introduction

As was mentioned in the previous chapter there is a possibility that work engagement might be predicted by a combination of different job characteristics and conscientiousness. It was also introduced that conscientiousness might play different roles between the job characteristics and work engagement.

The following chapter will introduce the previous literature that is available on the different variables that are found in this topic namely the job characteristics, work engagement and conscientiousness. The links, that previous research has found, between these variables will also be discussed.

2.2 Job Characteristics

In this study job characteristics were operationalised using the job demands-control-support (JDC-S) model. The model includes the operational variables of job demands, in particular psychological demands and the amount of resources (job control and the social support) available. The job demand-control (JDC) model was originally developed by Karasek (1979) and later expanded by Johnson and Hall (1988) to include the social support dimension. The model describes how these variables (job demands, job control, social support) interact to create job strain (Fernet, Guay, & Senécal, 2004; Karasek, 1979). The variables can also function to protect the individual from the unhealthy effects of job strain (Fernet et al., 2004; Karasek, 1979).

Karasek (1979) states that job strain is the result of a combination of factors. In Karasek’s (1979) model these factors are labelled job demands and job control. The job demands factor of the model is most commonly associated with stressors at work, such as time pressures due to heavy workload (Fernet et al., 2004; Karasek, 1979), and the amount of external effort required completing a job (Melamed, Kushnir, & Meir, 1991).

The job control factor consists of two components, labelled skill discretion and decision authority (De Bruin & Taylor, 2006; Fernet et al., 2004; Karasek, 1979; Mikkelsen, Øgaard, & Landsbergis, 2005). Skill discretion refers to the variety of tasks available while decision authority refers to the independent decision opportunities available (De Bruin & Taylor, 2006; Pelfrene et al., 2002). Job control can thus be defined as the amount of freedom an individual has to decide how to complete a task and to decide which skills to use to complete a task (Melamed et al., 1991).
Karasek (1979) combines job demands and job control to describe four different working environments: (a) a high strain environment characterised by high demands and low control; (b) a passive environment characterised by low demands and low control; (c) a low strain environment characterised by high control and low demands; and (d) an active environment characterised by high control and high demands. Figure 1 depicts Karasek’s (1979) explanation of the ways in which job demands and job control interact to create the four working environments.

![Figure 1. Karasek's Job demands-control model (adapted from Karasek, 1979)](image)

The diagonals in Figure 1 explain the combinations of job characteristics. The diagonal labelled Unresolved Strain shows that the highest amount of adverse effects can be found in high demands, low control jobs (Van der Doef & Maes, 1999). The diagonal labelled ‘Learning’ suggests that the combination of high control and high demands increases learning, development of skills and motivation (Van der Doef & Maes, 1999). The active working environment lies on the ‘Learning’ diagonal. This working environment “leads to development of new behavior [sic] patterns both on and off the job” (Karasek, 1979, p. 288).

These combinations of job characteristics have led to the development of two separate hypotheses related to the development of job strain. These hypotheses are known as the strain hypothesis and the buffer hypothesis. The strain hypothesis relates to the additive effect of job demands and job control on job strain while the buffer hypothesis relates to the interactive combination effect of job demands and job control on to job strain (De Bruin &
Taylor, 2006; Karasek, 1979; Mansell & Brough, 2005; Melamed et al., 1991; Van der Doef & Maes, 1999). In the JDC model the interaction between demands and control is often described as having a moderating effect; control is thought to moderate the effects of job demands (Chiu, Chung, Wu, & Ho, 2009; De Bruin & Taylor, 2006; Mansell & Brough, 2005; Van der Doef & Maes, 1999; Wall, Jackson, Mullarkey & Parker, 1996). The interaction effect of demands and control suggests that high control may moderate or ‘soften’ the effect of high demands on strain outcomes. However, Parkes, Mendham and Von Rabenau (1994) point out that this effect is also likely to work in the opposite direction. Thus, when control is low the interaction of demands and control could lead to strain outcomes that are disproportionately adverse (Parkes et al., 1994).

The implication of the ‘buffer’ hypothesis is that employees’ health and well-being can be maintained or increased by increasing job control without decreasing job demands. This can create an environment that increases learning and new behaviour (De Bruin & Taylor, 2006; Mansell & Brough, 2005; Van der Doef & Maes, 1999). This is particularly evident in the active work environment, which is the type of environment that provides employees the opportunity to control their work demands. This allows employees to experience the work as challenging and occurring in an environment in which they can actively learn from their experiences (Bradley, 2010). Active work environments also provide a job situation in which employees are able to deal with the high demands of the job and are thus protected from excessive job strain (Taris, Kompier, De Lange, Schaufeli & Schreurs, 2003). Therefore, in active work environments employees are insulated from job strain and able to actively learn from the environment. It is important to note that the majority of previous studies have focused on the high strain environment, while only few a studies have investigated the active work environment (Bradley, 2010; De Bruin & Taylor, 2006; Mansell & Brough, 2005; Taris et al., 2003).

Job demands and job control are two characteristics of the working environment that provide an explanation for the existence of job strain. However, these are not the only factors that influence job strain. In the 1980s a new dimension was added to Karasek’s (1979) job strain model in an effort to explain aspects of job strain that were beyond the explanation provided by job demands and job control. This third dimension is labelled social support (Chiu et al., 2009; Johnson & Hall, 1988; Rodríguez, Bravo, Peiró, & Schaufeli, 2001; Van der Doef & Maes, 1999). The social support dimension relates to the amount of social integration that an employee has achieved within the workplace. This includes social resources such as help from co-workers, feedback from supervisors, concern from co-workers
The social integration dimension is crucial to employee well-being (Van der Doef & Maes, 1999). Research has shown that work social support lessens stressors’ ability to produce strain and other negative effects (Beehr, Jex, Stacy, & Murray, 2000; Chiu et al., 2009; Johnson & Hall, 1988).

The inclusion of the social support dimension led to the creation of the job demand-control-support model (JDC-S; Chiu et al., 2009; De Bruin & Taylor, 2006; Jackson & Hall, 1988; Landsbergis, Schnall, Deitz, Friedman & Pickering, 1992; Van der Doef & Maes, 1999). Like the JDC model, the JDC-S model also results in two possible strain hypotheses. The first hypothesis relates to the additive effects of demands, control and support and the second hypothesis relates to the interactive effects of demands, control and support (Chiu et al., 2009; De Jonge & Kompier, 1997; Gelsema, Van der Doef, Maes, Akerboom, & Verhoeven, 2005; Melamed et al., 1991; Rodríguez et al., 2001; Schaubroeck & Fink, 1998; Searle, Bright, & Bochner, 1999). These interactive effects can be found between demands and control, between control and support, between demands and support or in interactions between all three of the characteristics (Chiu et al., 2009; De Jonge & Kompier, 1997; Gelsema et al., 2005; Melamed et al., 1999; Rodríguez et al., 2001; Schaubroeck & Fink, 1998; Searle et al., 1999).

