

Components of Work-related Wellbeing

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Abstract

Background

Assessing wellbeing in the workplace is becoming increasingly important as organisations recognise the influence of wellbeing on key work-related outcomes (Jarden & Jarden, 2017). However, the development of such assessments in practice is often haphazard (Donaldson, Dollwet, & Rao, 2015). Many of the available wellbeing assessments are comprised of items and scales drawn from various sources that are not based on any theoretical models. The Wellbeing360™ is one such assessment tool used in practice. It is unclear whether the items within the Wellbeing360™ are psychometrically sound and reflect a unidimensional construct. Because the focus of this thesis will be on the components of work-related wellbeing, the first aim of this research will be to test the underlying structure of the Wellbeing360™ work-related items. The second aim will be to test the reliability and validity of any resulting factors/scales. Determining the underlying structure of the work-related items will also allow the predictors of work-related wellbeing to be determined. Understanding the most significant predictors of work-related wellbeing will highlight any key components of the work environment that may be important for improving employee wellbeing. Thus, the third aim of this research will be to determine the most significant predictors of work-related wellbeing.

Methods

A secondary data set consisting of employee responses to the Wellbeing360™ was used. Participants were aged 18 years or over from 20 different organisations (in New Zealand and Australia) spanning nine industries. The questionnaire consisted of 116 items measuring aspects of wellbeing, health and lifestyle variables, and socio-demographics. The specific variables of interest concerned work-related wellbeing (Work-related Affect, Job Resources, and Job Demands), Age, Gender, Country of Birth, Resilience, Flourishing, Depression, Anxiety and Stress. In Paper 1, 20 of the work-related wellbeing items were subjected to Exploratory Factor Analysis (EFA) to determine their underlying structure. The resulting scales were tested for internal consistency using a Cronbach's alpha coefficient. The construct validity of the scales was also evaluated using Pearson's correlation coefficient. In Paper 2, the most significant predictors of high work-related affect were determined using binary logistic regression. Odds ratios were estimated for each of the predictor variables (e.g. job demands and job resources).

Results

The EFA revealed 16 of the 20 items loaded onto three factors: Factor 1 (Work-related Affect; six items), Factor 2 (Job Demands; three items), and Factor 3 (Job Resources; seven items). The Job Resources and Work-related Affect factors had acceptable levels of internal consistency ($\alpha = 0.85$) and were deemed reliable scales. The internal consistency of the Job Demands scale was below the acceptable level ($\alpha = 0.64$) and was, therefore, deemed an unreliable scale. The Work-related Affect Scale demonstrates some evidence of convergent validity as it is highly correlated with the Flourishing Scale ($r = 0.51$). All three scales showed some evidence of discriminant validity as they demonstrated low correlations with unrelated scales such as the Brief Resilience, Flourishing, and the Depression, Anxiety, and Stress 21 (DASS21) Scales.

After adjusting for all of the variables in the binary logistic regression model, the most significant predictors of high Work-related Affect were six of the seven Job Resources items (development opportunities (OR 1.82, 95% CI 1.67, 1.99), job control (OR 1.77, CI 1.63, 1.93), appreciation (OR 1.73, CI 1.57, 1.89), workplace relationships (OR 1.70, CI 1.53, 1.89), resources (OR 1.51, CI 1.39, 1.65), belonging (OR 1.43, CI 1.32, 1.54), respectively) followed by the three Job Demands items (work extended hours (OR 0.84, CI 0.80, 0.89), letting down friends/family (OR 0.84, CI 0.80, 0.90), work-life balance (OR 1.17, CI 1.10, 1.25), respectively). The seventh Job Resources item (supportive supervisor) was the weakest predictor of high work-related affect, although still statistically significant (OR 0.91, CI 0.83, 0.98). Three items were negative predictors of high work-related affect (work extended hours, letting down friends/family, and supportive supervisor).

Conclusion

Paper 1 provides practitioners and academics with two valid and reliable scales of work-related wellbeing (Work-related Affect and Job Resources Scales). However, further refinement and testing of the Job Demands factor is needed. The items within these scales fit previous models of wellbeing (e.g. Job Demands-Resources model). The findings from Paper 2 provide practical knowledge that may assist development of workplace wellbeing programmes and inform effective policies that target the wellbeing needs of their employees. The results indicate that programmes or policies should focus on employee resources to have the most significant impact on employee wellbeing. Specifically, resources associated with development opportunities, job control, and appreciation.

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LIST OF ABBREVIATIONS

| Abbreviation | Definition |
|---------------------|---|
| SWB | Subjective Wellbeing |
| PA | Positive Affect |
| NA | Negative Affect |
| PWB | Psychological Wellbeing |
| PWBT | Psychological Wellbeing Theory |
| SDT | Self-Determination Theory |
| BMI | Body Mass Index |
| WWB | Workplace Wellbeing |
| US | United States |
| J D-R | Job Demands-Resources |
| SWLS | Satisfaction with Life Scale |
| D-T | Delighted-Terrible |
| PANAS | Positive and Negative Affect Schedule |
| DASS | Depression Anxiety Stress Scales (42 items) |
| DASS 21 | Depression Anxiety Stress Scales (21 items) |
| PCA | Principal Components Analysis |
| WR | Work Resources |
| WD | Work Demands |

NOMENCLATURE

| Term/symbol | Definition |
|-----------------------------|---|
| BCE | Before common era |
| \$ | Dollar |
| ICC | Intraclass Correlation |
| EFA | Exploratory Factor Analysis |
| % | Percentage |
| CI | Confidence interval |
| <i>N</i> | Total number of cases |
| <i>p</i> | <i>p</i> -value, statistical significance |
| <i>r</i> | Pearson correlation coefficient |
| <i>M</i> | Mean |
| <i>SD</i> | Standard deviation |
| <i>α</i> | Cronbach's alpha |
| <i>χ²</i> | Chi-square |
| OR | Odds ratio |
| No. | Number |

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed L. J. Bookerv Date 03/08/2017

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Chapter 1. Introduction

1.1. Background

The World Health Organisation defined health in their 1946 constitution as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (“Constitution of the World Health Organization,” 1946, p. 1315).

However, most research studies concerning health are traditionally focussed on pathology, and health care systems are oriented towards the disease end of the disease-health continuum (see 2.1.3.). Moreover, health practitioners largely focus their resources towards disease intervention or bringing individuals from a disease health status to a neutral health status rather than from a disease or neutral health status to a positive health status (Brüssow, 2013; Ryff & Singer, 1998).

With the election of Martin Seligman as president of the American Psychological Association in 1998 came the emergence of positive psychology (Buela-Casal, Olivás-Avila, Musi-Lechuga, & Zych, 2011). This field of psychology urges researchers and practitioners to move away from exclusively studying human pathology and shift their focus to more positive characteristics of human functioning (Donaldson et al., 2015). Positive psychology is understood as the study of positive subjective experience, positive individual traits, and positive institutions. The goal of positive psychologists is to understand the components that allow individuals, communities, and societies to flourish (Seligman & Csikszentmihalyi, 2000). Positive psychologists employ the languishing-flourishing continuum (see 2.1.3.) which focuses on positive health promotion rather than disease intervention (bringing people to the positive health end of the scale) (Keyes, 2002).

One of the central beliefs of positive psychology is that humans strive to be happy and to find meaning and purpose in their lives (Donaldson et al., 2015). However, the pursuit of happiness can also be viewed as the pursuit of wellbeing, as happiness and wellbeing are often used synonymously in the positive psychology literature (Deci & Ryan, 2008b; Delle Fave, Brdar, Freire, Vella-Brodrick, & Wissing, 2011; Mathews & Izquierdo, 2008). In other words, reaching one’s full ‘happiness potential’ can also be described as maximising one’s wellbeing.

Though wellbeing research is fast growing in the positive psychology literature, there has been much debate among scholars over its definition. There is no one internationally recognised definition of wellbeing and its definitions differ across

disciplines (Linton, Dieppe, Medina-Lara, Watson, & Crathorne, 2016). Additionally, there are many associated theories of wellbeing (e.g. eudaimonic wellbeing, hedonic wellbeing, and flourishing). Within these theories, wellbeing is represented by different constructs. Though there is continued debate as to which constructs reflect wellbeing, researchers do agree that wellbeing is multidimensional. Its multidimensional nature makes wellbeing difficult to define and, therefore, difficult to measure (Diener et al., 2010; Huppert & So, 2013; Seligman, 2012).

Another challenge faced by wellbeing researchers is the vast number of tools available for assessment. Despite the large and growing number of scales, there again is no universally accepted measure of wellbeing (Linton et al., 2016). This may be attributed to the many contexts under which wellbeing is studied. For example, researchers studying wellbeing in a clinical context may use different scales than researchers studying wellbeing in a school environment. An emerging context of interest is the workplace because wellbeing has established links to organisational outcomes such as absenteeism, turnover, burnout, productivity, job satisfaction, and engagement (Ahuja, Chudoba, Kacmar, McKnight, & George, 2007; Bakker, Schaufeli, Leiter, & Taris, 2008; Böckerman & Ilmakunnas, 2012; Kocakulah, Kelley, Mitchell, & Ruggieri, 2016). However, because there are so many definitions, theories, and tools used throughout the wellbeing literature, the assessment of wellbeing in the workplace remains haphazard (Donaldson et al., 2015; Forgeard, Jayawickreme, Kern, & Seligman, 2011; Hone, Jarden, & Schofield, 2015). The focus of this thesis will be on the current practices surrounding workplace wellbeing assessment and its associated measurement issues in a workplace context.

1.1.1. Definition of key terms

Throughout the wellbeing literature, there is little agreement regarding definitions, but for the purposes of this research, these definitions apply.

Wellbeing: There is no one overarching definition of wellbeing; however, “The concept of wellbeing refers to optimal psychological functioning and experience” (Ryan & Deci, 2001, p. 142). This definition was chosen because it reflects flourishing and uses a positive approach to wellbeing.

Hedonic wellbeing/Hedonia: “hedonic wellbeing” or “hedonia” will refer to how satisfying or pleasurable one perceives their life to be without regards to the source of the pleasure (Disabato, Goodman, Kashdan, Short, & Jarden, 2015).

Subjective wellbeing (SWB): “subjective wellbeing” will refer to a theory of hedonic wellbeing that argues that wellbeing is comprised of three components: life satisfaction, positive affect, and negative affect (Diener, 2000; Diener, Emmons, Larsen, & Griffin, 1985; Pavot & Diener, 2008).

Eudaimonic wellbeing/Eudaimonia: “eudaimonic wellbeing” or “eudaimonia” will refer to the quality or satisfaction of life one experiences by acting in accordance with one’s values and set goals (Waterman, 1990, 2008; Waterman et al., 2010).

Psychological wellbeing (PWB): “psychological wellbeing” will refer to a theory of eudaimonic wellbeing that argues that wellbeing is comprised of six components: positive relations with others, autonomy, personal growth, self-acceptance, purpose in life, and environmental mastery (Ryff, 1989).

Flourishing: “flourishing” refers to experiencing high levels of both positive feelings and positive functioning (Keyes, 2002, 2005, 2007). Positive feelings reflect hedonic wellbeing and positive functioning reflects eudaimonic wellbeing (Page & Vella-Brodrick, 2009).

Languishing: “languishing” refers to experiencing low levels of both positive feelings and positive functioning (Keyes, 2002, 2005, 2007).

Work-related wellbeing: “work-related wellbeing” will refer to the “part of an employee’s overall wellbeing which is determined primarily by work and which can be influenced by workplace intervention” (Juniper, White, & Bellamy, 2009, p. 220).

Employee wellbeing: “employee wellbeing” will refer to an employee’s overall wellbeing which encompasses their general (eudaimonic/hedonic/flourishing) and work-related wellbeing.

1.1.2. Statement of the problem

Assessing and monitoring wellbeing in the workplace is becoming increasingly important to organisations because there is growing evidence to suggest wellbeing influences work-related outcomes such as absenteeism, engagement, turnover and productivity (Böckerman & Ilmakunnas, 2012; Cooper & Cartwright, 1994; Judge, 1993; Page & Vella-Brodrick, 2009). There are also financial benefits to investing in employee wellbeing assessment with every dollar invested returning between three to five times the initial investment (Goetzel & Ozminkowski, 2008; Rath & Harter, 2010). Moreover, New Zealand organisations are required by the Health and Safety at Work

Act to protect the welfare of their workers and workplaces (*Health and Safety at Work Act*, 2015). With that in mind, it is important that organisations measure and monitor the wellbeing of their employees so that prevention and intervention policies and programmes may be implemented when needed. Understanding the work-related predictors of employee wellbeing will enable organisations to target these policies and programmes to the greatest needs.

The current problem with work-related wellbeing assessment is that the development of surveys in practice can be haphazard (Donaldson et al., 2015; Forgeard et al., 2011; Hone, Jarden, & Schofield, 2015). Research suggests that minimal employee wellbeing assessment takes place and assessments that do take place are typically invalid and unreliable (Spence, 2015). These assessments generally ask few questions, are limited due to their small scale and do not measure wellbeing as a multidimensional concept (Diener, Oishi, & Lucas, 2015; Hone, Jarden, & Schofield, 2015). Additionally, many work-related wellbeing assessments are not founded on any theoretical models and may, therefore, consist of randomly sourced items from the positive psychology literature that have been adapted to capture employee wellbeing (Parker & Hyett, 2011). This may be attributed to the differing goals and practices used in businesses compared to academics. For example, businesses may favour efficiency (development and use of a psychological test in a timely manner) over rigorous reliability and validity tests. Lastly, work-related wellbeing assessments will ideally include scales that measure both global and evaluative information as well as the predictors of work-related wellbeing. However, most of the current assessments measure one or the other.

The Wellbeing360™ is one such assessment that measures both global information and predictors of wellbeing; however, the focus for this thesis will be limited to the work-related items within this instrument. The Wellbeing360™ is not based on any theoretical model and is not validated. Best practice in the use of psychometrics requires confirmation of validity and reliability, without which results should be interpreted with caution (Shum, O'Gorman, Myers, & Creed, 2013). Although many of the work-related items within the Wellbeing360™ have been sourced from previously validated scales, other items have been internally developed. Consequently, the mix of items has not been tested for reliability and validity. Furthermore, the structure of the work-related items is also unclear and it is unknown whether all the items measure the same underlying construct.

Because the structure of the work-related items is unknown, it is unclear which items are global measures of work-related wellbeing and which are predictors. It is necessary to understand the predictors of work-related wellbeing so that organisations can design effective wellbeing programmes and make the necessary changes to their work environment to improve wellbeing. For example, if only global measures of work-related wellbeing are used, there is no way to determine what contributed to an employee's wellbeing. So, although an organisation may know which employees were experiencing low levels of wellbeing, they would not know which components of the work environment to adjust to improve the low levels of wellbeing. As such, it is vital to understand the structure of the work-related items so that any redundant items can be removed, any scales can be tested for reliability and validity, and any predictors can be determined.

1.1.3. Statement of the purpose

This thesis examines wellbeing assessment from a positive organisational psychology perspective. The workplace wellbeing assessment of interest is the Wellbeing360™ with a focus on the work-related items.

Specific objectives of the thesis are:

1. To determine the underlying structure of the work-related items in an unvalidated measure of employee wellbeing.
2. To test the reliability (internal consistency) and construct validity (convergent and discriminant) of any resulting factors/scales.
3. To determine the most significant predictors of work-related wellbeing.

1.1.4. Significance of the research

Although there are many general wellbeing assessments (e.g. the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), the Satisfaction with Life Scale (Diener et al., 1985), the Flourishing Scale (Diener et al., 2010)) available in the psychology research domain, there is a lack of assessments that comprehensively evaluate employee wellbeing, particularly designed for organisational use. Many of the scales that do exist only measure specific aspects of work-related wellbeing. For example, the Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006), the Job-related Affective Wellbeing Scale (Van Katwyk, Fox, Spector, & Kelloway, 2000) and the Work and Meaning Inventory (Steger, Dik, & Duffy, 2012). These scales are widely adopted in organisational psychology research, but less so within

organisations, as human resource managers often have limited access to academic literature.