Meta-analyses by Van Der Doef and Maes (1999) and Häusser, Mojzisch, Niesel and Schulz-Hardt (2010) revealed that majority of studies have found evidence for the additive effects of demands, control and support. In the same meta-analyses evidence was found that, support for the proposed interactive effects is still inconsistent (Van der Doef & Maes, 1999; Häusser et al. 2010). Some studies found no significant evidence of interaction (De Bruin & Taylor, 2006; Landsbergis, 1998; Melamed et al., 1999; Pelfrene et al., 2002; Rodríguez et al., 2001; Searle et al., 1999; Smulders & Nijhuis, 1999) while other studies found evidence for interactions between the job characteristics (Chiu et al., 2009; Landsbergis et al., 1992; Love, Irani, Standing, & Themistocleous, 2007; Mikkelsen et al., 2005; Mansell & Brough, 2005; Peeters & Le Blanc, 2001; Schaubroeck & Fink, 1998; Wall et al., 1999).

2.3 Work Engagement

The aim of this study was to investigate the effects of personality on work engagement and the definition of work engagement provided by Schaufeli, Salanova, Gonzalez-Roma and Bakker (2002) was chosen to achieve this aim.
According to Schaufeli et al. (2002) work engagement is a positive state of well-being related to a person’s work (Bakker, Schaufeli, Leiter, & Taris, 2008; Schaufeli et al., 2002). Therefore the construct of work engagement refers to a work related state of mind that is positive and fulfilling in nature (Bakker, Van Emmerik, & Euwema, 2006; Schaufeli & Bakker, 2004). This state of mind is characterised by three dimensions, namely vigour, dedication and absorption (Bakker, Van Emmerik, & Euwema, 2006; Schaufeli & Bakker, 2004). This positive work-related state is not a short term, specific state but rather “a more persistent and pervasive affective-motivational state that is not focused on any particular object, event, individual or behavior [sic]” (Demerouti et al., 2001, pp.280-281). Martinussen, Richardsen and Burke (2007) further expand the explanation of work engagement by stating that engaged employees are characterised as full of energy and confident in their own effectiveness.

In support of the positive affective nature of work engagement Schaufeli et al. (2008) found evidence that engaged employees can be described as having “a sense of energetic and effective connection with their work activities” (p.176). The same study showed that engaged employees view themselves as being better equipped to deal with their job demands. The definition of work engagement provided above makes it clear that work engagement is positive and an engaged employee is more likely to be able to deal effectively with the strains of any work task.

Before continuing this discussion it must be noted that previous research found strong evidence suggesting that burnout is highly correlated with some of the personality traits described in the Five Factor Model of personality (Bakker et al., 2006; Cano-Garcia, Padilla-Muñoz, & Carrasco-Ortiz, 2005; Kim, Shin, & Swanger, 2009; Langelaan et al., 2006; Swider & Zimmerman, 2010). In light of evidence for a negative correlation between work engagement and job burnout (see for example Bakker et al., 2008; Schaufeli et al., 2002) it is logical to assume that work engagement will also be correlated to certain personality traits.

The main aim of this study was to investigate the effects of Conscientiousness on the relationship between job characteristics and work engagement. The next section focuses on Conscientiousness.

2.4 Conscientiousness

The Five-Factor Model (FFM) of personality is one of the most influential models of personality (Bakker, Van der Zee, Lewig & Dollard, 2006). It defines personality as consisting of five broad traits or dimensions (Bakker et al., 2006; McCrae & John, 1992).
These dimensions are called Extraversion, Neuroticism, Conscientiousness, Openness to Experience and Agreeableness. This study chose to focus on the personality dimension of Conscientiousness.

Conscientiousness is defined as an individual’s level of self-control and self-discipline (Bakker et al., 2006; Burger, 2004; McCrae & Costa, 1986). Individuals who score high on Conscientiousness measures are likely to be highly organised, have plan driven orientations and are determined to see plans through to the end (Bakker et al., 2006; Burger, 2004; McCrae & Costa, 1986). Therefore, conscientious employees would be expected to make detailed plans to accomplish their goals and to persist in these plans despite difficulties. The persistent and self-disciplined nature of the conscientious individual means that employees who score high on Conscientiousness would be expected to finish tasks and accomplish their goals (Bakker et al., 2006).

While Conscientiousness clearly relates to an individual’s self-control, self-discipline, persistence and goal-driven nature it is also linked to stress. Various studies have investigated the effects of Conscientiousness on stress and strain related outcomes. Several of these studies focused on the effects of the personality dimension Conscientiousness on burnout (Bakker et al., 2006; Cano-Garcia et al., 2005; Chung & Harding, 2009). A number of studies investigated the link between personality and general well-being or ill-health (Korotkov, 2008; Miller, Griffin, & Hart, 1999), while other studies focused on the role of personality in the stressor-strain relationship (Grant & Langan-Fox, 2006).

Miller et al. (1999) demonstrated that Conscientiousness was a significant predictor of certain work outcomes in a sample of public sector employees. In addition, Miller et al. (1999) and Korotkov’s (2008) studies showed that Conscientiousness moderates the ill effects of stressors. Importantly, Miller et al. (1999) found that Conscientiousness does not confound the relationship between work outcomes and other independent variables. Grant and Langan-Fox (2006) found evidence that suggests that Conscientiousness is a direct predictor of the ill effects of stressors.

The studies cited in the previous paragraph clearly illustrate that Conscientiousness can have a direct and moderating effect on work outcomes. The focus of this research was on investigating the possible direct, confounding and moderating roles of Conscientiousness in the relationship between work engagement and job characteristics. The remainder of this section discusses the research evidence for these specific roles.

In terms of the direct role of Conscientiousness some research studies (Kim et al., 2009; Langelaan et al., 2006; Mostert & Rothmann, 2006) have found evidence that suggests that
Conscientiousness directly predicts work engagement. Kim et al. (2009) investigated the effects of Conscientiousness on the three dimensions of work engagement, in a sample of fast food restaurant employees, and found that Conscientiousness had high positive relationships with vigour and absorption. The researchers concluded that employees who score high on Conscientiousness are more likely to have strengths in terms of responsibilities, organisational skills and steadiness. These employees are therefore more likely to channel their energy into work. A review of the literature, using EBSCOHOST multidisciplinary database, shows that few studies have focused on the direct effects of Conscientiousness on work engagement. The studies (Kim et al., 2009; Langelaan et al. 2006; Mostert & Rothmann, 2006) that have investigated this effect clearly show that Conscientiousness has a positive direct relationship with work engagement.

It is also possible that Conscientiousness confounds the relationship between work engagement and job characteristics. Moyle (1995) explains that a confounding effect occurs when the confounding variable “spuriously inflate[s] the correlations” (p.649) between the outcome variable and a predictor variable. A search of the literature, using EBSCOHOST multidisciplinary database, failed to find any previous studies focusing on the confounding effects of Conscientiousness on work engagement. However, some studies (Bakker et al., 2006; Watson & Pennebaker, 1989) did report the possibility of confounding effects between personality and work outcomes. In particular, Bakker et al. (2006) reported as part of the limitations of the study that there is a possibility of confounding effects between personality and work outcomes. One study (Mansell & Brough, 2005) that did investigate the confounding role of personality, reported that no evidence was found to support this role.

Conscientiousness might also play a role in moderating the effects of job characteristics on work engagement. A search of the literature, using EBSCOHOST multidisciplinary database, revealed no evidence for the moderating effect of Conscientiousness on the prediction of work engagement.

2.5 Hypotheses

The discussion above led to the generation of five hypotheses:

Hypothesis 1: Job demands, job control and social support have an additive effect on the prediction of work engagement.

Hypothesis 2: Job demands, job control and social support have an interactive effect on the prediction of work engagement.
Hypothesis 3: Conscientiousness has a direct effect on the prediction of work engagement, independent of any relationship between Conscientiousness and job characteristics.

Hypothesis 4: Conscientiousness will confound the effects of job characteristics on the prediction of work engagement.

Hypothesis 5: Conscientiousness will moderate the effects of job characteristics on the prediction of work engagement.

2.6 Conclusion

Clearly there are gaps in the previous literature regarding the relationship between the variables of this topic and this was shown in the chapter. Therefore the research question of whether conscientiousness has any effect on the relationship between work engagement and job characteristics was chosen to attempt to fill these gaps.
CHAPTER 3: RESEARCH METHOD

3.1 Introduction

To answer the hypotheses that were generated from the previous literature a certain research method was followed. In the following sections this method is discussed. The instruments used within this method are also discussed in this chapter.

Firstly the characteristics of the participants in the study are discussed. Following this the instruments are discussed in detail. The reliability of the instruments are also given. After the instruments the procedure that was followed is explained and then the ethical consideration of the study is discussed. Lastly the statistical analysis is explained in detail.

3.2 Participants

The sample consisted of 644 participants. These participants were employed in a variety of jobs. The participants were spread out over all levels of the organisations for example some participants were executive managers, others were middle management, and some were sales assistants. The participants also included call centre agents, drivers, policemen, engineers, accountants and as well as artisans and administrative personnel. The participants were also divided across the trade sectors as the participants came from service, manufacturing and trade industries.

In order to participate, individuals had to have at least a matric level of education and one year of work experience. The sample consisted of 272 men and 367 women with a mean age of 34.46 years (standard deviation = 11.45 years). Of the 644 participants, 82.1% of the participants were between the ages of 18 and 47 years. In terms of education 23.4% had only Grade 12, 10.7% had a certificate, 20.9% had a diploma and 22.1% had achieved an undergraduate degree. The remainder (22.9%) of the participants had an honours degree or higher qualification. The racial composition of the participants was 55.9% white, 27.8% black, 7.6% Asian/Indian and 8.2% coloured.

3.3 Instruments

3.3.1 Job characteristics

The variable job characteristics was operationalised through the factors of job demands, job control and social support. Karasek’s Job Content Questionnaire (JCQ; Karasek, 1985) was used to measure job demands, job control and social support (Karasek et al., 1998; Karasek, Choi, Ostergren, Ferrario, & De Smet, 2007). The three dimensions of the JCQ
(demands, control and support) are measured using a self-report scale with a 4 point Likert response scale ranging from 1 (Strongly disagree) to 4 (Strongly agree). The measure consists of 29 items.

An example of an item measuring psychological demands is: “My job requires long periods of intense concentration on the task”. Examples of items measuring control are: “My job requires a high level of skill” and “My job allows me to make a lot of decisions on my own”. An example of an item measuring social support is: “My supervisor is helpful in getting the job done”. A Factor analysis was completed, before the start of the data analysis, and the results of this factor analysis revealed that the three dimensions (demands, control and support) are best measured using a single factor for each dimension.

Previous international research (Chiu et al., 2009; Franche et al., 2005; Pelfrene et al., 2001; Schaufeli et al., 2008) found the following reliability coefficients: demands (0.65 to 0.78); control (0.65 to 0.83); and support (0.83 to 0.85). Acceptable Cronbach alpha coefficients were also found in this study (0.71 for demands, 0.79 for control, 0.80 for support).

3.3.2 Work Engagement

The 9-item self-report Utrecht Work Engagement Scale (UWES-9) developed by Schaufeli and Bakker (2003), was used to measure the participants’ work engagement. The UWES-9 measures work engagement as a single construct consisting of three dimensions (vigour, dedication and absorption). The scoring of the UWES-9 results in a single work engagement score, instead of scores for each of the dimensions. A factor analysis was completed, before the start of the data analysis, and the data revealed that this single work engagement factor was a superior fit to the data than the separate dimensions.

An example of an item measuring the vigour dimension is: “At my work, I feel bursting with energy”. An item from the dedication dimension is: “I am enthusiastic about my job”. An example of an absorption item is: “I am immersed in my work”. The UWES-9 response scale makes use of a seven point Likert scale where 0 = I never feel like this and 6 = I always feel like this.

International studies have yielded reliability scores for the UWES-9 with Cronbach alpha coefficients ranging from 0.70 to 0.94 (Korunka, Kubicek, Schaufeli, & Hoonakker, 2009; Schaufeli & Bakker, 2003; Schaufeli, Bakker, & Salanova, 2006). South African studies have yielded similar results with Cronbach alpha coefficients ranging from 0.68 to 0.91.
(Coetzee & Rothmann, 2005; Rothmann & Jordaan, 2006). This study yielded a similar result with a high alpha coefficient of 0.91 for the UWES-9.

3.3.3 Conscientiousness

In this study Conscientiousness was measured using the NEO Five Factor Inventory Revised (NEO-FFI-R; McCrae & Costa, 2004). The measure consists of 60 items measuring Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness. The Conscientiousness subscale includes 12 items. Examples of items measuring Conscientiousness are “I keep my belongings neat and clean” and “When I make a commitment, I can always be counted on to follow through”. The inventory uses a 5 point Likert type response scale ranging from 1 (Strongly disagree) to 5 (Strongly agree).