What this study offers to the wellbeing literature is the validation of potential work-related wellbeing scales. Validation of such scales will enable users to interpret their work-related results with confidence. Revealing the underlying structure of the work-related items will also allow for potential item reduction (removing the items that do not measure the underlying construct). Furthermore, this study will offer organisations an insight into the greatest predictors of work-related wellbeing. With this knowledge, organisations can tailor any wellbeing initiatives to the needs of their employees.

1.1.5. Study de-limitations

1. The Wellbeing360™ consists of 116 items and measures wellbeing variables (n=37), health and lifestyle variables (n=45), socio-demographic variables (n=7), and work-related variables (n=27). The present studies consider the work-related variables only. The validity of the work-related items was compared to other validated scales featured in the Wellbeing360™ assessment.
2. Best practice in psychometric assessment requires both the validity and the reliability of a measure to be tested to ensure that results can be interpreted confidently. Typically, the construct validity (convergent and discriminant), internal consistency, and test-retest reliability would be tested. As the data was not collected for the purposes of these studies there were some measurement constraints. The data set did not consist of repeated measures; therefore, test-retest reliability was not performed and the assessment's stability across time could not be determined. Additionally, the convergent validity of two of the scales could not be determined due to lack of comparative scales.
3. According to Jarden and Jarden (2017), wellbeing assessments can occur at three levels of the organisation: the individual, group, and organisational level. The secondary data set that was analysed reflects individual wellbeing responses to an individual wellbeing assessment (Wellbeing360™). Therefore, only the individual level of assessment will be reviewed.

1.2.Thesis overview

The second chapter of this thesis contains a review of the literature that discusses the traditions of general and work-related wellbeing research, their associated constructs, current wellbeing assessment practices and issues with wellbeing measurement. Chapter

three outlines an overview of the methods used to conduct the present studies as well as the variables and scales used. Chapters four and five are distinct studies that report the investigation of the study aims. These chapters have been prepared as separate papers for publication in peer-reviewed journals; therefore, some repetition of information occurs. Chapter six discusses the main findings, implications for research and practice, strengths and limitations of the research.

Chapter 2. Literature Review

2.1.Theories of wellbeing

Positive psychology is a relatively recent scientific field, developed after a plea by Martin Seligman in 1998 for psychologists to move away from exclusively studying human pathology and shift their focus to more positive characteristics of human functioning (Donaldson et al., 2015). Seligman and Csikszentmihalyi (2000) have since developed a framework for the science of positive psychology that seeks to understand wellbeing, excellence, and optimal human functioning.

Subsequently, positive psychology is understood as the study of positive subjective experience, positive individual traits, and positive institutions (Seligman & Csikszentmihalyi, 2014). In other words, positive psychology is the study of wellbeing. The goal of positive psychologists is to understand the components that allow individuals, communities and societies to flourish (Seligman & Csikszentmihalyi, 2000).

Although well-being is receiving more attention from researchers, there remains to be one overarching definition of well-being; however, a popular definition describes well-being as ‘optimal functioning and experience’ (Ryan & Deci, 2001). Throughout history, there have been many conceptions of well-being but these conceptions are typically divided into one of two traditions: hedonic or eudaimonic. Though these traditions reflect two different conceptions of well-being, both focus on the subjective nature of well-being (Chen, Jing, Hayes, & Lee, 2013).

2.1.1. Hedonic wellbeing

Hedonic wellbeing was first conceptualised by Aristippus (3rd century Before Common Era (BCE)), a Greek philosopher who described hedonia as humans seeking to maximise their pleasure and minimise their pain (Tatarkiewicz, 1976). Pleasure and pain were seen to be significant indicators of what was good and bad, thus maximising pleasure was seen to be maximising the good in one’s life. Conversely, minimising one’s pain was seen to be minimising the bad in one’s life. Within this perspective, wellbeing is regarded as the sum of hedonic moments. The more pleasure we attain and the more pain we avoid, the greater our hedonic wellbeing (Ryan & Deci, 2001).

Hedonic philosophers believe wellbeing is an internal state that reflects the subjective evaluations one makes about the quality of their life (Delle Fave et al., 2011). Therefore, individuals are considered the greatest judge or evaluator of their own

wellbeing that reflects its subjective nature. Recent research regarding hedonic wellbeing has predominantly focused on positive emotion and life satisfaction and is often operationalized as subjective wellbeing (SWB) (Diener, 2000; Diener et al., 1985; Pavot & Diener, 2008). The construct of SWB and is most commonly conceptualised as a tripartite model of individual evaluations of one's life (Diener, 1984). The tripartite model of SWB has been used in many studies (Davern, Cummins, & Stokes, 2007; Huebner & Dew, 1996; Vittersø, 2003), with the original article by Diener (1984) cited over 1000 times by 2010 (Busseri & Sadava, 2010).

According to this model, there are three distinctive features of SWB. First, the study of SWB focuses on an individual's subjective evaluations of their life. Second, SWB consists of individual's global evaluations of their life. Lastly, SWB incorporates both positive and negative evaluations of one's life (Diener, 1984, 1994). The tripartite model of SWB was developed so that it is consistent with these trademarks. The model consists of three constructs: life satisfaction, positive affect, and negative affect (Andrews & Withey, 1976).

According to Campbell, Converse, and Rodgers (1976), life satisfaction is the distance between an individual and their goals or aspirations. As such, an individual with high life satisfaction is likely to have achieved their goals or is likely to be in the process of achieving their goals. On the contrary, an individual with low life satisfaction is likely to be far from achieving their goals (Keyes, Shmotkin, & Ryff, 2002). To gain a higher life satisfaction, one must pursue and engage in activities that help them to achieve their goals. For example, if one wishes to achieve a high grade in an exam, one must engage in activities such as studying to achieve their goal and thus gain higher life satisfaction. Life satisfaction represents the cognitive component of SWB and reflects long-term evaluations of one's life (Keyes et al., 2002).

The final two factors of SWB represent the affective components and reflect pleasant and unpleasant feelings of recent experiences (Keyes et al., 2002). Positive affect (PA) can be described as the extent to which one feels enthusiastic, active, and alert. A person with high PA will exhibit a lot of energy, will be able to concentrate their full attention, and demonstrate pleasurable engagement. On the other hand, a person with low PA will exhibit sadness and lethargy (Watson et al., 1988). In contrast, negative affect (NA) can be described as the extent to which one feels distressed and unpleasurable engagement. A person with high NA will exhibit aversive moods such as anger, disgust, fear, guilt, and nervousness. Moreover, a person with low NA will

demonstrate a state of calmness and serenity (Watson et al., 1988). Happiness or high SWB results when there is a balance between PA and NA.

Global evaluations of these three components are what contribute to a person's happiness or SWB (Chen et al., 2013). Accordingly, someone who perceives themselves to have high life satisfaction, high positive affect, and low negative affect, will have high SWB (Diener, 1984). People with high SWB predominantly make positive assessments of their circumstances and those with low SWB tend to perceive many negative factors in their life that are harmful and inhibit their goals. To gain higher levels of SWB, one must pursue activities or actions that result in a positive emotional experience (e.g. pleasure). High levels of SWB can be achieved accumulatively by increasing the frequency of these positive emotional experiences (Fredrickson, 2004). Achieving high levels of SWB reflects an optimal human functioning (Keyes, 2005; Ryan & Deci, 2001) which is an important goal for both individuals and societies (Diener, 2000; Seligman & Csikszentmihalyi, 2000). Higher levels of SWB are also linked with fewer mental illness symptoms, stronger interpersonal relations, a better health status, a more adaptive disposition and cognitive styles that are more self-enhancing (Diener, 1984, 1994, 2000; Diener, Suh, Lucas, & Smith, 1999; Lyubomirsky, Sheldon, & Schkade, 2005; Pressman & Cohen, 2005). The tripartite model of SWB, however, represents only one dimension of wellbeing. Other methods and theories are used in the eudaimonic wellbeing tradition.

2.1.2. Eudaimonic wellbeing

The eudaimonic tradition of wellbeing is often contrasted with the hedonic tradition and can be traced back to Aristotle (4th century BCE) (Henderson & Knight, 2012). Aristotle described a good life in *Nicomachean Ethics* as living one's life to its fullest potential by acting in accordance with how one ought to live (Aristotle, 2011). Accordingly, wellbeing is obtained by living authentically and in accordance with one's 'daemon' or true nature (Norton, 1976). However, unlike hedonic wellbeing, there is less agreement among scholars as to what constitutes as eudaimonic wellbeing. Subsequently, there is currently no single agreed upon definition of eudaimonic wellbeing (Disabato et al., 2015); however, eudaimonic wellbeing often conceptualised as psychological wellbeing (PWB) (Delle Fave et al., 2011; Henderson & Knight, 2012; Keyes et al., 2002). In recent literature, eudaimonic wellbeing has been described as living as one's true self and acting in accordance with one's values and beliefs (Waterman, 1993). It has also

been described as fulfilling one's true potential (Ryff & Keyes, 1995) and experiencing that one has fulfilled their purpose or meaning in life (Ryff, 1989).

Although there is disagreement about the definition of eudaimonic wellbeing there are two common, accepted theories that have been developed in accordance with the eudaimonic wellbeing tradition (Steger, Kashdan, & Oishi, 2008). The first theory is known as the Psychological Wellbeing Theory (PWB) (Ryff, 1989) and the second theory is known as Self-Determination Theory (SDT).

Psychological Wellbeing Theory

PWB suggests that eudaimonic wellbeing is achieved through positive goal attainment (Deci & Ryan, 2008b) and is based on the assumption that humans strive to reach their full potential and realise their talents (Chen et al., 2013). Ryff's (1989) theory suggests that wellbeing is not made up of life satisfaction and positive and negative affect, however, instead proposes that wellbeing is a multi-dimensional construct comprised of life attitudes. These life attitudes can be divided into six dimensions.

The first dimension is 'positive relations with others' and can be described as the desire to connect with others, as well as the desire to love and be loved and care and be cared for (Baumeister & Leary, 1995; Bowlby, 1958; Harlow, 1958). Individuals with high scores on this dimension are described as having relationships with others that are warm, satisfying, and trusting. These individuals also concern themselves with the welfare of others, have a significant capacity for empathy affection, and intimacy, and understand that relationships require both giving and taking. Individuals who score low on this dimension have few relationships in which they trust, struggle to care for others, experience more frustration and isolation with interpersonal relationships, and are not willing to compromise to sustain relationships (Ryff, 1995; Segrin & Rynes, 2009).

The second dimension is 'autonomy' and can be described as one's self-determination (Ryff & Keyes, 1995; Ryff & Singer, 2008). Individuals who score high on this dimension are independent and capable of resisting social pressures. They also regulate their behaviour from within and do not judge themselves based on other's standards. On the contrary, individuals who score low on this dimension are greatly concerned with how others perceive them. They rely on the evaluations of others in order to make decisions and are not able to resist social pressures (Ryff, 1995).

The third dimension 'personal growth' which reflects one's ability in managing their life and surroundings effectively (Ryff & Keyes, 1995; Ryff & Singer, 2008). High

scorers in this dimension will experience feelings of continued development and see themselves as having the ability to reach their full potential. These individuals also notice improvements in their own behaviour through time and develop in ways that demonstrate self-knowledge. On the other hand, individuals who score low on this dimension sense that they lack progress over time, experience feelings of boredom, and lack the ability to develop new behaviours and attitudes (Ryff, 1995).

The fourth dimension is 'self-acceptance' and is the ability to make positive evaluations of oneself and one's past (Ryff & Keyes, 1995; Ryff & Singer, 2008). Individuals with a high score on this dimension exhibit a positive attitude toward themselves by accepting and acknowledging their many characteristics (both good and bad). These individuals also have a positive view of their past. Low scorers in this dimension tend to feel dissatisfied with themselves and are disappointed with their past. They struggle to accept their bad qualities and often wish to be different to who they currently are (Ryff, 1995).

The fifth dimension is 'purpose in life' and can be viewed as the extent that one believes their life is purposeful and meaningful (Ryff & Keyes, 1995; Ryff & Singer, 2008). High scorers in this dimension have specific goals and direction in their lives. They feel that both their present and past life were/are meaningful and purposeful and have aims and objectives for their future. Conversely, low scorers do not possess a sense of meaning and purpose and have no sense of life direction. They also feel that their past did not serve a purpose (Ryff, 1995).

The six and final dimension is 'environmental mastery' which can be described as one's continued development as a person (Ryff & Keyes, 1995; Ryff & Singer, 2008). Individuals with high scores in this dimension demonstrate confidence and competence in managing their environment. They can control a wide range of external activities, make use of presented opportunities and choose contexts that are specific to their needs. Low scorers find it challenging to manage everyday matters and feel that they cannot change their environments to suit their needs. They are oblivious to presented opportunities and find it difficult to control their external world (Ryff, 1995).

Self-Determination Theory

SDT has some similarities to PWBT in that it also examines goal-directed behaviour; however, SDT is more focused on the content of goals and processes experienced when pursuing goals rather than the achievement of goals (Deci & Ryan, 2000). One of the

main concerns of SDT is the degree to which individuals can satisfy their basic psychological needs. This is because satisfying one's basic needs promotes wellbeing (Ryan, Huta, & Deci, 2013). There are three psychological needs central to SDT. These needs are competence, relatedness, and autonomy and are critical for understanding the content and processes of goal pursuits (Deci & Ryan, 2000).

'Competence' is best described as the sense of self-worth one feels in relation to internal and external environments (Ryan et al., 2013). In other words, whether people feel capable when navigating their environments. This construct is similar to 'environmental mastery' in PWBT; however, competence is more concerned with the satisfaction gained from navigating an environment effectively rather than just successfully navigating an environment (the outcome). Individuals who satisfy the need for competence gain positive adaptive consequences because people who are learning and interested in their environments are more likely to adapt to any challenges that may arise in different contexts. Individuals who do not gain any satisfaction from learning are less likely to use their inherited skills and, therefore, may find it difficult to adapt to new environments (Deci & Ryan, 2000).

'Relatedness' can be thought of as the desire to feel connected to and cared for by others (Ryan et al., 2013) and is similar to the dimension of 'positive relations to others' in PWBT. This need stems from innate tendencies to protect one's offspring (Deci & Ryan, 2000). Like competence, relatedness also has positive adaptive consequences. For instance, relatedness with others allows for a more cohesive social group (Stevens & Fiske, 1995). Cohesive social groups foster resource sharing and transmission of knowledge and also offer individuals more protection than less cohesive social groups (Deci & Ryan, 2000). It is, therefore, beneficial for individuals to maintain relatedness with others as to maintain their wellbeing.

'Autonomy' is also a dimension of PWBT, but is defined differently under SDT. Autonomy under SDT refers to the need for choice and volition when regulating behaviour (self-governance) (Ryan et al., 2013). It also reflects the desire to organise one's own activities and experiences to gain a sense of self (Angyal, 1982; DeCharms, 1968; Deci, 1980; Ryan & Connell, 1989; Sheldon & Elliot, 1999). However, autonomy is not to be confused with independence. As argued by Ryan and Deci (2006) one can be "autonomously dependent" (p. 1562) because people are more likely to rely on others that encourage and support their autonomy.

In order to be deemed psychologically healthy, one must satisfy all three needs as they are considered critical aspects of human functioning (Deci & Ryan, 2000). However, there is no one scale that has been designed specifically to measure the three psychological needs of SDT. Rather, the needs are built into existing scales and measured alongside other constructs (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Van den Broeck, Vansteenkiste, Witte, Soenens, & Lens, 2010; Vlachopoulos & Michailidou, 2006).