Studies have found reliabilities for the Conscientiousness scale of the NEO-FFI-R ranging from 0.75 to 0.88 (Aluja, Garcia, Rossier, & Garcia, 2005; Egan & McCorkindale, 2007; Otter & Egan, 2007). This study yielded an acceptable reliability score of 0.82.

3.4 Procedure

Of the almost seven hundred questionnaires that were distributed, to a variety of organisations and participants, six hundred and forty-four questionnaires were suitable for the use in the data analysis. The distribution was done in collaboration with research associates and a group of honours degree students. All instruments were self-report questionnaires. A purposeful non-random sampling strategy was employed to select participants who met the inclusion criteria.

3.5 Ethical Considerations

Participation in the study was voluntary and the participants were assured of confidentiality by means of the cover letter of the questionnaire. The participants were given the option to receive feedback at the completion of the research. If a participant wanted to accept the option to receive feedback, the email addresses of the two head researchers were included on the cover letter of the questionnaire. The gathered data were used for research purposes only.

3.6 Statistical Analysis

The research study aimed to investigate the direct, confounding and moderating effects of Conscientiousness, job demands, control and support on the prediction of work
engagement. Hierarchical multiple regression analyses were performed to meet this aim. The standard assumptions of homoscedasticity, normal distribution and linear relations were inspected. The assumption of linear relations was not met. Thus to control for curvilinearity, all regression analyses include the quadratic terms of demands, support and control.

The first regression model focused on analysis of the first (additive effects) and second (interactive effects) hypotheses. The first step in this model involved controlling for age and gender. In the second step the demands, control and support variables were entered. A significant finding at this step was taken as evidence for the additive effects of job characteristics. In order to account for the curvilinear relationships the quadratic terms of demands, control and support were entered into the regression model in the third step. A significant result at this step was taken as evidence of the curvilinear relationships. The fourth step of the regression model contained the interaction terms and a significant result at this point was taken as evidence for a moderating effect. The last step of the regression model contained a three-way interaction term of demands, control and support. A significant finding here suggested that demands, control and support interact in a three-way relationship to predict work engagement.

To test for hypotheses three to five hierarchical multiple regression analysis was completed. This analysis involved a series of five steps. In the first step the effects of age and gender were controlled. Conscientiousness was entered as the second step. A significant result in this step was taken as evidence for the direct effect of Conscientiousness on predicting work engagement. In the third step demands, control and support were added separately. The fourth step involved adding the corresponding quadratic terms. A significant result for Conscientiousness in step two and non-significant results in step three and four was taken as evidence of the confounding effect of Conscientiousness. The fifth step contained the interaction terms between Conscientiousness and the job characteristic variables. A significant result here was taken as evidence of the moderating effects of Conscientiousness.
CHAPTER 4: RESULTS

4.1 Introduction

In the previous chapter the method that was followed, to answer the research hypotheses, was discussed. This research method yielded a certain amount of results. In the following section these results will be described in detail. Firstly the means, standard deviations and pearson correlations will be given. The results for the job characteristics predicting work engagement then follows. Next the results for hypotheses 3 to 5 will be given for each of the following three relationships: Demands and conscientiousness predicting work engagement; Control and conscientiousness predicting work engagement and Support and conscientiousness predicting work engagement.

4.2 Means, Standard Deviations and Inter-correlations

The means, standard deviations and Pearson inter-correlation of the variables are provided in table 4.1. The table shows that work engagement was significantly and positively correlated with Conscientiousness, control and support. As a result of the curvilinearity of the relationship between work engagement and demands the correlation between work engagement and job demands was non-significant. Conscientiousness was significantly correlated with demands (negatively) and control (positively) and had a non-significant correlation with support. Furthermore, job demands was found to be significantly and positively correlated with control but had a non-significant correlation with support.

Table 4.1
Means, Standard Deviations and Pearson Inter-correlations of Variables

<table>
<thead>
<tr>
<th>Measures</th>
<th>Mean</th>
<th>SD</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Work Engagement</td>
<td>44.18</td>
<td>9.57</td>
<td>0.27***</td>
<td>0.00</td>
<td>0.52***</td>
<td>0.18***</td>
</tr>
<tr>
<td>2. Conscientiousness</td>
<td>46.10</td>
<td>6.33</td>
<td>1</td>
<td>0.13***</td>
<td>0.17***</td>
<td>0.07</td>
</tr>
<tr>
<td>3. Demand</td>
<td>25.49</td>
<td>3.77</td>
<td>1</td>
<td>0.17***</td>
<td>-0.07</td>
<td></td>
</tr>
<tr>
<td>4. Control</td>
<td>26.43</td>
<td>4.27</td>
<td>1</td>
<td>-0.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Support</td>
<td>30.82</td>
<td>5.91</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Correlations have been calculated only for subjects with complete data, $n = 644$.

*p < 0.05; **p < 0.01; ***p < 0.001.
4.3 Job Demands, Control and Support Predicting Work Engagement

4.3.1 Hypotheses 1 and 2: Additive and Interactive effects of job demands, control and social support

Table 4.2 shows that age and gender were included in the first step of the hierarchical analysis. Age had a significant contribution \( b = 0.16, t = 4.99, p < 0.001 \), indicating that scores on work engagement increased with age. Table 4.2 also shows that the second step of the hierarchical analysis found evidence for the additive effects of demands, control and support on the prediction of work engagement. Demands, control and support jointly accounted for 28.9% of the variance in work engagement \( \Delta R^2 = 0.29, p < 0.001 \). The direction of the effects of the job characteristics were as expected. The contributions of the job characteristics were as follows: demands \( b = -0.21, t = -2.54, p < 0.05 \), control \( b = 1.15, t = 15.02, p < 0.001 \) and support \( b = 0.32, t = 5.93, p < 0.001 \).

Step 3 of the hierarchical analysis showed that the quadratic terms of demands and support added significantly to the proportion of variance explained \( \Delta R^2 = 0.02, p < 0.001 \); see table 4.2. This influence was in the expected direction. Therefore this was taken as evidence of the curvilinear relationships between (a) demands and work engagement; and (b) support and work engagement. The contributions were as follows: demands\(^2 \) \( b = -0.05, t = -3.01, p < 0.01 \) and support\(^2 \) \( b = 0.02, t = 3.18, p < 0.01 \). These results provided evidence for the additive hypothesis of the ability of demands, control and support to predict work engagement.

Table 4.2 also provides evidence for the interactive hypothesis. Evidence was found (a) that control moderates the relationship between demands and work engagement and (b) that support moderates the relationship between control and work engagement. These interactions contributed a significant proportion of variance above and beyond that of the additive effects of demands, control and support \( \Delta R^2 = 0.02, p < 0.01 \). The contributions of the different interactions were as follows: control \( \times \) demands \( b = 0.041, t = 2.293, p < 0.05 \) and support \( \times \) control \( b = -0.035, t = -2.991, p < 0.01 \). The interaction effects are shown in figures 2 and 3.

Figure 2 shows that a high control environment results in a slightly less pronounced effect of demands on work engagement. In a low control environment the effect of demands on work engagement is much greater. The moderating effects of support on control are much more pronounced than the effects of control on demands. Figure 3 clearly shows that high
social support coupled with high control resulted in the highest level of work engagement while low social support and low control resulted in the lowest level of work engagement.

Table 4.2 also provides evidence for a three-way interaction between demands, control and support in the prediction of work engagement (see figure 4). This interaction adds significantly to the proportion of variance predicting work engagement ($\Delta R^2 = 0.005$, $p < 0.05$). However, this was a marginal effect [$b = 0.01$, $t = -2.14$, $p < 0.05$]. Figure 4 shows that environments with high control, low demands and high support resulted in the highest...
level of work engagement. When high control and high support were combined with high demands there was a slight decrease in work engagement. However, this effect was much less pronounced than that produced by high demands, low control and low support.

In total the additive and interactive effects of demands, control and support explained 37.2% of the variance \( F(12,620) = 30.59, p < 0.001 \).

Table 4.1
Hierarchical Regression Predicting Work Engagement from Job Demands, Control and Support

<table>
<thead>
<tr>
<th>Source Model</th>
<th>Step 1 (Age and gender)</th>
<th>Step 2 (Main effects)</th>
<th>Step 3 (Quadratic terms)</th>
<th>Step 4 (Interaction terms)</th>
<th>Step 5 (3-way interaction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>39.11</td>
<td>39.84</td>
<td>39.76</td>
<td>39.76</td>
<td>39.60</td>
</tr>
<tr>
<td>Age</td>
<td>0.16***</td>
<td>0.12***</td>
<td>0.12***</td>
<td>0.12***</td>
<td>0.12***</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.94</td>
<td>0.19</td>
<td>0.10</td>
<td>-0.04</td>
<td>-0.02</td>
</tr>
<tr>
<td>Demands</td>
<td>-0.21*</td>
<td>-0.17*</td>
<td>-0.12</td>
<td>-0.12</td>
<td>-0.12</td>
</tr>
<tr>
<td>Control</td>
<td>1.15***</td>
<td>1.08***</td>
<td>1.01***</td>
<td>1.00***</td>
<td>1.00***</td>
</tr>
<tr>
<td>Support</td>
<td>0.32***</td>
<td>0.42***</td>
<td>0.48***</td>
<td>0.49***</td>
<td>0.49***</td>
</tr>
<tr>
<td>Demand²</td>
<td>-0.05**</td>
<td>-0.05**</td>
<td>-0.05**</td>
<td>-0.05**</td>
<td>-0.05**</td>
</tr>
<tr>
<td>Control²</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Support²</td>
<td>0.02**</td>
<td>0.03***</td>
<td>0.03***</td>
<td>0.03***</td>
<td>0.03***</td>
</tr>
<tr>
<td>Demand × Control</td>
<td>0.04*</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand × Support</td>
<td>0.02</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Control × Support -0.04** -0.03**
Demand × Control × Support -0.01**

Model $R^2$ 0.04*** 0.33*** 0.35*** 0.37** 0.37*
Model $\Delta R^2$ 0.04*** 0.29*** 0.02*** 0.02** 0.01*

Note. Correlations have been calculated only for subjects with complete data, $n = 644$. 
*p < 0.05; **p < 0.01; ***p < 0.001.

4.4 Demands and Conscientiousness Predicting Work Engagement

4.4.1 Hypothesis 3: Direct effects of Conscientiousness on work engagement

Evidence for the direct effect of Conscientiousness is provided table 4.3. After controlling for age and gender, Conscientiousness made a significant contribution [$b = 0.37, t = 6.31, p < 0.001$] to the prediction of work engagement ($\Delta R^2 = 0.06, p < 0.001$). This contribution was in the expected direction.

4.4.2 Hypothesis 4: Conscientiousness is a confounding variable

No evidence was found to support this hypothesis. Table 4.3 shows that after controlling for personality, the contribution of the quadratic term of demands was still significant [$b = -0.08, t = -4.46, p < 0.001$]. This means that demands retained predictive power in the presence of Conscientiousness; this is sufficient evidence to suggest that Conscientiousness does not confound the relationship between demands and work engagement.

4.4.3 Hypothesis 5: Conscientiousness is a moderating variable

No evidence was found to support this hypothesis. Table 4.3 clearly shows that the interaction term of demands and Conscientiousness was non-significant [$b = 0.02, t = 1.34, p = 0.180$]. This suggests that Conscientiousness does not moderate the relationship between demands and work engagement. In total demands and Conscientiousness explained 13.1% of the variance [$F(6,627) = 15.72, p < 0.001$].
4.5 Control and Conscientiousness Predicting Work Engagement

4.5.1 Hypothesis 4: Conscientiousness is a confounding variable

No evidence was found to support this hypothesis. Table 4.4 shows that the contribution of control remained significant \( [b = 1.08, t = 13.99, p < 0.001] \) in the presence of Conscientiousness. Control therefore retained predictive power in the presence of Conscientiousness. This is sufficient evidence to suggest that Conscientiousness does not confound the relationship between control and work engagement.

4.5.2 Hypothesis 5: Conscientiousness is a moderating variable

No significant evidence was found to support this hypothesis. Table 4.4 shows that the interaction term of control and Conscientiousness was non-significant \( [b = 0.01, t = 0.82, p = 0.411] \). Therefore, Conscientiousness does not moderate the relationship between control and work engagement.

The total proportion of variance explained by control and Conscientiousness was 31.4%, \( [F(6,627) = 47.79, p < 0.001] \).

Table 3.4
Hierarchical Regression Predicting Work Engagement from Job Control and Conscientiousness

<table>
<thead>
<tr>
<th>Source Model</th>
<th>Step 1 (Age and gender)</th>
<th>Step 2 (Personality)</th>
<th>Step 3 (Job characteristic)</th>
<th>Step 4 (Quadratic term)</th>
<th>Step 5 (Interactive term)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>39.12</td>
<td>40.53</td>
<td>41.75</td>
<td>41.92</td>
<td>41.88</td>
</tr>
<tr>
<td>Age</td>
<td>0.16***</td>
<td>0.13***</td>
<td>0.07*</td>
<td>0.07*</td>
<td>0.07*</td>
</tr>
</tbody>
</table>
4.6 Support and Conscientiousness Predicting Work Engagement

4.6.1 Hypothesis 4: Conscientiousness is a confounding variable

No evidence was found to support this hypothesis. Table 4.5 shows that after controlling for personality and the curvilinear effect of support the contribution of the quadratic term of support was still significant \( b = -0.04, t = 5.29, p < 0.001 \). Support thus retained predictive power in the presence of Conscientiousness. This is sufficient evidence to show that Conscientiousness does not confound the relationship between support and work engagement.