2.1.3. Flourishing

Although wellbeing literature is typically divided into hedonic and eudaimonic traditions, there is current debate over whether this distinction should be made (Waterman, 2008). As such, researchers are beginning to adopt an integrated view of hedonic and eudaimonic traditions to gain a more comprehensive view of wellbeing. For example, Kashdan, Biswas-Diener, and King (2008) argue that hedonic and eudaimonic traditions of wellbeing demonstrate considerable conceptual overlap. One of the issues they raise is that the philosophical definitions of the two traditions are difficult to translate to science. Particularly eudaimonia as there is no predominant definition or consistent measurement.

Other researchers have found that eudaimonia and hedonia may, in fact, represent one all-encompassing wellbeing construct. For example, Disabato et al. (2015) found a 0.96 correlation between Diener's model of SWB and Ryff's model of PWB. Both eudaimonia and hedonia also demonstrated similar interactions with other wellbeing constructs such as curiosity and gratitude. These findings were consistent for seven different locations across the globe. Disabato et al. (2015) argued that eudaimonia and hedonia should be measured as one construct; however, acknowledged that eudaimonia may encompass characteristics of meaningful goal-directedness that are not represented within the hedonic tradition. Furthermore, both Waterman, Schwartz, and Conti (2008) and Bauer, McAdams, and Pals (2008) found a significant level of covariance between conceptions of eudaimonic and hedonic wellbeing.

Though there is strong consensus and empirical evidence supporting the claim that eudaimonic and hedonic wellbeing demonstrate significant conceptual overlap, researchers also argue that they do demonstrate different properties. For instance, Waterman (2007) argues that although there is a high correlation between hedonic and eudaimonic measures there is evidence to suggest that the two traditions do differ.

Eudaimonia is more highly correlated with the degree to which activities promote the opportunity to reach one's full potential, investment of effort, setting strong, reachable goals, and feeling challenged. Whereas hedonia is more highly correlated with subjective experiences such as relaxing, feeling excited and content, getting lost in the moment and forgetting any personal problems (Waterman, 2007).

In addition, Chen et al. (2013) used a bi-factor model to test whether eudaimonic and hedonic wellbeing were distinct constructs. They found the constructs to be highly related because they "form a general factor of global wellbeing" (p. 28). However, they also found that the components of hedonic and eudaimonic wellbeing produce unique variances because they form specific factors. They concluded that hedonic and eudaimonic wellbeing are distinct constructs despite being significantly related at the general construct level. Similarly, Keyes et al. (2002) tested whether eudaimonia and hedonia represent distinct conceptions of wellbeing. Consistent with Chen et al. (2013), they also argue that hedonia and eudaimonia are highly related, however, distinct conceptions of wellbeing. The most distinct aspects of eudaimonia being 'purpose in life' and 'personal growth' whereas the most distinct aspects for hedonia are life quality and affective components.

In light of these findings, distinguished psychologists now recognise the benefits of both eudaimonia and hedonia and have adopted views that incorporate both traditions (Bakker & Schaufeli, 2008; Henderson & Knight, 2012; Hone, Jarden, Duncan, & Schofield, 2015). The integrated perspective of eudaimonic and hedonic wellbeing traditions is known as flourishing (Keyes, 2002). Within this perspective, high wellbeing reflects a presence of both eudaimonia and hedonia (Huta & Ryan, 2010).

The term flourishing was first used and developed by Keyes (2002). Keyes defined mental health as possessing both positive feelings and positive functioning. As such, to receive a mentally healthy diagnosis, one must demonstrate hedonic symptoms (positive feelings toward one's life) as well as eudaimonic symptoms (positive psychological functioning). Keyes' theory assumes that mental health and mental illness are not equivalent, however, correlated dimensions. Individuals diagnosed as mentally healthy are deemed flourishing and those diagnosed with a lack of mental health (however, not necessarily a presence of mental illness) are deemed languishing. From this perspective, wellbeing can be depicted as a continuum with languishing at one end and flourishing at the other (see Figure 1).

Figure 2. Disease-Health Continuum

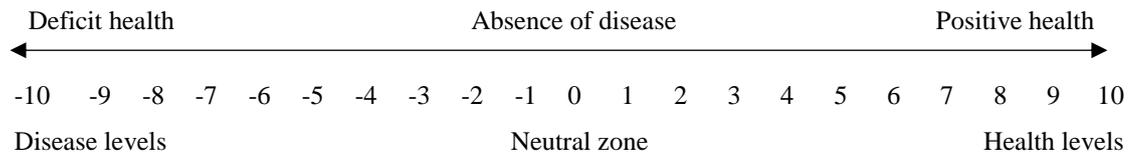


Figure 2. Current health systems operate between the neutral zone and the disease levels zone. Adapted from Brüssow (2013).

In comparison, the flourishing-languishing continuum acknowledges that individuals in poor health and in need of help may not necessarily have the presence of a disease. These individuals may fit in the neutral zone of the disease-health continuum. From a health systems perspective, these individuals are not likely to be prioritised and thus may not receive the treatment or assistance they need to flourish or achieve positive health. From a positive psychology perspective, these individuals are the ones who do need support to achieve optimal functioning. Therefore, it is important to recognise that the absence of disease is not necessarily an indication of positive health or flourishing and that the current health systems need to allocate more of their resources to health promotion and not just disease intervention. However, to successfully promote health and wellbeing one must understand their underlying predictors.

2.1.4. Predictors of flourishing

One's wellbeing is not a set state and can change throughout one's life. There are numerous predictors that can influence one's state of wellbeing. It is important to understand these predictors so that preventative action can be taken if needed. Below are some common predictors of general wellbeing. These are the components of wellbeing that can influence whether an individual is flourishing.

A common group of flourishing predictors is health behaviours such as eating, sleeping, exercising, drinking, and smoking habits. Food intake is significantly important to health and vitality because it influences one's level of energy and nutrient intake (Dalton & Logomarsino, 2014). The food an individual eats can also affect how they feel, perform, look, and sleep (Hefferon, 2013). Sleep quality and quantity are also important predictors of flourishing because sleep not only plays a major role in mental health, however, also affects one's metabolism, memory and learning, reproductive system, and helps to restore the cells in one's body (Kryger, Roth, & Dement, 2011; Lewis, 2011).

Substance abuse can also have a significant effect on one's health. There is extensive evidence highlighting the risks associated with smoking cigarettes (Freund, Belanger, D'Agostino, & Kannel, 1993; Haas, Muñoz, Humfleet, Reus, & Hall, 2004; Orth, Ritz, & Schrier, 1997). For example, there are currently more than 24 different diseases linked to smoking. These include cardiovascular disease, respiratory disease, and 10 different types of cancer (D. Hammond, Fong, McNeill, Borland, & Cummings, 2006). Likewise, there is also significant research highlighting the negative effects of chronic alcohol consumption. These include liver disease, anaemia, and cancer (Eichner & Hillman, 1971; Maddrey, 2000; Zima et al., 2001).

Exercise is another health behaviour and one of the most important activities individuals can undertake to promote flourishing. People who engage in exercise regularly are less likely to develop heart disease, diabetes, and cancer, and are less likely to suffer from depression (Hyde, Maher, & Elavsky, 2013). Both monitoring food intake and exercising regularly can also help individuals maintain a healthy Body Mass Index (BMI) (Hefferon, 2013). While debate regarding the usefulness of the BMI in health research exists (Ashwell & Hsieh, 2005), BMI does give an indication of one's physical health, another driver of flourishing. Individuals within the healthy BMI range are less likely to develop chronic diseases (Ogden, 2012). The presence of such diseases also reflects one's physical health. Diagnosis of a chronic disease or illness not only impacts day-to-day flourishing, however, can also have long-term effects on one's health (Boehm & Kubzansky, 2012; Goetzl & Ozminkowski, 2008).

Another common driver of flourishing is one's financial resources and behaviour. This is highlighted in recent research by Mackay, Prendergast, Jarden, and Schofield (2015) who found that higher incomes are linked to higher wellbeing. In their study, participants who felt they were living comfortably on their income were 12 times more likely to have high self-perceived wellbeing than participants who found it challenging to live comfortably on their income. Similarly, many studies have found a positive relationship between income and wellbeing, however, only to a certain degree (Ahuvia & Friedman, 1998; Diener, 2000; Schyns, 1998). Once a certain amount of money has been obtained, increased income no longer influences flourishing. In many countries, links between increased income and wellbeing have only been found among those at the lower end of the socio-economic ladder. It appears that once people earn enough money to get themselves out of poverty, then further increases in income have no further effect on wellbeing (Myers, 2000; Oishi, Diener, Lucas, & Suh, 1999; Tatzel,

2002). It can, therefore, be concluded that financial resources do influence one's level of flourishing, however, only to a certain threshold.

To summarise, although wellbeing has been traditionally studied through the eudaimonic or eudaimonic perspective, there is extensive evidence to suggest that they are highly related constructs, however, both traditions contain unique components. As such, researchers have adopted an integrated view of wellbeing that incorporates both traditions. This new conceptualisation has been deemed flourishing and concerns both the positive feelings associated with hedonia and the positive psychological functioning associated with eudaimonia. Flourishing acknowledges that the absence of disease does not necessarily mean the presence of positive health. This shift in perspective has allowed researchers to incorporate components of both hedonia and eudaimonia to further their understanding of wellbeing. Additionally, understanding the predictors of high wellbeing or flourishing allows researchers and practitioners to gain a more comprehensive view of the components of wellbeing.

2.2. Wellbeing in the workplace

Wellbeing can be studied in many different contexts, however, the workplace is an important context for measuring wellbeing because an individual's work impacts many of their life roles, takes up much time and energy, and plays an important role in an individual's life satisfaction (Rothmann, 2008). Wellbeing measurement is also becoming of increasing importance to organisations because wellbeing has established links to individual and organisational outcomes such as absenteeism, turnover, burnout, productivity, job satisfaction, and engagement (Ahuja et al., 2007; Bakker et al., 2008; Bäckerman & Ilmakunnas, 2012; Kocakulah et al., 2016).

Wellbeing in the workplace consists of both work and non-work-related aspects. The non-work-related aspects include the eudaimonic, hedonic, and flourishing concepts discussed in the previous section (see 2.1.). As will be discussed, work-related aspects include concepts such as job satisfaction and work-related affect which can encompass engagement, occupational stress, and burnout. To improve and maintain the wellbeing of employees, it is important that an organisation understand what contributes to work-related wellbeing and why it is important to the overall functioning of the organisation. Only then will an organisation be able to develop effective prevention and intervention wellbeing strategies. This section will outline current theories regarding employee wellbeing, review the predictors and outcomes of employee wellbeing, and discuss some of the benefits and consequences of employee wellbeing assessment.

2.2.1. Theories of employee wellbeing

Employee wellbeing has often been regarded as the extent to which employees are satisfied with their job (Daniels, 2000; Rothmann, 2008; Wall & Clegg, 1981). Because job satisfaction limits the scope of employee wellbeing, some researchers have proposed that instead, work-related affect is assessed (Daniels, 2000; Rothmann, 2008; Wright & Cropanzano, 2004). Work-related affect can encompass other work-related outcomes such as engagement and burnout (Cropanzano & Wright, 2001). This allows for a more comprehensive view of work-related wellbeing as it is a multidimensional construct.

Other researchers have argued that both job satisfaction and work-related affect should be assessed because they both predict employee wellbeing. For example, Cotton and Hart (2003) used a multi-measure approach which consisted of both positive and negative affect as well as job satisfaction. By using both work-related affect and job satisfaction their study captured both the affective and cognitive components of workplace wellbeing. Page and Vella-Brodrick (2009) also argue for the measurement of both job satisfaction and work-related affect. They developed a model to demonstrate the components that contribute to employee mental health. As shown in Figure 3, their model consists of three core components and incorporates hedonic and eudaimonic traditions of wellbeing as well as components that are specific to the workplace. Using both general and work-related wellbeing measures is likely to depict a more accurate representation of employee wellbeing than using SWB measures alone (Page & Vella-Brodrick, 2009).

The first component is SWB and is a significant focus of the hedonic wellbeing tradition. SWB consists of life satisfaction and positive and negative affect (see 1.1.1). The second component is PWB, a significant focus of the eudaimonic wellbeing tradition. PWB consists of relatedness, autonomy, personal growth, self-acceptance, purpose in life, and environmental mastery (see 1.1.2.). These components were selected based on (Keyes, 2002, 2005, 2007) wellness approach (see 1.1.3.) that argues that both SWB and PWB contribute to employee mental health representing positive feelings and positive functioning respectively. Although SWB and PWB are likely to offer distinctive variance to employee wellbeing, the additional variance may be explained if scales are used that measure constructs specific to the workplace (Page & Vella-Brodrick, 2009). As such, the final component chosen as part of their model was

workplace wellbeing (WWB). This component consists of two context-specific constructs: job satisfaction and work-related affect.

Figure 3. Model of Employee Mental Health

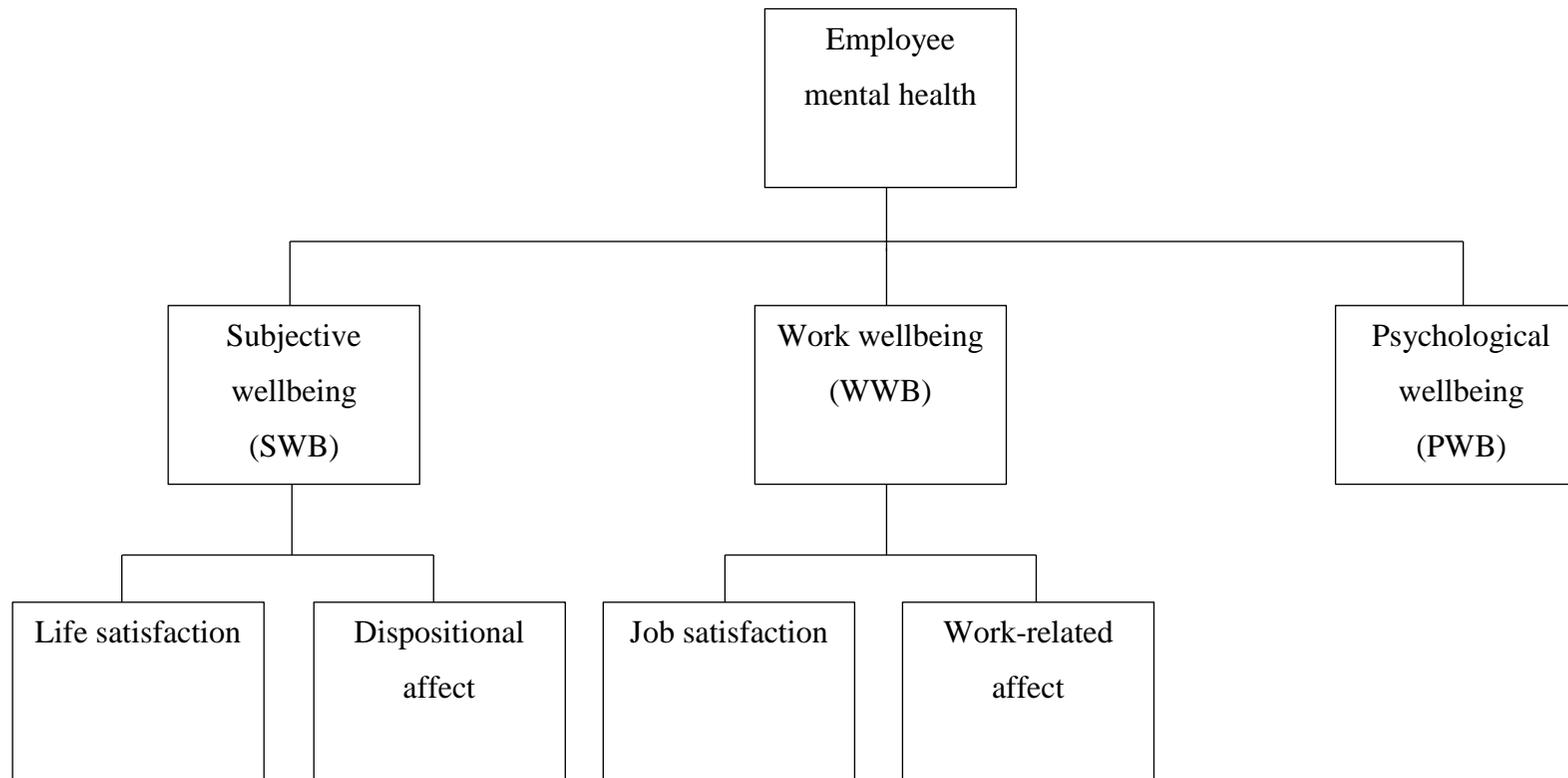


Figure 3. Model of employee mental health as shown by Page and Vella-Brodrick (2009). The model consists of three core components: SWB, WWB, and PWB. PWB consists of six dimensions: self-acceptance, positive relations with others, environmental mastery, autonomy, personal growth, and purpose in life. These dimensions were not included in the figure for simplicity.