4.6.2 Hypothesis 5: Conscientiousness is a moderating variable

No significant evidence was found to support this hypothesis. Table 4.5 shows that the interaction term of support and Conscientiousness was non-significant \( b = -0.002, t = -0.29, p = 0.789 \). Therefore, Conscientiousness does not moderate the relationship between support and work engagement.

The total proportion of variance explained by support and Conscientiousness was 17.3% \( [F(6,625) = 21.85, p < 0.001] \).

Table 4.4
<table>
<thead>
<tr>
<th>Source Model</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Step 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstandardised regression coefficients (β)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>39.11</td>
<td>40.52</td>
<td>39.53</td>
<td>37.90</td>
<td>37.90</td>
</tr>
<tr>
<td>Age</td>
<td>0.16***</td>
<td>0.13***</td>
<td>0.16***</td>
<td>0.16***</td>
<td>0.16***</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.94</td>
<td>-1.11</td>
<td>-1.36</td>
<td>-1.37</td>
<td>-1.37</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.37***</td>
<td>0.34***</td>
<td>0.30***</td>
<td>0.30***</td>
<td>0.30***</td>
</tr>
</tbody>
</table>

Note. Correlations have been calculated only for subjects with complete data, \( n = 644 \).

*\( p < 0.05 \); **\( p < 0.01 \); ***\( p < 0.001 \).
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Support</td>
<td>0.33***</td>
<td>0.53***</td>
<td>0.53***</td>
<td></td>
</tr>
<tr>
<td>Support²</td>
<td>0.04***</td>
<td>0.04***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support × Conscientiousness</td>
<td>-0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model $R^2$</td>
<td>0.04***</td>
<td>0.10***</td>
<td>0.14***</td>
<td>0.17***</td>
</tr>
<tr>
<td>Model $\Delta R^2$</td>
<td>0.04***</td>
<td>0.06***</td>
<td>0.04***</td>
<td>0.04***</td>
</tr>
</tbody>
</table>

Note. Correlations have been calculated only for subjects with complete data, $n = 644$.

*p < 0.05; **p < 0.01; ***p < 0.001.
CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The previous chapters explained the previous research, the research method followed as well as the results that were produced through following the method. The following sections will now discuss the results and a conclusion will be presented. Some recommendations for future research will be made. The most important limitations of this study will also be given.

5.2 Discussion

This study aimed to investigate the effects of job characteristics on work engagement. It also investigated the moderating effects of Conscientiousness on work engagement. Five hypotheses were proposed: (1) job demands, job control and social support would additively predict work engagement; (2) job characteristics would interactively predict work engagement; (3) Conscientiousness would have a direct effect on the prediction of work engagement; (4) Conscientiousness would have a confounding effect on the relationship between job characteristics and work engagement; and (5) Conscientiousness would have a moderating effect on the relationship between job characteristics and work engagement.

The main contribution of this study lies in the findings regarding the direct, confounding and moderating effects of Conscientiousness on the prediction of work engagement. The results of this study showed that Conscientiousness had a significant direct and positive effect on the prediction of work engagement. This is consistent with the previous literature that also showed a direct effect of Conscientiousness on work engagement (Kim et al., 2009; Langelaan et al., 2006; Mostert & Rothmann, 2006). It is possible that the direct effects of Conscientiousness was observed because persons who score high on Conscientiousness are highly organised, self disciplined and are more likely to use their energy towards the completion of their work.

Furthermore the results of this study showed that Conscientiousness had no confounding effect on the relationship between job characteristics and work engagement. This finding is consistent with the previous study in which it was shown that personality does not confound work outcomes (Mansell & Brough, 2005). The results of the study also showed that Conscientiousness had no moderating effects on the relationship between work engagement and job characteristics. No previous research was found where Conscientiousness is in a moderating relationship with work engagement and job characteristics. Thus this study adds
some evidence to the literature that Conscientiousness does not moderate the relationship between work engagement and job characteristics.

Finding positive evidence for the direct effects of Conscientiousness and no supporting evidence for the confounding and moderating effects present an interesting result. These findings is most likely because Conscientiousness relates to a person’s internal self discipline, self control and organisational skills and therefore would have little to no effects on external factors such as job demands, job control and social support.

The results of this study also showed some partial evidence for the additive and interaction hypotheses of the JDC-S model. Finally, the study contributes to the literature on the presence of three-way interactions in the JDC-S model.

Regarding the additive effects of the JDC-S model, the results of this study are consistent with previous research that showed significant evidence for the additive effects of the JDC-S model (Chiu et al., 2009; De Bruin, & Taylor, 2006; Landsbergis, 1988; Landsbergis et al., 1992; Mansell, & Brough, 2005; Melamed, et al., 1991; Mikkelsen et al., 2005; Rodríguez et al, 2001; Searle, et al., 1999). This result is also consistent with the findings of two meta-analyses (Häusser et al., 2010; Van Der Doef & Maes, 1999) that showed that a majority of studies found complete or partial evidence for the additive effects of the JDC-S model.

The results of this study showed significant evidence for the additive effect of job demands, control and social support on the prediction of work engagement. It must be noted that although the evidence for the direct effect of social support was significant, the influence of social support on the prediction of work engagement was only marginal. Therefore the evidence of the additive effects of the job characteristics, in this study, is more indicative of the JDC model and less so for revised JDC-S model. This result could be because of how the construct of social support is operationalised. It might be that social support needs to be better defined in order to provide more significant results regarding the direct effect of social support on work engagement.

The findings of the study suggest that the additive nature of the job characteristics influence the prediction of work engagement as follows: higher work demands result in lower engagement; higher control results in higher work engagement; and higher social support results in higher work engagement. Practically this finding suggests that in order to optimise worker engagement work tasks should be designed to have high control and low demands. Tasks should also give employees the chance to obtain support from colleagues and supervisors. However, this simplistic interpretation ignores the interactive effects of demands, control and support.
The interactive effects of the job characteristics were also investigated. The following interaction effects were found: (1) control moderated the effects of demands on the prediction of work engagement; (2) support moderated the effects of control on the prediction of work engagement; and (3) control and support moderated the effects of demands in a three-way interaction.

The findings concerning control moderating the effects of demands and support moderating the effects of control are consistent with the findings of previous research on interaction effects (Chiu et al., 2009; Landsbergis et al., 1992; Mansell & Brough, 2005; Mikkelsen et al., 2005; Peeters & Le Blanc, 2001; Schaubroeck, & Fink, 1998; Wall et al., 1996). This study found no evidence of an interaction between demands and support. Although this finding is echoed in some previous research (Pelfrene et al., 2002; Rodríguez et al., 2001) other research studies have found evidence for interaction between demands and support (Mikkelsen et al., 2005; Schaubroeck, & Fink, 1998). These findings might be the result of the way that the job characteristics are defined in the measures of these characteristics. It could also be a possibility that, in some organisations, occupations and environments, the interaction between social support and demands is more visible.

The results of the interaction between demands and control are displayed in figure 2. Figure 2 shows that higher control would result in an overall higher score on work engagement. The combination of high control and high demands gives a slightly higher work engagement score than a high control, low demands situation. However, this finding was only true for the high control situation. In situations where control is at medium or low levels higher demands will result in lower levels of work engagement. Therefore, adding more control to a job design increases work engagement, especially when combined with a high demands job environment.

Figure 3 shows the results for the moderating effects of support on control. The figure shows that higher support consistently results in higher work engagement scores. When combined with high control this interaction showed the highest amount of work engagement. It can therefore be concluded that a situation in which an individual has high control and high support would result in a higher level work engagement. The implication is therefore that employees should be given more control over their work. Employees should also be given the opportunity to receive and provide support to colleagues and supervisors.

The three-way interaction found in this study is very rarely researched (Chiu et al., 2009; Melamed et al., 1991; Rodríguez et al., 2001; Schaubroeck, & Fink, 1998). Research support for the three-way interaction is inconsistent as some studies have found no interaction
other studies have found interactions only when support is operationalised differently (Schaubroeck, & Fink, 1998), while some studies have found full support for the interaction (Chiu et al., 2009). This study’s finding regarding the presence of a three-way interaction therefore makes an important contribution to the research literature.

The effects of the three-way interaction are shown in Figure 4. The figure shows that work engagement is highest in situations with high control and support and low demands. The effect of high demands is small and work engagement is only slightly lower in a high control, high support and high demands situation. Lower levels of control and support combined with high demands have a much more pronounced impact of work engagement.

Work engagement is thus significantly lower in high control, low support and high/low demands situations than it is in high control, high support situation and high/low demands situations. The lowest work engagement occurs in situations where both control and support are low and demands are high. Figure 4 also shows that high control situations and high support situation predict consistently higher work engagement than low control and low support situations.

The implication of the three-way interaction is that employees with jobs that have high levels of control and support are better able to engage in their work. It is not always possible to change job demands, and it is therefore important to ensure that employees have high levels of control and support in order to remain engaged with their work. This high level of work engagement would be likely to lead to better performance.

As with all studies there are some limitations that need to be mentioned as well as some recommendations that might be useful for future research. These limitations and recommendation will now be discussed.

5.3 Limitations and Recommendations for Future Research

A few limitations of the study must be noted. The first limitation concerns the use of a cross-sectional research design. The use of this research design limits the ability to make conclusions about causal relationships. Future research studies should employ longitudinal research designs in order to study the causal relationships between Conscientiousness, job characteristics and work engagement.

A further limitation concerns the use of self-report measures, which can lead to method variance. However, both direct and interactive effects were analysed. According to Rodríguez et al. (2001) main effects may be the result of method variance but interaction
effects are less affected by method variance. Future research would however benefit greatly from the use of a variety of measures.

A third limitation is that although gender was controlled for, in a previous study gender has been shown to have statistically significant influence on the effects of the job characteristics (De Bruin & Taylor, 2006). Future research should analyse the relationships between Conscientiousness, job characteristics and work engagement separately for men and women. A distinct advantage of this study was the use of a variety of different organisations and jobs over multiple industries. This should have resulted in a variety of different levels of job demands, control and social support being included in the study.

5.4 Conclusion

In conclusion this study, despite any limitations, makes some valuable contributions to the research literature on the relationships between job characteristics, Conscientiousness and work engagement. In the study evidence was found that Conscientiousness directly influences the prediction of work engagement but no evidence was found for the confounding or moderating effects of Conscientiousness in the relationship between job characteristics and work engagement. Furthermore the study showed significant evidence for the additive effects of the JDC model but the direct effects of social support was only marginal. Interactive effects were observed between demands and control and control and support but no interactions were found between demands and support. Finally significant evidence was found that demands, control and support interacts together to influence the prediction of work engagement.
LIST OF REFERENCES


APPENDIX A: Demographic Information Questionnaire

Demographic Information

1. Age: __________
2. Gender:  □ Male  □ Female
3. Nationality: ______________
4. Job Title: ________________
5. When did you start your current job? MM/YYYY  ________________
6. Residence: Please indicate how many people live in your household  ________________

7. Race
   □ White
   □ Black/African
   □ Asian
   □ Indian
   □ Coloured
   □ Other ________________

8. Principle home language
   □ Afrikaans
   □ English
   □ Tswana
   □ Pedi
   □ Venda
   □ Swati
   □ Southern-Sotho
   □ Tsonga
   □ Ndebele
   □ Zulu
   □ Xhosa
   □ Other ________________

9. Highest qualification obtained:
   □ Grade 12
   □ Certificate
   □ Diploma
   □ B-Degree
   □ Honours or equivalent
   □ Masters
   □ Doctorate
   □ Other ________________
10. Your marital status:
☐ Single
☐ Married
☐ Divorced
☐ Separated
☐ Co-habitation
☐ Widow(er)

11. Parent(s)/guardian education (choose only the highest qualification obtained)

11.1 Mother
☐ Below Grade 12
☐ Grade 12
☐ Certificate
☐ Diploma
☐ B-Degree
☐ Honours or equivalent
☐ Masters
☐ Doctorate
☐ Other

11.2 Father
☐ Below Grade 12
☐ Grade 12
☐ Certificate
☐ Diploma
☐ B-Degree
☐ Honours or equivalent
☐ Masters
☐ Doctorate
☐ Other