Job satisfaction

Job satisfaction is “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences” (Locke, 1976, p. 1300) and is the most extensively studied variable in organisational research (Böckerman & Ilmakunnas, 2012; Brough, O’Driscoll, Kalliath, Cooper, & Poelmans, 2009; Edmans, 2012). Researchers initially studied job satisfaction from a need-fulfilment perspective, that is whether or not one’s job met their physical, psychological and emotional needs (Porter, 1963; Wolf, 1970). However, current researchers study job satisfaction from an attitudinal perspective which views job satisfaction as either one’s global feeling toward their job or a collection of attitudes one has toward different facets of their job (Ironson, Smith, Brannick, Gibson, & Paul, 1989).

An issue with job satisfaction is the extent to which it contributes to one’s life satisfaction. There is continued debate over whether life satisfaction determines job satisfaction or whether job satisfaction determines life satisfaction (Rode, 2004). One would think that the two constructs are highly correlated, however, research shows that the two are only moderately correlated (Judge & Watanabe, 1993; Rice, Near, & Hunt, 1980; Rode, 2004). As such, happiness or satisfaction in life does not equate to happiness or satisfaction at work and thus the two constructs need to be measured independently. Therefore, Page and Vella-Brodrick (2009) argue that job satisfaction should be included in the model of employee mental health as a distinct factor unrelated to life satisfaction.

Job satisfaction, however, has been criticised for being an inadequate measure of WWB. Wright and Cropanzano (2004) suggest that job satisfaction should instead be replaced with measures of dispositional affect. Warr (1987, 1990), and Daniels (2000) have adopted a similar approach and have used measures of work-related affect which is argued to be a more specific measure of WWB than general affect. Job satisfaction is also criticised by some researchers as being an unreliable predictor of workplace outcomes such as performance (Judge, Thoresen, Bono, & Patton, 2001). However, Wright, Cropanzano, and Bonett (2007) found results that contradict previous notions of job satisfaction. Their findings suggest that job satisfaction is, in fact, a valid predictor of workplace performance.

Work-related affect

Work-related affect is best understood using models proposed by Warr (1987, 1990) and Daniels (2000). The model developed by Warr (1987, 1990) is a circumplex model which depicts wellbeing on two diagonal axes. One axis ranging from anxious to content (tense,

uneasy, worried, calm, contented, relaxed) and the other ranging from depressed to enthusiastic (depressed, gloomy, miserable, cheerful, enthusiastic, optimistic). Because the model did not include the arousal aspect of affective wellbeing, it was argued that the model may not have strong predictive validity. The model was later developed to include four dimensions: pleasure-displeasure, anxiety-comfort, enthusiasm-depression, and fatigue-vigour (Warr, 2002). The pleasure-displeasure dimension reflects how one feels about their job. The anxiety-comfort dimension measures occupational stress. The enthusiasm-depression reflects how engaged an individual is at work and the fatigue-vigour dimension reflects burnout. The model developed by Daniels (2000), however, is considered a more comprehensive model of work-related affect. This model depicts wellbeing on five axes: anxiety-comfort, depression-pleasure, bored-enthusiastic, tiredness-vigour, and angry-placid.

Because job satisfaction and work-related affect reflect two distinct and comprehensive measures of WWB, Page and Vella-Brodrick (2009), argue that both job satisfaction and work-related affect are likely to contribute to an employee's overall wellbeing. Overall, WWB along with general wellbeing measures (PWB and SWB) are argued as contributors to an employee's overall wellbeing. Although their model establishes the structure of employee mental health, it does not incorporate the work and non-work-related predictors that influence employee wellbeing.

2.2.2. Predictors of employee wellbeing

Like general wellbeing, employee wellbeing is not a set state and can change throughout one's work life. There are many predictors that can influence employee wellbeing including those previously mentioned (e.g. exercise, nutrition, and sleep). However, this section will focus on the work-related predictors of employee wellbeing. These predictors can be organised into three groups (Danna & Griffin, 1999). The first group relates to the work setting and includes factors such as health, safety, and other hazards that can impact employee wellbeing. The second group of predictors are personality traits such as Type A behavioural tendencies and locus of control. The final group of predictors are occupational stressors. This group includes factors such as one's role in the organisation, relationships at work, and home/work spill over, job demands, and job resources. This group concerns the psychological work-related predictors and will thus be the focus of this section.

Occupational stress is a major problem for organisations due to lost productivity, absenteeism and the cost of stress-related disability claims (Cooper & Cartwright, 1994;

King, 1995). Moreover, occupational stress can have a significant impact on individuals with known links to coronary heart disease, mental collapse, job dissatisfaction, accidents, and family difficulties (Cooper & Cartwright, 1994). Some of the causes of occupational stress are factors central to the job. These factors are best understood using the Job Demands-Resources model (J D-R) which postulates that working conditions can be divided into two categories: job demands and job resources (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Job demands are aspects of the job such as work overload, emotional and physical demands, and work-life balance that require effort and can result in fatigue. Job resources are aspects of the job that encourage personal growth, learning and development, and motivation. These include factors such as autonomy, performance feedback, social support, development opportunities and support from a supervisor (Bakker & Demerouti, 2007; Bakker & Schaufeli, 2008).

Demands can cause both physical and psychological difficulties for employees. For example, work overload can cause physical problems such as joint pain. On the other hand, work underload can have a psychological effect (e.g. lowered self-esteem) causing behaviours such as increased smoking and substance abuse (Glowinkowski & Cooper, 1986). Demands are also positively correlated with mental health (Moyle, 1998). Furthermore, demands such as shift work are linked to increases in accident proneness while long hours have shown links to mild (headaches) and more severe (myocardial infarction) wellbeing outcomes (C. Bell & Telman, 1980; Sparks, Cooper, Fried, & Shirom, 1997).

The work/home interface is another type of demand that can be a source of occupational stress for employees. It can also be referred to as “spill over stress” because work-related stress can be brought home and interfere with family life, and family-related stress can be brought to work impacting work outcomes (Glowinkowski & Cooper, 1986). Boles, Johnston, and Hair Jr (1997), found both work and non-work-related domains were associated with the formation of work attitudes. They also found role conflict was correlated with emotional exhaustion and work-family conflict was correlated to emotional exhaustion and job satisfaction. Moreover, Caudron (1997) found that overwork was related to marital conflict and Fletcher (1988) found that occupational stress can have an effect on both psychological and physical health, as well as life expectancy and marital satisfaction. Not only must these predictors of work-related wellbeing be considered; however, the potential individual and organisational consequences of poor employee wellbeing need to be established to form a rationale for wellbeing monitoring and measurement.

Job demands are also linked to other negative work-related outcomes such as burnout and disengagement. However, the J D-R model suggests that job resources can reduce or buffer the effects of job demands on work-related outcomes (Demerouti et al., 2001). In other words, employees are less likely to experience burnout because of their job demands if they are given sufficient job resources. One such resource is supportive supervision. Managerial support is positively associated with job satisfaction (Moyle, 1998). Similarly, appreciation and feedback from supervisors influence work-related affect, flourishing and work-related wellbeing (Dickson-Swift, Fox, Marshall, Welch, & Willis, 2014; Hone, Jarden, Duncan, et al., 2015). Moreover, Moyle (1998) found that managerial support was positively associated with mental health. This suggests that targeting managerial support during interventions may help to improve employee wellbeing.

There are many other resources that can buffer the negative effects of job demands. Some of which include one's relationships at work, feeling part of the team, having control over important job aspects, being provided with sufficient tools/equipment as well as opportunities to learn and develop (Bakker & Demerouti, 2007; Bakker, Demerouti, & Euwema, 2005; Bakker, Demerouti, & Verbeke, 2004). These particular resources relate to SDT. As previously discussed (see 2.1.2.), the main concern of SDT is the degree to which individuals can satisfy their three basic psychological needs: autonomy, competence, and relatedness. In a work setting, relationships and belonging reflect relatedness, having control of important job aspects reflects autonomy, and being provided with sufficient tools/equipment as well as opportunities to learn and develop reflect competence.

Workplace relationships are an important driver of wellbeing because they can have both positive and negative work-related outcomes. For example, negative relationships such as mistrust among co-workers are linked to higher role ambiguity, loss of communication between team members, lower job satisfaction and poor PWB (Cooper & Cartwright, 1994). Co-worker jealousy can also lead to aversive outcomes such as violence and harassment (Vecchio, 1997). On the other hand, positive relationships with co-workers generate greater access to social support which is strongly linked to job satisfaction (Chiaburu & Harrison, 2008). Social support can also act as a buffer against stressful events or job demands and can increase positive affect (Terry, Nielsen, & Perchard, 1993). Additionally, a sense of belonging that one gets from feeling part of a work team is both a basic human need and component of employee engagement (Baumeister & Leary, 1995). Offering input in important decision making and having their opinions heard helps employees maintain an

interest in their work. Furthermore, employees who identify their work as contributing to a meaningful purpose, are more likely to have a greater interest in their work (Harter, Schmidt, & Keyes, 2003).

Autonomy and control over important aspects of one's job are also important predictors of work-related wellbeing because they give employees the flexibility to manage their own workload and they are positively correlated with job satisfaction (de Jonge, Bosma, Peter, & Siegrist, 2000; Spector, Chen, & O'Connell, 2000). This kind of freedom helps to relieve occupational stress and burnout and has a negative association with perceived work overload (Ahuja et al., 2007). Not only does autonomy have work-related benefits, however, it also helps with work-life spill over as autonomy is correlated with reduced work-family conflict (Goldstein, 2003; Thomas & Ganster, 1995). This is due to the flexibility in the timing of work-related activities that autonomy allows. Lastly, giving employees control over important aspects of their job also has organisational benefits such as greater organisational commitment (Bailyn, 1989; Bélanger, 1999; Hill, Miller, Weiner, & Colihan, 1998).

Lastly, being provided with sufficient tools/equipment as well as opportunities to learn and develop helps employees to establish a degree of confidence and competence in their work. If employees are not given the appropriate tools or training needed to do their job well, then their performance will be significantly impacted. Competence not only affects work performance, it is also associated with task effectiveness and social integration (Kim, Cable, Kim, & Wang, 2009). Provision of development opportunities is also strongly linked to job satisfaction and employee retention (Egan, Yang, & Bartlett, 2004; Hone, Jarden, Duncan, et al., 2015; Rowden, 2002). Therefore, paying for training and provisions may be less costly for organisations long-term.

In summary understanding what predicts/drives an employee's wellbeing will help organisations to develop effective wellbeing programmes and can highlight components of the work environment that organisations can change to improve employee wellbeing. Understanding and measuring employee wellbeing has many other benefits both individual and organisational. The following section will highlight both the benefits of high employee wellbeing and the consequences of low employee wellbeing.

2.2.3. The benefits and consequences of employee wellbeing

Work and wellbeing are closely linked, each affecting the other. Work can positively impact one's wellbeing through the provision of resources such as social support, learning and

development opportunities and performance feedback. On the other hand, one's wellbeing can positively impact their work or workplace. For instance, Page and Vella-Brodrick (2009) report that employees with high wellbeing can demonstrate up to 30% more productivity than employees with low wellbeing. Additionally, wellbeing is negatively associated with intentions to leave (Hart & Cooper, 2001). This mutual relationship reflects the need for organisations to invest in decent wellbeing strategies. Every dollar invested in employee wellbeing will approximately return five dollars US (Rath & Harter, 2010) through increased engagement, productivity and customer service. This link between wellbeing and work demonstrates both individual and organisational benefits and consequences.

Individual benefits and consequences

It is important that an organisation maintains the health and wellbeing of its employees to evade the psychological consequences employees can sustain under poor wellbeing management. Psychological consequences generally stem from workplace stress which can arise when an employee perceives a lack of fit between themselves and their work environment (Danna & Griffin, 1999). For example, role conflict, role ambiguity, poor work relationships, or dissatisfaction with career development are all potential sources of stress for an employee (Cooper & Cartwright, 1994; Glowinkowski & Cooper, 1986). Sexual harassment whether it be direct or indirect is also destructive to an employee's psychological condition and results in lower job satisfaction (Glomb et al., 1997). Other typical psychological consequences of low employee wellbeing include problems with family, disrupted sleep, sexual dysfunction, and depression (Quick, Horn, & Quick, 1987).

In contrast, high employee wellbeing (flourishing) has many individual benefits. For example, employees with high wellbeing are more likely to get promoted sooner than employees with low wellbeing (Boehm & Lyubomirsky, 2008). High wellbeing also promotes job satisfaction which leads to greater autonomy, competence, relatedness, and life satisfaction reflecting the eudaimonic and hedonic benefits of improving employee wellbeing (Deci & Ryan, 2008a; Judge & Watanabe, 1993; Tait, Padgett, & Baldwin, 1989).

People with high wellbeing are also generally healthier and live longer. For instance, there is evidence to suggest that employees with high psychological wellbeing are also less likely to suffer from the cold virus and cardiovascular disease (Boehm & Kubzansky, 2012; S. Cohen, Alper, Doyle, Treanor, & Turner, 2006). Similarly, these employees recover quicker from illness and take fewer sick days (Bertera, 1990; Cooper & Dewe, 2008).

Employees with high wellbeing are also generally more engaged, energetic, motivated, and productive (Clifton & Harter, 2003; Oswald, Proto, & Sgroi, 2015; Page & Vella-Brodrick, 2009). They are more effective in their team role, provide greater customer service, and are more creative and innovative (Cotton & Hart, 2003; Daniels, 2000; Judge et al., 2001).

Organisational benefits and consequences

Low employee wellbeing not only affects individual employees but can have significant consequences for organisations. The most significant consequence being the declines in the financial health of an organisation. For example, when employees are stressed, the rate of absenteeism within an organisation increases, productivity decreases, and compensation and health insurance claims increase (Cooper & Cartwright, 1994). According to the Wellness in the Workplace survey, approximately 6.1 million working days were lost to absenteeism costing New Zealand businesses \$1.3 billion (New Zealand dollars) in 2012 (Tynan, Milsom, & O'Reilly, 2013). Similarly, the 2014 Absence Management Survey found that Australian employees take an estimated 10 sick days per year which costs Australian businesses around \$33 billion (Australian) (Smerdon, 2014). Therefore, it is important that organisation put in place wellbeing programmes so that they improve the wellbeing of their employees and thus reduce the financial strain caused by employee absenteeism.

On the other hand, investing in employee wellbeing can have significant financial benefits for an organisation. For example, Edmans (2011) found that employee satisfaction had a significant positive effect on shareholder returns. Improving employee wellbeing through prevention and intervention can also reduce the financial cost of employee absenteeism by 19% as employees with high wellbeing are more likely to be happier and in good health (Bertera, 1990; Waddell & Burton, 2006). Similarly, fostering happiness at work can also help reduce turnover costs by 46% (Judge, 1993). As such, developing wellbeing programmes may not only reduce the financial strain caused by employee absenteeism, however, may, in fact, result in greater organisational profits.