13. Please provide an estimate of your personal annual income?

_______________________

14. Please provide an estimate of the combined annual income of you and your partner?

_______________________
APPENDIX B: Utrecht Work Engagement Scale (UWES-9)

Instructions
The following statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the ‘1’ (one) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 7) that best describes how frequently you feel that way.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Never</th>
<th>Almost never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td></td>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>②</td>
<td></td>
<td>Almost never</td>
<td>A few times a year or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>③</td>
<td></td>
<td>Rarely</td>
<td>Once a month or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>④</td>
<td></td>
<td>Sometimes</td>
<td>A few times a month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td></td>
<td>Often</td>
<td>Once a week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>⑥</td>
<td></td>
<td>Very often</td>
<td>A few times a week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>⑦</td>
<td></td>
<td>Always</td>
<td>Everyday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

39. At my work, I feel bursting with energy
40. At my job, I feel strong and vigorous
41. I am enthusiastic about my job
42. My job inspires me
43. When I get up in the morning, I feel like going to work
44. I feel happy when I am working intensely
45. I am proud of the work that I do
46. I am immersed in my work
47. I get carried away when I’m working
## APPENDIX C: Job Content Questionnaire

**Instructions**

Please respond to all of the following statements by making a cross over the number that best indicates your answer, even if it does not fit exactly.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>My job requires that I learn new things.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>My job requires a high level of skill.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>My job requires me to be creative.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>My job involves a lot of repetitive work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>On my job, I have very little freedom to decide how I do my work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>My job allows me to make a lot of decisions on my own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>I get to do a variety of different things on my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I have a lot of say about what happens on my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>I have an opportunity to develop my own special abilities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>My job requires working very fast.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>My job requires working very hard.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>I am not asked to do an excessive amount of work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>I have enough time to get the job done.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>I am free from conflicting demands that others make.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>My job requires long periods of intense concentration on the task.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>My tasks are often interrupted before they can be completed, requiring attention at a later time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>My job is very hectic.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Waiting on work from other people or departments often slows me down on my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Instructions**
Please respond to all of the following statements by making a cross over the number that best indicates your answer, even if it does not fit exactly.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>I have no supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>My supervisor is concerned about the welfare of those under him.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>My supervisor pays attention to what I am saying.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21.</td>
<td>I am exposed to hostility or conflict from my supervisor.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22.</td>
<td>My supervisor is helpful in getting the job done.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23.</td>
<td>My supervisor is successful in getting people to work together.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24.</td>
<td>People I work with are competent in doing their jobs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25.</td>
<td>People I work with take a personal interest in me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26.</td>
<td>I am exposed to hostility or conflict from the people I work with.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27.</td>
<td>People I work with are friendly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28.</td>
<td>The people I work with encourage each other to work together.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29.</td>
<td>People I work with are helpful in getting the job done.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
APPENDIX D: NEO Five Factor Inventory Revised

Instructions

Carefully read all the instructions before beginning. Read each statement carefully. Please respond by making a cross over the number that best indicates your answer.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>76.</td>
<td>I am not a worrier.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>77.</td>
<td>I like to have a lot of people around me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>78.</td>
<td>I enjoy concentrating on a fantasy or daydream and exploring all its possibilities, letting it grow and develop.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>79.</td>
<td>I try to be courteous to everyone I meet.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>80.</td>
<td>I keep my belongings neat and clean.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>81.</td>
<td>At times I have felt bitter and resentful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>82.</td>
<td>I laugh easily.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>83.</td>
<td>I think it’s interesting to learn and develop new hobbies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>84.</td>
<td>At times I bully or flatter people into doing what I want them to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>85.</td>
<td>I’m pretty good about pacing myself so as to get things done on time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>86.</td>
<td>When I’m under a great deal of stress, sometimes I feel like I’m going to pieces.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>87.</td>
<td>I prefer jobs that let me work alone without being bothered by other people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>88.</td>
<td>I am intrigued by patterns I find in art and nature.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>89.</td>
<td>Some people think I’m selfish and egotistical.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>90.</td>
<td>I often come into situations without being fully prepared.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>91.</td>
<td>I rarely feel lonely or blue.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>92.</td>
<td>I really enjoy talking to people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>93.</td>
<td>I believe letting students hear controversial speakers can only confuse and mislead them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>94.</td>
<td>If someone starts a fight, I’m ready to fight back.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>95.</td>
<td>I try to perform all the tasks assigned to me conscientiously.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>96.</td>
<td>I often feel tense and jittery.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>97.</td>
<td>I like to be where the action is.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---</td>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>98.</td>
<td>Poetry has little or no effect on me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>99.</td>
<td>I’m better than most people, and I know it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>100.</td>
<td>I have a clear set of goals and work toward them in an orderly fashion.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>101.</td>
<td>Sometimes I feel completely worthless.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>102.</td>
<td>I shy away from crowds of people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>103.</td>
<td>I would have difficulty just letting my mind wander without control or guidance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>104.</td>
<td>When I’ve been insulted, I just try to forgive and forget.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>105.</td>
<td>I waste a lot of time before settling down to work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>106.</td>
<td>I rarely feel fearful or anxious.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>107.</td>
<td>I often feel as if I’m bursting with energy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>108.</td>
<td>I seldom notice the moods or feelings that different environments produce.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>109.</td>
<td>I tend to assume the best about people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>110.</td>
<td>I work hard to accomplish my goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>111.</td>
<td>I often get angry at the way people treat me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>112.</td>
<td>I am a cheerful, high-spirited person.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>113.</td>
<td>I experience a wide range of emotions or feelings.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>114.</td>
<td>Some people think of me as cold and calculating.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>115.</td>
<td>When I make a commitment, I can always be counted on to follow through.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>116.</td>
<td>Too often, when things go wrong, I get discouraged and feel like giving up.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>117.</td>
<td>I don’t get much pleasure from chatting with people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>118.</td>
<td>Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>119.</td>
<td>I’m hard-headed and tough-minded in my attitudes.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>120.</td>
<td>Sometimes I’m not as dependable or reliable as I should be.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>121.</td>
<td>I am seldom sad or depressed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>122.</td>
<td>My life is fast-paced.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>123.</td>
<td>I have little interest in speculating on the nature of the universe or the human condition.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>124.</td>
<td>I generally try to be thoughtful and considerate.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>125.</td>
<td>I am a productive person who always gets the job done.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
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<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>126.</td>
<td>I often feel helpless and want someone else to solve my problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>127.</td>
<td>I am a very active person.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>128.</td>
<td>I have a lot of intellectual curiosity.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>129.</td>
<td>If I don’t like people, I let them know it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>130.</td>
<td>I never seem to be able to get organised.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>131.</td>
<td>At times I have been so ashamed I just wanted to hide.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>132.</td>
<td>I would rather go my own way than be a leader of others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>133.</td>
<td>I often enjoy playing with theories or abstract ideas.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>134.</td>
<td>If necessary, I am willing to manipulate people to get what I want.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>135.</td>
<td>I strive for excellence in everything I do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>