Fostering high levels of employee wellbeing also has non-financial benefits. High wellbeing promotes good co-worker relationships which in turn impacts mental health (e.g. depression, anxiety, and stress levels) (Butterworth et al., 2011). Enabling strong workplace relationships is also beneficial for developing high levels of wellbeing as happiness is contagious. Employees can affect each other's mood. For instance, Fowler and Christakis 2009 demonstrated that the happiness of a close acquaintance can increase the chance of

personal happiness by up to 15%. Other non-financial organisational benefits include attracting top talent, becoming more resilient to change, greater flexibility, and out competing competitors (Edmans, 2012; Harter et al., 2003; Lewis, 2011).

In summary, poor employee wellbeing can result in psychological consequences for individuals and can place a significant financial strain on organisations. On the other hand, high employee wellbeing can result in positive outcomes such as greater mental health, stronger workplace relationships, and greater financial returns. As such, it is important that organisations employ methods to assess and monitor their employee's wellbeing so they can gain data to inform their wellbeing practices. The data gained from wellbeing measurement will allow organisations to identify possible health risks and implement prevention and intervention strategies. The next section will review the best practice in selecting and administering employee wellbeing assessments.

2.3. Measuring employee wellbeing

The extensive evidence demonstrating the links between high levels of wellbeing and desirable work-related outcomes is convincing employers of the need to assess, monitor, and improve the wellbeing of their employees. With the growing interest in wellbeing measurement, more and more wellbeing assessments are being developed. There is no dominant scale when it comes to wellbeing assessment. Some scales measure general wellbeing domains, some measure work-related wellbeing domains, and others measure a combination of both. This section will highlight some of the most widely used wellbeing scales and some of the issues associated with wellbeing measurement.

2.3.1. Common wellbeing scales

As the definition of wellbeing and what it is comprised of continues to change over time, so does the ways in which it is assessed. Ideally, employee wellbeing assessments will include measures of general wellbeing (e.g. hedonia, eudaimonia, and flourishing) as well as work-related measures (e.g. job satisfaction, work-related affect, and engagement). Assessments will also ideally consist of items that measure both global and evaluative wellbeing information, as well as the predictors and enablers of general and work-related wellbeing. For example, they will ask questions which help demonstrate the level of wellbeing in an organisation and ask questions that demonstrate the elements that contribute to an organisation's level of wellbeing (Jarden & Jarden, 2017). However, the reality is most wellbeing assessments consist of either general wellbeing or work-related wellbeing items.

Other scales may only measure specific wellbeing outcomes or domains. There is no consensus among researchers in the field of positive psychological assessment about which scales should be used for employee wellbeing assessments; however, researchers do agree that wellbeing requires many different metrics in order to measure the multidimensional construct (Diener et al., 2015; Hone, Jarden, & Schofield, 2015).

There are many scales used throughout the wellbeing assessment literature which makes selecting the right scale somewhat difficult. Before selecting any tools though, one must establish any goals of their assessment. According to the Me-We-Us framework developed by Jarden and Jarden (2017), these goals can be created for the three different levels of an organisation: the individual (Me), groups/teams (We) and organisational level (Us). This framework provides an outline of the different levels of assessment and intervention that may be needed to achieve maximum performance and wellbeing throughout an organisation. Goals should be established for each level of the organisation or the level at which an assessment and intervention will take place (for the purposes of this review, the focus will be on the individual level of wellbeing assessment). Table 1 shows some of the most common individual wellbeing measures within the wellbeing assessment literature.

Table 1 *General Wellbeing Scales (global measures)*

| Domain | Scale | Author/s |
|--|--|--------------------------|
| Hedonia (Life Satisfaction) | Satisfaction with Life Scale | (Diener et al., 1985) |
| | Delighted-Terrible Scale | (Andrews & Withey, 1976) |
| Hedonia (Positive and Negative Affect) | Positive Affect and Negative Affect Schedule | (Watson et al., 1988) |
| | Affectometer 2 | (Kammann & Flett, 1983) |
| | Scale of Positive and Negative Experience | (Diener et al., 2010) |
| Eudaimonia | Scales of Psychological Wellbeing | (Ryff, 1989) |
| Flourishing | Flourishing Scale | (Diener et al., 2010) |

Life satisfaction is one of the main domains of hedonic wellbeing and has many associated scales. However, there is an ongoing debate over whether to employ multi-item or single-item scales. A multi-item empirical measure that taps into this component of SWB is the Satisfaction with Life Scale (SWLS) (Diener et al., 1985; Pavot & Diener, 2008). This is the most common multi-item scale for assessing life satisfaction and is considered valid and

reliable consistently demonstrating internal reliability scores above 0.80 (Diener et al., 1985; Pavot & Diener, 1993). The most common valid and reliable single-item scale is the Delighted-Terrible Scale (D-T Scale) (Andrews & Withey, 1976). The D-T Scale has the advantage of concision, has been widely used in large-scale surveys, and demonstrates a high validity coefficient of 0.77.

Positive and negative affect are the other two domains of hedonic wellbeing. Acknowledging the need for a valid and reliable measure of PA and NA, Watson et al. (1988) developed a 10-item scale known as the Positive and Negative Affect Schedule (PANAS). The PANAS demonstrates internal consistency, convergent and discriminant validity and is stable over a two month period (Watson et al., 1988). Consequently, it is deemed a reliable and valid measure of PA and NA (NA $\alpha = 0.87$, PA $\alpha = 0.88$). Concurrently, the Affectometer 2 (overall reliability: $\alpha = 0.95$) (Kammann & Flett, 1983) and the Scale of Positive and Negative experience (Diener et al., 2010) (NA $\alpha = 0.81$, PA $\alpha = 0.87$) are also reliable and valid measures of PA and NA.

Unlike hedonic wellbeing, eudaimonic measures are not well established. Eudaimonic wellbeing is most commonly measured using the Scales of PWB developed by (Ryff, 1989). These scales are founded on mental health, clinical, and lifespan development theories (Kafka & Kozma, 2002) and are divided into six dimensions: positive relations with others, autonomy, personal growth, self-acceptance, purpose in life, and environmental mastery. Although these scales are widely used, there is ongoing debate as to whether the scales can be divided into six dimensions. Many researchers have assessed the structure and discriminant validity of the scales; however, the findings are inconsistent. For example, Ryff and Keyes (1995) assessed the structure of the scales using Structural Equation Modelling and found the data best fit a model of six primary factors (Ryff's six dimensions) linked to one higher order factor (wellbeing). There have also been other studies that used confirmatory factor analysis to assess the structure of the scales of PWB (Cheng & Chan, 2005; Clarke, Marshall, Ryff, & Wheaton, 2001; van Dierendonck, 2004). The findings of these studies are all consistent with that of Ryff and Keyes (1995).

On the other hand, there have been studies in which the data does not fit a 6-factor model. Springer and Hauser (2006) examined the measurement properties of the scales and found substantial overlap between the dimensions. Specifically, personal growth, purpose in life, self-acceptance, and environmental mastery. Similarly, Kafka and Kozma (2002) found

that their analysis resulted in 15 factors instead of six and these were linked to three higher order factors rather than one. They then argued that the scales of PWB were limited to face validity. Moreover, Abbott et al. (2006) again could not find a model that fit with the proposed six factors. They instead suggest that two method factors need to be included in the model to achieve a better fit. Because these findings are so scattered, it is difficult to determine whether the scales of PWB are a reliable and valid tool for measuring eudaimonic wellbeing and should, therefore, be used with caution.

The integrated approach to measuring both hedonic and eudaimonic wellbeing (known as flourishing) is typically assessed using the Flourishing Scale (Diener et al., 2010). This scale measures flourishing, positive and negative feelings, and has demonstrated good psychometric properties. The scale has strong internal reliability ($\alpha = 0.91$) and strong convergent validity as it is strongly correlated with measures of happiness and life satisfaction (Hone, Jarden, & Schofield, 2014). Because this scale is a short (eight items) and a psychometrically sound measure of both hedonic and eudaimonic wellbeing, it is a good representation of an individual's general wellbeing levels and is subsequently used to develop novel wellbeing tools (e.g. the Sovereign New Zealand Wellbeing Index (Jarden et al., 2013)).

Factors that influence flourishing

Employee assessments may also contain items relating to the predictors of general wellbeing (demographics, health behaviours, lifestyle behaviours, and financial behaviours/resources). These predictors vary between assessments and unlike global measures of general wellbeing there are no consistent driver measures. Driver items can be sourced from validated scales such as The International Physical Activity Questionnaire (Craig et al., 2003), and the Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). Alternatively, driver items may be designed by the scale developer/s to align with the goal of the assessment. These items are most commonly designed as Likert scales.

Work-related wellbeing scales (global measures)

Measuring work-related wellbeing can be very difficult due to the varied nature of available scales. Some work-related wellbeing scales assess overall levels of wellbeing and others assess levels of specific work-related outcomes such as engagement, burnout, job satisfaction and performance. Choosing the right scales to include in an assessment depends on the goal of the assessment and what it is designed to measure. Scale developers may wish to use comprehensive work-related wellbeing scales in their assessment; however, there are very few available. There are, however, many scales that measure specific work-related outcomes. Items can be taken from each of these scales and included in the novel assessment. Alternatively, scale developers may wish to design their own items based on work-related wellbeing literature.

One of the significant issues with work-related wellbeing literature is the bidirectionality of some work-related wellbeing domains; specifically, engagement and job satisfaction. These domains can be considered both predictors of work-related wellbeing and work-related wellbeing outcomes (see 2.3.2.). As discussed (see 2.2.2.), predictors of work-related wellbeing relate to work setting, personality, and occupational stressors. For the purposes of this review, engagement and job satisfaction will be treated as work-related outcomes/global measures of employee wellbeing. Table 2 shows some of the commonly used work-related wellbeing scales.

Table 2 *Work-related Wellbeing Scales (global measures)*

| Domain | Scale | Author/s |
|--------------------------|---|--|
| Employee wellbeing | Workplace Wellbeing Index | (Page, 2005) |
| | Work Wellbeing Questionnaire | (Parker & Hyett, 2011) |
| Work-related affect | Job-Related Affective Well-Being Scale | (Warr, 1990) |
| Engagement | Utrecht Work Engagement Scale | (Schaufeli et al., 2006) |
| Job satisfaction | Michigan Organizational Assessment Questionnaire Satisfaction sub-scale | (Cammann, Fichman, Jenkins, & Klesh, 1979) |
| | Job in General Scale | (Ironson et al., 1989) |
| | Job Descriptive Index | (Balzer, Smith, & Kravitz, 1990) |
| Burnout | Maslach Burnout Inventory | (Maslach, Jackson, & Leiter, 1997) |
| Performance/Productivity | Health and Productivity Questionnaire | (Kessler et al., 2003) |

There are few global measures of overall employee wellbeing and even fewer valid and reliable measures. An example of a reliable scale is the Work Wellbeing Questionnaire (Parker & Hyett, 2011). This scale was developed due to the lack of comprehensive employee wellbeing scales in the literature. The scale consists of 31-items that measure four domains of work-related wellbeing: work satisfaction, organisational respect for the employee, employer care, and intrusion for work into private life. Respondents are to rate the items such as “Is your work fulfilling?” on a 5-point Likert scale that ranges from 0 (not at all) to 4 (extremely true). The scale demonstrates excellent test-retest reliability; however, has yet to be tested for validity.

An example of a valid and reliable scale is the Workplace Wellbeing Index (Page, 2005). The scale is based on the single-item SWB scale “How satisfied are you with your job as a whole” and has been adapted to measure more specific measures of employee wellbeing. Items begin with “How satisfied are you with” and end in specific workplace components. For example, “How satisfied are you with your co-workers?”. The scale consists of 15 items and is answered using an 11-point Likert scale using very dissatisfied (0) and very satisfied

(10). Page (2005) performed factor analysis on the scale and extracted two factors: extrinsic and intrinsic satisfiers. The sub-scales demonstrated excellent internal consistency with Cronbach alpha levels of 0.92 and 0.89 respectively.

Although there is a lack of comprehensive employee wellbeing scales, there are many scales that measure specific work-related outcomes. A commonly measured workplace outcome is work-related affect typically assessed using the Job-related Affective Wellbeing Scale (Warr, 1990). This scale has been designed to measure affective wellbeing in different contexts depending on the phrasing used in the instructions. The work-related version measures work-related anxiety, comfort, depression, and enthusiasm. The scale has been deemed valid and has internal consistencies that range between 0.80 and 0.95 (Van Katwyk et al., 2000).

Another important work-related outcome is engagement and the most commonly used scale is the Utrecht Work Engagement Scale (Schaufeli et al., 2006). This scale consists of three sub-scales that reflect the three components of engagement: vigour (six items), dedication (five items), and absorption (six items). Items are answered using a 7-point Likert scale that ranges from Never (0) to Always (6). The scale demonstrates good construct validity (Seppälä et al., 2009), test-retest reliability and internal consistency ($\alpha = 0.92$) (Schaufeli et al., 2006).

The most widely studied work-related outcome is job satisfaction (Edmans, 2012; Egan et al., 2004; Judge et al., 2001) and as such, it has many dominant associated scales. At present, there are two types of job satisfaction measures that are utilised: global and facet scales. Global scales measure one's global feeling toward their job (Ironson et al., 1989) while facet scales measure the attitudes one has toward different facets of their job (Balzer et al., 1990). Global and facet scales cannot be used interchangeably as they are not equivalent (Ironson et al., 1989; Jackson & Corr, 2002). To choose the correct scale for measurement, one must consider the aims of the research. The global approach is used when researchers wish to determine one's overall attitude toward their job and the facet approach is used when researchers wish to determine which characteristics of a job result in satisfaction/dissatisfaction (e.g. pay, work relationships, manager).

A commonly used global scale is the Job in General Scale (Ironson et al., 1989). The scale contains 18 items such as "Think of your job in general. All in all, what is it like most of the time?". For each adjective (e.g. pleasant, better than most, rotten), respondents can

select “Yes” “Aren’t sure” or “No”. The Job in General Scale demonstrates good internal consistency with scores between 0.91 to 0.95 (Ironson et al., 1989). The scale is also considered valid as it correlates highly with other global measures of job satisfaction such as the Job Descriptive Index Work Scale (0.78) (Ironson et al., 1989). Similarly, the Michigan Organizational Assessment Questionnaire Satisfaction sub-scale is also a commonly used global scale (Cammann et al., 1979). The sub-scale is very short with three items. Items include “All in all I am satisfied with my job” and respondents can select from seven responses ranging from “Strongly agree” to “Strongly disagree”. This scale is also valid and reliable with internal consistency scores of 0.77 to 0.87 and high correlations with other work variables (Cammann et al., 1979; Jex & Gudanowski, 1992; Spector, Dwyer, & Jex, 1988).

One of the most widely used facet scales is the Job Descriptive Index (Balzer et al., 1990). This is a 72-item scale that assesses five job facets including work, pay, promotion, supervision, and co-workers. Each item uses an evaluative adjective to describe an aspect of a job facet. For example: “Think of the work you do at present. How well does each of the following words or phrases describe your work? (Routine, Satisfying, Good)”. Respondents can select “Yes”, “Uncertain” or “No”. The Job Descriptive Index is considered both a valid and reliable tool (Spector, 1997) with average internal consistency scores above 0.86 for all facets and test-retest reliability scores demonstrating that job satisfaction is susceptible to change over time (Kinicki, McKee-Ryan, Schriesheim, & Carson, 2002).

Another commonly assessed work-related outcome is burnout which is most commonly assessed using the Maslach Burnout Inventory (Maslach et al., 1997). The scale consists of 22 items and can be divided into three sub-scales that measure the three components of burnout: emotional exhaustion (nine items), depersonalisation (five items), and reduced personal accomplishment (eight items). Items are statements containing feelings and attitudes. For example, “I feel burned out from my work”. Items are answered using a 7-point Likert scale which ranges from never (0) to everyday (6). The sub-scales demonstrate construct validity and acceptable internal consistency levels with alpha levels of 0.90 for emotional exhaustion, 0.79 for depersonalisation, and 0.71 for personal accomplishment. The sub-scales also demonstrate good test-retest reliability with reliability coefficients of 0.82 for emotional exhaustion, 0.60 for depersonalisation, and 0.80 for personal accomplishment (Maslach et al., 1997).

Factors that influence work wellbeing

Workplace predictors include aspects of work setting, employee personalities, and occupational stressors. However, with regard to measuring predictors of work-related wellbeing, only occupational stressors are typically assessed. These stressors can be grouped into demands and resources as consistent with the J D-R model. Like general wellbeing predictors, there are no dominant scales to measure the predictors of wellbeing. However, there are many scales and items that measure components of job demands and job resources. For example, autonomy can be considered a work resource and has associated scales (e.g. The Work Autonomy Scales (Breugh, 1985)). Similarly, managerial support, relationships at work, feeling part of the team, having control over important job aspects, being provided with sufficient tools/equipment as well as opportunities to learn and develop are all job resources and are all assessed using different measures. This is also true for measuring job demands which creates a problem for scale developers looking to include job demands and job resources items in a novel assessment. As a result, scale developers tend to design their own items or source items from the positive psychology literature.

2.3.2. Measurement issues with wellbeing assessment

The scales discussed above are some of the most common scales used in academic research. When it comes to assessing wellbeing in practice, specifically in a work context, there is no dominant comprehensive scale that incorporates general and work-related items that reflect both the predictors and outcomes of wellbeing. Because there is a need for such a scale, many researchers and organisations are creating their own scales (Jarden & Jarden, 2017). These scales, however, are typically comprised of a combination of existing scales, individual items from existing scales, and self-designed items. Additionally, these novel measures are often not based on any underlying model and can lack validity and reliability. Until a consistent, comprehensive measure of wellbeing is developed and utilised, the assessment of wellbeing may continue to be random, scattered and lacking psychometric properties such as validity and reliability.

There is little data available regarding positive psychological assessment practices in workplaces. Data that does exist suggests that even though there are many wellbeing tools available, minimal employee wellbeing assessment actually takes place and assessments that do take place are typically invalid and unreliable (Spence, 2015). For example, in Australia, as few as 3.6% of all organisations offer workplace wellbeing programmes (HAPIA, 2009).

Moreover, the wellbeing assessments that are used, generally ask few questions, are limited due to their small scale, and do not measure wellbeing as a multidimensional concept (Diener et al., 2015; Hone, Jarden, & Schofield, 2015). This lack of valid and reliable wellbeing assessment may be attributed to several of the difficulties associated with wellbeing measurement.

One of the most significant issues associated with wellbeing assessment is the lack of consensus surrounding the definition of wellbeing. Though researchers agree that wellbeing is a multidimensional construct (Diener et al., 2010; Huppert & So, 2013; Seligman, 2012), there remains to be one overarching and internationally recognised definition of wellbeing. Consequently, the measurement of wellbeing continues to be haphazard because it is difficult to measure something that is so inconsistently defined (Donaldson et al., 2015; Forgeard et al., 2011; Hone, Jarden, & Schofield, 2015).

Another issue associated with wellbeing measurement is the vast number of tools available for assessment. Though wellbeing tools and literature is readily available to academics, it is not often accessible to human resource managers. Consequently, these managers must rely on resources provided by government agencies such as Worksafe New Zealand and the Ministry of Business, Innovation and Employment. Without access to the wellbeing literature, human resource managers have no means of checking whether any assessments they are provided with are based on theoretical models and whether the assessments are reliable and valid.

Financial costs associated with employing wellbeing assessment strategies can also be a barrier. Although wellbeing assessments may appear to be expensive, research has shown that every dollar invested in comprehensive employee wellbeing programmes will approximately return five dollars US (Rath & Harter, 2010). Therefore, although there may be short-term costs associated with wellbeing assessment, there are certainly long-term benefits.

Another issue comes with the bidirectionality of some wellbeing outcomes the most common of which are engagement and job satisfaction. These domains can be treated as both outcome and predictor variables. For example, job satisfaction has been shown to predict burnout, turnover, delayed return to work, organisational citizenship, and performance (Froom, Melamed, Nativ, Gofer, & Froom, 2001; Kalliath & Morris, 2002; Van Dick et al., 2004; Williams & Anderson, 1991; Wright & Cropanzano, 2000). On the other hand, skill

variety, role ambiguity, pay satisfaction, managerial support, and training and development opportunities all predict job satisfaction (Glisson & Durick, 1988; Krueger et al., 2002). Similarly, engagement predicts job performance, intention to leave, financial returns, job satisfaction, organisational commitment, and organisational citizenship behaviour (Halbesleben & Wheeler, 2008; Saks, 2006; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009) while job demands, job resources, organisational support, procedural justice, and job characteristics predict engagement (Saks, 2006; Schaufeli, Bakker, & Van Rhenen, 2009). When developing a novel scale, or analysing the results of an assessment, researchers/scale developers must decide whether to treat domains such as engagement and job satisfaction as predictor or outcome variables. Establishing the direction of such domains will avoid any confusion when interpreting the results of an assessment.

The issues associated with wellbeing measurement make it difficult for organisations to accurately assess the wellbeing of their employees. With the growing interest in employee wellbeing assessment, it is imperative that comprehensive, valid, and reliable assessments are developed and used both in the positive psychological assessment literature and in practice. There is also a need for those existing assessments to undergo tests of validity and reliability. These tests can demonstrate high face validity; however, because many are comprised of both novel items and items/scales extracted from the positive psychology literature, they must be tested to ensure the items measure the same underlying construct. Once a valid assessment has been established and utilised, organisations can determine the predictors of their employee's wellbeing. Of particular interest, the predictors of employee wellbeing that organisations have to ability to change. Organisations can then use this information to tailor workplace wellbeing programmes to meet the wellbeing needs of their employees.

2.4. Conclusion

With the emergence of positive psychology, the wellbeing literature has seen an increase in the study of positive characteristics of human functioning. There has also been a move from the study of wellbeing as either eudaimonia or hedonia to an integrated view of both traditions known as flourishing.

When studying wellbeing in a workplace context, researchers/practitioners must measure general wellbeing indicators such as flourishing as well as the work-related components of wellbeing such as job satisfaction and work-related affect. These components reflect the global aspects of work-related wellbeing. Moreover, the predictors of wellbeing

must be measured so that the factors underlying the wellbeing levels in a workplace can be determined. However, at present, there are few available work-related wellbeing assessments that incorporate both global and driver measures as most measure one or the other. There is no consistent measure of work-related wellbeing that makes it difficult to select an appropriate tool for measurement. Furthermore, though there are many existing scales, human resource managers have very limited access to these scales and to the wellbeing literature. Until a consistent, reliable, valid, and accessible measure of wellbeing is developed and utilised the assessment of wellbeing in the workplace will remain haphazard.

Chapter 3. Methods

This research involves secondary analysis of a wellbeing assessment tool administered by a workplace health company.

3.1. Participants

Data consisted of 11,532 responses to the Wellbeing360™. Participants were working adults from 20 independent organisations (across nine industries) in New Zealand and Australia.

3.2. Procedures

The Wellbeing360™ questionnaire was distributed between October 2015 and October 2016 by Vitality Works, a commercial organisation who specialise in workplace health and wellbeing. Vitality Works offer the Wellbeing360™ assessment tool as one of their services to organisational clients. Most respondents are employed by clients of Vitality Works and were invited to complete the Wellbeing360™ by their employer; however, one organization is an industry association that invited their members. Participation was voluntary, and informed consent was deemed to have been given once respondents had read, signed, and dated the consent form. Participants were also invited to give consent for the use of their anonymous data in academic research (see Appendix 1). Data were provided to the researcher by Vitality Works in the form of an anonymised excel spreadsheet. Ethics approval was granted by Auckland University of Technology Ethics Committee on 27 September 2016 (AUTEK Reference number 16/179).

3.3. Measures

The Wellbeing360™ is a wellbeing assessment tool that was developed by a team of wellbeing experts (Dr Aaron Jarden, Dr Louise Schofield, Liam Scopes, Sarah Harmer, and Melanie Gibson) over the past ten years. The tool is currently used by Vitality Works to assess and inform organisations of the state of their employee's wellbeing. The questionnaire consists of 116 items and measures wellbeing variables (e.g., life satisfaction, resilience, and flourishing), health and lifestyle variables (e.g., physical activity, nutrition, cigarette and alcohol consumption, body mass index, and sleep) and socio-demographic variables (e.g., age, gender, country of birth). The specific variables of interest for this study concerned work-related wellbeing, resilience, flourishing, depression, anxiety, stress, age, gender, and country of birth.

3.3.1. Work-related wellbeing

The Wellbeing360™ contains 27 items related to work-related wellbeing; however, for the purposes of scale development, only the items containing 5 response levels (20 items total) were retained for analysis. Many items were drawn from existing scales (Items 1-3, 6-13, and 15-18) and measure a variety of wellbeing domains such as engagement, strengths use, job resources, job demands, meaning, relatedness, autonomy, and competence (shown in Table 3). Other items were developed by Vitality Works (Items 4, 5, 14, 19, and 20) and are informed by self-determination theory and the J D-R model literature. Items 1 to 13 are answered using a 5-point Likert scale which ranges from “Strongly Disagree” to “Strongly Agree”. Item 14 is answered using a 5-point Likert scale which ranges from “Very Dissatisfied” to “Very Satisfied”. Items 15 to 18 are negatively worded and as such are reverse coded. These items are answered using a 5-point Likert scale which ranges from “All of the time” to “Never”.

Selecting “Strongly Disagree”, “Very Dissatisfied”, and “All of the time” reflects a score of one for the item and selecting “Strongly Agree”, “Very Satisfied”, and “Never” reflects a score of five for the item. Therefore, the minimum overall score is 20 and the maximum overall score is 100. High scores represent respondents who are thriving in the workplace. Low scores represent respondents with low work-related wellbeing.

Table 3 *Work-related Wellbeing Items*

| No. | Item | Domain | Scale/Model | Author |
|-----|---|---------------|---|---------------------------|
| 1 | I am enthusiastic about my job | Engagement | Utrecht Work Engagement Scale | (Schaufeli et al., 2006) |
| 2 | I am regularly able to do what I do best | Strengths Use | Strengths Use and Knowledge Scale/Self-Determination Theory | (Govindji & Linley, 2007) |
| | | | Work and Wellbeing | |
| 3 | I am appreciated for the work that I do | Job resources | Assessment/Job Demands-Resources model | (Juniper et al., 2009) |
| 4 | I leave work feeling like I have done a good day's work | Competence | Self-Determination Theory | Original |
| 5 | I am able to detach from work when I am not there | Job demands | Job Demands-Resources model | Original |
| 6 | The job I do makes a meaningful contribution | Meaning | The Work and Meaning Inventory | (Steger et al., 2012) |
| | | | Work and Wellbeing | |
| 7 | My work provides me with opportunities to grow and learn | Job resources | Assessment/Job Demands-Resources model | (Juniper et al., 2009) |
| 8 | My supervisor cares about my wellbeing | Job resources | Gallup Workplace Audit/Job Demands-Resources model | (Harter et al., 2003) |
| 9 | I have the resources (equipment, tools, and supplies) to do my job well | Job resources | Gallup Workplace Audit/Job Demands-Resources model | (Harter et al., 2003) |

| | | | | |
|----|--|---------------|--|-------------------------------|
| 10 | I am satisfied with my workplace relationships | Relatedness | Work-related Basic Need Satisfaction Scale/Self-Determination Theory | (Van den Broeck et al., 2010) |
| 11 | There is someone at work who is one of my closest friends | Relatedness | Gallup Workplace Audit/Self-Determination Theory | (Harter et al., 2003) |
| 12 | I have control over the important aspects of my job | Autonomy | Job Content Questionnaire/Self-Determination Theory | (Karasek, 1985) |
| 13 | In the past seven days, I have done my best to be fully engaged at work | Engagement | Utrecht Work Engagement Scale | (Schaufeli et al., 2006) |
| 14 | Overall, how satisfied are you with the balance between your work and other aspects of your life such as time with your family or leisure | Job demands | Job Demands-Resources model | Original |
| 15 | Felt future career prospects at your company were limited | Job resources | Work and Wellbeing Assessment/Job Demands-Resources model | (Juniper et al., 2009) |
| 16 | Do you regularly have to let down friends and family owing to job demands and/or are unable to pursue leisure interests, e.g. sports and hobbies due to work commitments | Job demands | Work and Wellbeing Assessment/Job Demands-Resources model | (Juniper et al., 2009) |

| | | | | |
|----|--|-------------|--|------------------------|
| 17 | Been unable to find time during the working day to eat a regular, healthy diet | Job demands | Work and Wellbeing Assessment Job Demands-Resources model | (Juniper et al., 2009) |
| 18 | Had to regularly work extended hours, e.g. early mornings and/or late evenings | Job demands | Work and Wellbeing Assessment Job Demands-Resources model | (Juniper et al., 2009) |
| 19 | Felt that you are part of the team | Relatedness | Self-Determination Theory | Original |
| 20 | Felt that you provided great service to your customers | Competence | Self-Determination Theory | Original |

3.3.2. The Brief Resilience Scale

The Brief Resilience Scale was developed by Smith et al. (2008) in order to assess one's ability to recover from stress. The scale was tested using four samples. One sample consisted of 128 undergraduate students, another consisted of 64 undergraduate students, another consisted of 112 cardiac rehabilitation patients, and the final sample consisted of 50 women who were either controls or who suffered from fibromyalgia. All samples came from Albuquerque, New Mexico.

The scale consists of six items (see Appendix 2), three of which are positively worded. For example, "I tend to bounce back quickly after hard times". The remaining three items are negatively worded. For instance, "It is hard for me to snap back when something bad happens". Respondents answer statements using a 5-point Likert scale ranging from "Strongly disagree" to "Strongly agree". Selecting "Strongly disagree" reflects a score of one for the item and selecting "Strongly agree" reflects a score of five for the item. To determine an overall score, items 2, 4, and 6 (negatively worded items) are reverse coded before calculating the mean of the six items. Respondents' overall scores range from 1.0 to 5.0. High scores represent individuals that demonstrate greater ability to bounce back from stress, and low scores represent individuals that find it harder to recover from stress.

Smith et al. (2008) tested the psychometric properties of the scale and found the scale to be both reliable and valid. Two of the samples were given the test twice to assess test-retest reliability. The first sample had an Intraclass correlation coefficient (ICC) of 0.69 and the second sample had an ICC of 0.62 demonstrating the temporal stability of the scale. Internal consistency was also good with alpha levels ranging from 0.80 to 0.91 across all four samples. The scale also demonstrated both convergent and discriminant validity through positive correlations with optimism, purpose in life, and other resilience measures, and negative correlations with pessimism and alexithymia. Factor analysis confirmed the 1-factor structure of the scale (Smith et al., 2008).

3.3.3. The Flourishing Scale

The Flourishing Scale was developed by Diener et al. (2010) in order to assess social-psychological prosperity and provide information which could assist or complement other commonly used SWB scales. The measure was originally designed as a 12-item scale and deemed the Psychological Wellbeing Scale, however, has now been reduced to the eight-item Flourishing Scale (see Appendix 3). The scale measures respondent's subjective success in

domains such as relationships, self-esteem, purpose and optimism. Diener et al. (2010) assessed the scales using a sample of 689 college students from six different locations.

Items of the Flourishing Scale are positively phrased. For example, “I lead a purposeful and meaningful life” and “My social relationships are supportive and rewarding”. Respondents answer all eight items using a 7-point Likert scale which ranges from “Strongly Disagree” to “Strongly Agree”. Selecting “Strongly Disagree” reflects a score of one for the item and selecting “Strongly Agree” reflects a score of seven for the item. As such, the minimum overall score is eight (“Strongly Disagree” selected for all items) and the maximum overall score is 56 (“Strongly Agree” selected for all items). High scores represent respondents who perceive high success in important domains of human functioning. Low scores represent respondents who perceive low success or improvement needed in important domains of human functioning.

The Flourishing Scale demonstrates excellent psychometric properties exhibiting both reliability and validity. Diener et al. (2010) found an alpha level of 0.87 reflecting the high internal consistency and a temporal stability level of 0.71 reflecting the scales consistency across time. The scale also showed high convergence with other similar scales such as the Satisfaction with Life Scale (Diener et al., 1985), UCLA Loneliness Scale (Russell, 1996), and the Life Orientation Test (Scheier, Carver, & Bridges, 1994). Psychometric properties of the Flourishing Scale were also tested by Hone et al. (2014) who used data from New Zealand’s Sovereign Wellbeing Index (Jarden et al., 2013). Findings from their study were consistent with that of Diener et al. (2010). Alpha levels for internal consistency were high with an ICC of 0.91. The Flourishing Scale also demonstrated strong positive correlations with single-item happiness and life satisfaction questions and strong negative correlations with Centre for Epidemiological Studies Depression Scale (Radloff, 1977) reflecting both convergent and discriminant validity. Factor analysis confirmed the 1-factor structure of the Flourishing Scale.

3.3.4. The Depression, Anxiety, Stress Scale

The Depression Anxiety Stress Scale (DASS) was developed by Lovibond and Lovibond (1995) and was originally designed as a 42-item scale consisting of three self-report measures (depression, anxiety and stress measures). The depression measure examines dysphoria, hopelessness, devaluation of life, self-deprecation, lack of involvement, anhedonia, and inertia. The anxiety measure examines autonomic arousal, skeletal muscle effects, situational

anxiety, and subjective experience of anxious affect. The stress measure examines difficulty relaxing, nervous arousal, irritability, impatience and agitation. The DASS also has a 21-item version (DASS 21) which contains seven items per measure. The DASS 21 is used within the Wellbeing360™ assessment (see Appendix 4).

The depression measure contains statements such as “I felt down-hearted and blue”. The anxiety measure contains statements such as “I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)”. The stress measure contains statements such as “I tended to over-react to situations”. Respondents rate the degree to which they have experienced the symptoms throughout the past week using a 4-point Likert scale. Responses range from zero indicating “Did not apply to me” to three indicating “Applied to me very much”. Overall scores for each measure range from zero indicating selection of “Did not apply to me” for all statements, to 21 indicating selection of “Applied to me very much” for all seven items. Overall scores for the scale (all three measures) range from zero to 63.

High scores for the depression measure reflect individuals with characteristics such as blue, low-spirited, self-disparaging and pessimistic. These individuals also feel that their life has little or no meaning, are uninvolved and find it difficult to experience joy and satisfaction. High scores for the anxiety measure reflect individuals who are worried, nervous, and shaky. They also have difficulty breathing, experience dryness of the mouth, frequent heart pounding, and sweaty palms. High scores for the stress measure reflect individuals who are often tense, easily upset, and find it difficult to relax. The individuals are also easily startled and do not welcome interruption or delay. Low scores for the overall scale reflect individuals who cope well under the pressures of work and life. On the other hand, high scores for the overall scale reflect individuals who struggle to cope with life pressures and who may benefit from seeking professional advice.

The psychometric properties of the DASS 21 have been tested by Henry and Crawford (2005). Their findings suggest that the DASS 21 demonstrates both reliability and validity. The three sub-measures all demonstrated internal consistency with alpha scores of 0.82 (depression), 0.90 (anxiety), and 0.93 (stress). Alpha level for the overall scale was 0.88. The DASS 21 also demonstrated both convergent and discriminant validity when compared to other validated measures of depression and anxiety such as the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983), and the Personal Disturbance Scale (Bedford &

Foulds, 1978). Factor analysis was also performed confirming the expected 3-factor structure of the scale.

3.3.5. Demographics

Age is one of the independent continuous control variables (ranging from 18 years to 83 years). *Gender* is one of the independent control variables. Males were coded 1, females were coded 2, gender diverse was coded 3, and unspecified was coded 4. *Country of birth* was one of the independent control variables. This variable determined whether participants were born in New Zealand or Australia or born in other countries. Participants born in New Zealand and Australia were coded as 1 and participants born in other countries were coded as 0. (All demographic items were used in Paper 2).

3.3.6. Other items

The Wellbeing360™ consists of many other items that were not used in these studies. Other items include demographic information (weight, height, country of birth, date of birth, pregnancy status), physical wellbeing information (exercise, nutrition, alcohol, caffeine, and cigarette consumption, sleep, personal and family medical history, blood pressure, blood glucose level, and cholesterol ratio) and financial wellbeing information. These items were drawn from a variety of sources and have been untested for validity and reliability.

3.4. Analysis

Data were imported from the Excel spreadsheet into the Statistical Package for the Social Sciences (version 22; Chicago: SPSS Inc.). The level of significance was set at alpha level 0.05. A brief outline of the statistical analyses used in each paper follows. For a more in-depth discussion of the statistical techniques used see 4.2.4. and 5.2.4..

3.4.1. Determining the structure of the work-related items

Exploratory Factor Analysis (EFA) was used to determine whether the work-related items measured the same underlying construct. Redundant items were removed from the analysis and the resulting scales (factors) were tested for internal consistency using a Cronbach's alpha coefficient (above 0.70 was considered sufficient). The construct validities of the scales were also evaluated with the DASS21, the Flourishing Scale, and the Brief Resilience Scale. Convergent and discriminant validity were determined using Pearson's correlation coefficient.

3.4.2. Determining the predictors of high work-related affect

The resulting factors from the EFA included Work-related Affect, Job Resources, and Job Demands items. The prediction of high work-related affect from the set of Job Resources and Job Demands items were determined using binary logistic regression. Odds ratios were estimated for each of the predictor variables (Job Resources, Job Demands, gender, age, and country of birth).

Chapter 4. Paper 1- The factor structure of the work-related items of the Wellbeing360™ assessment

Preface

Assessing employee wellbeing is an important step toward achieving a healthy workplace. There is substantial evidence to suggest that wellbeing is associated with organisational outcomes such as absenteeism, turnover, productivity, job satisfaction, and engagement (Ahuja et al., 2007; Bakker et al., 2008; Böckerman & Ilmakunnas, 2012; Kocakulah et al., 2016). However, a literature review (Chapter 2) demonstrates that few assessments take place and those that do are typically invalid and unreliable or untested for their psychometric properties (Spence, 2015). Consequently, the measurement of wellbeing in the workplace remains haphazard (Donaldson et al., 2015; Forgeard et al., 2011; Hone, Jarden, & Schofield, 2015). Thorough testing of existing and novel assessments is needed to ensure the consistency of employee wellbeing measurement.

In this chapter, the underlying structure of work-related items within an existing and widely used assessment will be determined. Additionally, these items will be tested for validity and reliability. The findings of this study will confirm whether these work-related items measure the same underlying construct and whether any of the items are redundant. Moreover, the findings will demonstrate whether any resulting scales are valid and reliable measures of work-related wellbeing.

Abstract

Background: Employee wellbeing assessments can establish the levels and predictors of wellbeing within a workplace; however, research shows that few assessments take place and those that do can be invalid and unreliable.

Aim: The purpose of this study is to determine the structure and psychometric properties of the work-related items in the Wellbeing360™ (a widely-used workplace wellbeing tool).

Methods: Data ($N = 11,532$) were collected by Vitality Works, an organisation that specialises in workplace health and wellbeing. Data consisted of employee responses to the Wellbeing360™ with a focus on responses to work-related items. Exploratory Factor Analysis was used to determine the underlying structure of the items. The resulting factors were treated as scales and tested for internal consistency using a Cronbach's alpha coefficient (above 0.70 was considered sufficient). The construct validity of the scales was also evaluated against the Flourishing Scale, the Resilience Scale, and the DASS21 sub-scales. Convergent and discriminant validity was determined using Pearson's correlation coefficient.

Results: Of the 20 work-related items, 16 loaded onto the following three factors: Job Resources (seven items), Work-Related Affect (six items), and Job Demands (three items). The Job Resources and Work-related Affect factors had acceptable levels of internal consistency ($\alpha = 0.85$) and were deemed reliable scales. The internal consistency of the Job Demands Scale was below the acceptable level ($\alpha = 0.64$) and was, therefore, deemed an unreliable scale. The Work-related Affect Scale demonstrates some evidence of convergent validity as it is highly correlated with the Flourishing Scale ($r = 0.51$). All three scales showed some evidence of discriminant validity as they demonstrated low correlations with unrelated scales such as the Brief Resilience, Flourishing, and the Depression, Anxiety, and Stress 21 (DASS21) Scales.

Conclusions: The findings indicate that the work-related wellbeing items of the Wellbeing360™ are not unidimensional and in fact form three factors (Work-related Affect, Job Resources, and Job Demands). The Work-related Affect and Job Resources factors can be used as valid and reliable scales of work-related wellbeing. The Job Demands factor needs further refinement before use as a valid and reliable scale.

4.1. Background

Employee wellbeing assessment is a relatively new field of research that has become of increasing importance to organisations. Wellbeing has links to organisational outcomes such as absenteeism, turnover, burnout, productivity, job satisfaction, and engagement (Ahuja et al., 2007; Bakker et al., 2008; Böckerman & Ilmakunnas, 2012; Kocakulah et al., 2016). The information gained from workplace wellbeing assessments is beneficial because it offers employers an insight into the levels of employee wellbeing within their organisation and provides the information needed to develop successful wellbeing programmes. For example, workplace wellbeing assessments can establish which employees are experiencing low levels of wellbeing and what may be driving these low levels of wellbeing (Jarden & Jarden, 2017). With this information, organisations can develop effective wellbeing programmes that increase the wellbeing of their employees. Increases in wellbeing will also lead to increases in productivity, job satisfaction, and engagement, and decreases in absenteeism, burnout, and turnover.

In order to comprehensively capture employee wellbeing, workplace wellbeing assessments should measure both global and evaluative information as well as the predictors of wellbeing (Jarden & Jarden, 2017). Global measures establish the level of wellbeing within an organisation whereas driver measures evaluate the factors that contribute to the level of wellbeing within an organisation. The Warwick-Edinburgh Mental Wellbeing Scale (Tennant et al., 2007) is one known global measure of wellbeing, whereas the Brief Resilience Scale (Smith et al., 2008) is a measure of the predictors of wellbeing. Ideally, workplace wellbeing assessments will include a battery of these global and driver measures of wellbeing. This allows organisations to see both the level of wellbeing within their organisation and determine the factors that contribute to that level of wellbeing.

The current problem with work-related wellbeing assessment is that the development of surveys in practice can be haphazard (Donaldson et al., 2015; Forgeard et al., 2011; Hone, Jarden, & Schofield, 2015). Research suggests that minimal employee wellbeing assessment takes place and assessments that do take place are typically invalid and unreliable (Spence, 2015). Many of the assessments that do exist generally ask few questions, are limited due to their small scale and do not measure wellbeing as a multidimensional concept (Diener et al., 2015; Hone, Jarden, & Schofield, 2015). As mentioned, work-related wellbeing assessments will ideally measure both global and evaluative information as well as the predictors of work-related wellbeing; however, most of the current assessments measure one or the other.

Additionally, many work-related wellbeing assessments are not founded on any theoretical models and may, therefore, consist of randomly sourced items from the positive psychology literature that have been adapted to capture employee wellbeing (Parker & Hyett, 2011). This may be attributed to the differing goals and practices used in businesses compared to academics. For example, businesses may favour efficiency (development and use of a psychological test in a timely manner) over rigorous reliability and validity tests. Furthermore, although there are many work-related wellbeing assessments available throughout the positive psychology literature, human resource managers have restricted access to such literature. Consequently, these managers must rely on resources provided by government agencies such as Worksafe New Zealand or organisations who specialise in the assessment of wellbeing in the workplace.

Vitality Works is one such organisation that specialises in the assessment and promotion of wellbeing in the workplace. They have developed their own wellbeing assessment called the Wellbeing360™ that has already been widely used in New Zealand and Australia. The assessment consists of both general and work-related measures of wellbeing and contains both global and driver items. The assessment is not based on any theoretical model and the items have been drawn from various sources. Items within the assessment have been grouped into different domains of wellbeing; however, the focus of this thesis will be on the items within the work domain. Because the work-related wellbeing items have been drawn from various sources, it is unknown whether the items are valid, reliable, and measure the same underlying construct.

The aim of this paper will be to determine whether the work-related items of the Wellbeing360™ are unidimensional and to test their internal consistency and construct validity. The structure of the items will demonstrate whether the items measure the same underlying construct and whether any of the items are redundant. What this study adds to wellbeing assessment practice is the validation of items within a popular wellbeing assessment tool. Validation of the work-related items will allow organisations to determine (with confidence) the overall level of work-related wellbeing in their workplace so they can make an informed decision about whether they need to invest in prevention and intervention strategies such as workplace wellbeing programmes.

4.2. Methods

4.2.1. Participants

Data consisted of 11,532 responses to the Wellbeing360™. Participants were working adults from 20 independent organisations (across nine industries) in New Zealand and Australia.

4.2.2. Procedures

Data were collected between October 2015 and October 2016 by Vitality Works, an organisation that specialises in measuring and promoting health and wellbeing in the workplace. Most respondents are employed by clients of Vitality Works and were invited to complete the Wellbeing360™ by their employer; however, one organisation is an industry association that invited their members. Participation was voluntary, and informed consent was deemed to have been given once respondents had read, signed, and dated the consent form. Participants were also invited to give consent for the use of their anonymous data in academic research (see Appendix 1). Data were provided by Vitality Works in the form of an anonymised excel spreadsheet. Ethics approval was granted by Auckland University of Technology Ethics Committee on 27 September 2016 (AUTEC Reference number 16/179).

4.2.3. Measures

The Wellbeing360™ is a wellbeing assessment tool that was developed by a team of wellbeing experts from Vitality Works and academic institutions over the past ten years. The tool is used by Vitality Works to assess the state of wellbeing in various organisations. The Wellbeing360™ was designed to inform organisations about the wellbeing of their employees to identify areas for intervention and monitor the effectiveness of workplace wellbeing programmes. The web-based survey consists of 116 items that capture wellbeing (e.g. life satisfaction, resilience, and flourishing), health and lifestyle (e.g. physical activity, nutrition, cigarette and alcohol consumption, body mass index, and sleep) and socio-demographic factors (e.g. age, gender, country of birth). The specific variables of interest for this study concerned work-related wellbeing (20 items), resilience (six items), flourishing (eight items), depression (seven items), anxiety (seven items), and stress (seven items).

Work-related wellbeing

The Wellbeing360™ contains 27 items related to work-related wellbeing; however, for the purposes of scale development, only the items containing five response levels (20 items total) were retained for analysis. Many items were drawn from existing scales (Items 1-3, 6-13, and 15-18) and measure a variety of wellbeing domains such as engagement, strengths use, job

resources, job demands, meaning, relatedness, autonomy, and competence (shown in Table 4). Other items were developed by Vitality Works (Items 4, 5, 14, 19, and 20) and are informed by self-determination theory and the J D-R model.

Items 1 to 13 are answered using a 5-point Likert scale which ranges from “Strongly Disagree” to “Strongly Agree”. Item 14 is answered using a 5-point Likert scale which ranges from “Very Dissatisfied” to “Very Satisfied”. Items 15 to 18 are negatively worded and as such are reverse coded. These items are answered using a 5-point Likert scale which ranges from “All of the time” to “Never”. Selecting “Strongly Disagree”, “Very Dissatisfied”, and “All of the time” reflects a score of one for the item and selecting “Strongly Agree”, “Very Satisfied”, and “Never” reflects a score of five for the item. Therefore, the minimum overall score is 20 and the maximum overall score is 100. High scores represent respondents who are thriving in the workplace. Low scores represent respondents with low work-related wellbeing.

Table 4 *Work-related Wellbeing Items*

| No. | Item | Domain | Scale/Model | Author |
|-----|---|---------------|---|---------------------------|
| 1 | I am enthusiastic about my job | Engagement | Utrecht Work Engagement Scale | (Schaufeli et al., 2006) |
| 2 | I am regularly able to do what I do best | Strengths Use | Strengths Use and Knowledge Scale/Self-Determination Theory | (Govindji & Linley, 2007) |
| 3 | I am appreciated for the work that I do | Job resources | Work and Wellbeing Assessment/Job Demands-Resources model | (Juniper et al., 2009) |
| 4 | I leave work feeling like I have done a good day's work | Competence | Self-Determination Theory | Original |
| 5 | I am able to detach from work when I am not there | Job demands | Job Demands-Resources model | Original |
| 6 | The job I do makes a meaningful contribution | Meaning | The Work and Meaning Inventory | (Steger et al., 2012) |
| 7 | My work provides me with opportunities to grow and learn | Job resources | Work and Wellbeing Assessment/Job Demands-Resources model | (Juniper et al., 2009) |
| 8 | My supervisor cares about my wellbeing | Job resources | Gallup Workplace Audit/Job Demands-Resources model | (Harter et al., 2003) |
| 9 | I have the resources (equipment, tools, and supplies) to do my job well | Job resources | Gallup Workplace Audit/Job Demands-Resources model | (Harter et al., 2003) |

| | | | | |
|----|--|---------------|--|-------------------------------|
| 10 | I am satisfied with my workplace relationships | Relatedness | Work-related Basic Need Satisfaction Scale/Self-Determination Theory | (Van den Broeck et al., 2010) |
| 11 | There is someone at work who is one of my closest friends | Relatedness | Gallup Workplace Audit/Self-Determination Theory | (Harter et al., 2003) |
| 12 | I have control over the important aspects of my job | Autonomy | Job Content Questionnaire/Self-Determination Theory | (Karasek, 1985) |
| 13 | In the past seven days, I have done my best to be fully engaged at work | Engagement | Utrecht Work Engagement Scale | (Schaufeli et al., 2006) |
| 14 | Overall, how satisfied are you with the balance between your work and other aspects of your life such as time with your family or leisure | Job demands | Job Demands-Resources model | Original |
| 15 | Felt future career prospects at your company were limited | Job resources | Work and Wellbeing Assessment/ Job Demands-Resources model | (Juniper et al., 2009) |
| 16 | Do you regularly have to let down friends and family owing to job demands and/or are unable to pursue leisure interests, e.g. sports and hobbies due to work commitments | Job demands | Work and Wellbeing Assessment/ Job Demands-Resources model | (Juniper et al., 2009) |
| 17 | Been unable to find time during the working day to eat a regular, healthy diet | Job demands | Work and Wellbeing Assessment Job Demands-Resources model | (Juniper et al., 2009) |

| | | | | |
|----|--|-------------|---|------------------------|
| 18 | Had to regularly work extended hours, e.g. early mornings and/or late evenings | Job demands | Work and Wellbeing Assessment Job Demands-Resources model | (Juniper et al., 2009) |
| 19 | Felt that you are part of the team | Relatedness | Self-Determination Theory | Original |
| 20 | Felt that you provided great service to your customers | Competence | Self-Determination Theory | Original |

Resilience

Resilience was measured using The Brief Resilience Scale (Smith et al., 2008) which assesses an individual's ability to recover from stress. The scale consists of six statements such as "I tend to bounce back quickly after hard times" and "I have a hard time making it through stressful events" (see Appendix 2). The three negative statements were reverse coded for scoring purposes. Respondents answer using a 5-point Likert scale ranging from "Strongly disagree" to "Strongly agree". High scores on this scale represent individuals that demonstrate greater ability to bounce back from stress, and low scores represent individuals that find it harder to recover from stress. The internal consistency of the scale ranges from 0.80 to 0.91 (Smith et al., 2008).

Flourishing

Flourishing was measured using The Flourishing Scale (Diener et al., 2010). This scale assesses respondent's subjective success in domains such as relationships, self-esteem, purpose and optimism using eight items such as "I lead a purposeful and meaningful life" (see Appendix 3). Respondents answer using a 7-point Likert scale which ranges from "Strong Disagreement" to "Strong Agreement". High scores represent respondents who perceive high success in important domains of human functioning. Low scores represent respondents who perceive low success or improvement needed in important domains of human functioning. The internal consistency of the scale ranges from 0.87 to 0.91 (Diener et al., 2010; Hone et al., 2014).

Depression, Anxiety, Stress

Depression, Anxiety, and Stress were measured using the DASS-21 (Lovibond & Lovibond, 1995), which was originally designed as a 42-item, however, has since been developed into a 21 item scale with three sub-scales. The depression sub-scale contains seven items such as "I felt down-hearted and blue". The anxiety sub-scale contains seven items such as "I tended to over-react to situations. The stress sub-scale contains seven items such as "I tended to over-react to situations" (see Appendix 4). Respondents rate the degree to which they have experienced the symptoms throughout the past week using a 4-point Likert scale. Responses range from "0" indicating "Did not apply to me" to "3" indicating "Applied to me very much". Low scores for the overall scale reflect individuals who cope well under the pressures of work and life. High scores for the overall scale reflect individuals who struggle to cope with life pressures and who may benefit from seeking professional advice. The three sub-

measures all demonstrate internal consistency with alpha scores of 0.82 (depression), 0.90 (anxiety), and 0.93 (stress). Alpha level for the overall scale is 0.88 (Henry & Crawford, 2005).

4.2.4. Analysis

Data were imported from the Excel spreadsheet into the Statistical Package for the Social Sciences (version 22; Chicago: SPSS Inc.). Exploratory Factor Analysis (EFA) was used to test the unidimensionality of the work-related items. Before analysis, data were screened for possible violations of EFA assumptions. The sample size needed to be more than 150 respondents with at least five cases for each variable. A spot check of several combinations of variables was also conducted to check for linearity (Tabachnick & Fidell, 2014). If there was evidence to suggest curvilinear relationships between variables, data were deemed unsuitable for factor analysis. Due to the large sample size, skewness and kurtosis will not have a significant effect on the analysis (Tabachnick & Fidell, 2014). Data were also screened for missing data and outliers.

Factorability was checked through inspection of the correlation matrix for correlations above 0.30. If there were few correlations above 0.30, data were considered unsuitable for factor analysis. Bartlett's test of sphericity was checked for significance and the Kaiser-Meyer-Olkin statistic was checked for a value above 0.60. If Bartlett's test was non-significant and/or the Kaiser-Meyer-Olkin statistic was below 0.60, data were deemed unsuitable for factor analysis. After data were screened for assumption violations, the analysis was then carried out in three steps.

The first step involved performing an EFA on the 20 work-related items to determine their underlying structure. EFA analyses shared variance and thus evades the inflation of estimates of accounted variance (Osborne & Costello, 2009). The preferred method of extraction for EFA is maximum likelihood estimation (Fabrigar, Wegener, MacCallum, & Strahan, 1999); however, data severely violated the assumption of normality. Principal axis factoring using oblimin rotation was, therefore, used as the extraction method as it does not make distributional assumptions (Cunningham, 2008). The number of factors chosen to extract was determined using the Kaiser criterion (Kaiser, 1974), the scree test (Cattell, 1966), and parallel analysis (Watkins, 2000). Items with communalities values below 0.3 were removed from the analysis and items with coefficients above 0.3 in the structure matrix were considered to load strongly onto a component (Pallant, 2013).

Step two involved the construction of scales based on the number of factors that were extracted during EFA. Composite scores were computed and the internal reliability of the scales was determined by a Cronbach's alpha coefficient using 0.70 as the criterion (Pallant, 2013). Scales with Cronbach's alpha level below 0.70 were deemed unreliable.

Step three involved examining the convergent and discriminant validity of any resulting scales against related and unrelated wellbeing scales (the Flourishing Scale, the Brief Resilience Scale, and the DASS21 Depression, Anxiety, and Stress sub-scales). Convergent and discriminant validity were assessed using Pearson's correlation coefficient. Correlations between 0.10 and 0.29 were considered small, correlations between 0.30 and 0.49 were considered medium, and correlations 0.50 and above were considered large (J. Cohen, 1988).

4.3. Results

4.3.1. Participants

Participant demographic information is presented in Table 5. Data consisted of 11,532 participants 51.40% of which were female. Participants were aged between 18 and 83 with a mean age of 41.20 years. Participants were also born in a wide range of countries with 65.70% of participants were born in either New Zealand or Australia and the remaining participants born in Pacific Island, Asian, Middle Eastern, African, American, European and other countries. Participants worked in nine different industries with the majority working in transport, postal and warehousing (37.70%) and public administration and safety (31.70%) industries.

Table 5 *Demographic Information (N = 11,532)*

| Demographic | | All Participants | |
|---------------|---|-------------------|-------|
| | | No. | % |
| Gender | Male | 5,594 | 48.60 |
| | Female | 5,914 | 51.40 |
| | Unspecified | 24 | 0.10 |
| | Diverse | 0 | 0.00 |
| Age | Under 20 | 58 | 0.50 |
| | 20-29 years | 2,187 | 19.00 |
| | 30-39 years | 2,910 | 25.20 |
| | 40-49 years | 3,010 | 26.10 |
| | 50-59 years | 2,288 | 19.80 |
| | 60-69 years | 890 | 7.70 |
| | 70 and over | 60 | 0.50 |
| | Mean (SD) | 41.2 (12.9) years | |
| Birth country | NZ/Australia | 7,572 | 65.70 |
| | Pacific Islands | 354 | 3.10 |
| | Asia | 1,128 | 9.80 |
| | Middle East | 61 | 0.50 |
| | Africa | 360 | 3.10 |
| | America | 281 | 2.40 |
| | Europe | 1,514 | 13.10 |
| | Other | 262 | 2.30 |
| Job industry | Mining | 498 | 4.30 |
| | Electricity, gas, water, and waste services | 1,050 | 9.10 |
| | Construction | 31 | 0.30 |
| | Transport, postal and warehousing | 4,348 | 37.70 |
| | Financial and insurance services | 46 | 0.40 |
| | Professional, scientific and technical services | 1,416 | 12.30 |
| | Public administration and safety | 3,656 | 31.70 |
| | Education and training | 26 | 0.20 |
| | Health care and social assistance | 461 | 4.00 |

4.3.2. Exploratory Factor Analysis

Data were screened for violations of EFA assumptions. There were no concerning outliers and the data contained no missing values with each variable having 11,532 cases. A spot check of several combinations of variables revealed no evidence of curvilinear relationships. The correlation matrix showed that 19 of the 20 items correlated at least 0.3 with at least one other item (see Table 6). The Kaiser-Meyer-Olkin value was 0.92 which is above the recommended value of 0.6 (Kaiser, 1974). Bartlett's test of sphericity, $\chi^2(190) = 79,834, p < 0.01$, indicated that the correlations between items were sufficient for EFA (Bartlett, 1954). Four of the communalities, however, were below 0.3 (see Table 7) which suggests that these four items shared little to no common variance with the other items. These items were, therefore, removed from the analysis leaving 16 items total. After removing these items, the correlation matrix showed that all 16 items correlated at least 0.3 with at least one other item. The Kaiser-Meyer-Olkin value was 0.92 and Bartlett's test of sphericity was significant, $\chi^2(120) = 70,712, p < 0.01$. EFA was, therefore, deemed suitable for the remaining 16 items.

EFA using principal axis factoring established three components with eigenvalues greater than one and the scree plot demonstrated a break after the third component. Parallel analysis was performed using Monte Carlo parallel analysis (Mooney, 1997). The programme computed a random data matrix which revealed three components with criterion values less than the corresponding eigenvalues (16 variables x 2500 respondents) supporting the retention of three factors. Given the large sample size, Kaiser criterion, scree plot, and parallel analysis findings, three factors were retained for analysis. Together the three factors explain 57.06% of the variance, with Factor 1 explaining 38.11%, Factor 2 explaining 11.53% of the variance, and Factor 3 explaining 7.43% of the variance.

The rotated solution demonstrated the presence of simple structure (Thurstone, 1947) as all three factors had several strong loadings and all variables had significant loadings on a single component. Table 7 shows factor loadings after rotation. Items loading onto Factor 1 reflect Work-related Affect, items loading onto Factor 2 reflect Job Demands, and items loading onto Factor 3 reflect Job Resources. There is a strong positive correlation between Factors 1 and 3 ($r = 0.63$), a weak negative correlation between Factors 2 and 3 ($r = -.28$), and no correlation between Factors 1 and 2 ($r = -0.08$).

Table 6 *Correlation Matrix for EFA with Oblimin Rotation of Three Factor Solution of Work-Related Wellbeing Items*

| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------|------|------|------|----|----|----|----|----|----|----|----|----|
| 1. Work-life balance | 1.00 | | | | | | | | | | | | | | | | | | | |
| 2. Let down family/friends | -0.40 | 1.00 | | | | | | | | | | | | | | | | | | |
| 3. Time for diet | -0.19 | 0.30 | 1.00 | | | | | | | | | | | | | | | | | |
| 4. Extended hours | -0.28 | 0.46 | 0.36 | 1.00 | | | | | | | | | | | | | | | | |
| 5. Belonging | 0.27 | -0.09 | -0.08 | -0.06 | 1.00 | | | | | | | | | | | | | | | |
| 6. Customer service | 0.19 | -0.02 | 0.01 | 0.02 | 0.39 | 1.00 | | | | | | | | | | | | | | |
| 7. Career prospects | -0.21 | 0.09 | 0.08 | 0.06 | -0.28 | -0.12 | 1.00 | | | | | | | | | | | | | |
| 8. Job enthusiasm | 0.24 | 0.00 | 0.00 | 0.06 | 0.36 | 0.35 | -0.32 | 1.00 | | | | | | | | | | | | |
| 9. Able to do best | 0.24 | -0.03 | -0.02 | 0.02 | 0.34 | 0.43 | -0.25 | 0.62 | 1.00 | | | | | | | | | | | |
| 10. Appreciation | 0.28 | -0.16 | -0.12 | -0.12 | 0.43 | 0.24 | -0.36 | 0.45 | 0.45 | 1.00 | | | | | | | | | | |
| 11. Good day's work | 0.26 | -0.03 | -0.02 | 0.01 | 0.35 | 0.46 | -0.24 | 0.58 | 0.61 | 0.43 | 1.00 | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|-------------|--------------|--------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|------|
| 12. Detachment | 0.33 | -0.23 | -0.15 | -0.28 | 0.16 | 0.13 | -0.08 | 0.12 | 0.17 | 0.18 | 0.21 | 1.00 | | | | | | | | |
| 13. Meaningful contribution | 0.21 | -0.05 | -0.04 | 0.00 | 0.33 | 0.38 | -0.22 | 0.53 | 0.51 | 0.41 | 0.54 | 0.19 | 1.00 | | | | | | | |
| 14. Opportunities to develop | 0.22 | -0.07 | -0.05 | -0.01 | 0.36 | 0.21 | -0.45 | 0.51 | 0.42 | 0.52 | 0.40 | 0.11 | 0.47 | 1.00 | | | | | | |
| 15. Supervisor care | 0.24 | -0.16 | -0.10 | -0.11 | 0.40 | 0.17 | -0.32 | 0.36 | 0.30 | 0.58 | 0.30 | 0.15 | 0.31 | 0.49 | 1.00 | | | | | |
| 16. Resources | 0.26 | -0.15 | -0.11 | -0.12 | 0.30 | 0.21 | -0.29 | 0.36 | 0.36 | 0.45 | 0.34 | 0.22 | 0.32 | 0.44 | 0.46 | 1.00 | | | | |
| 17. Workplace relationships | 0.29 | -0.11 | -0.09 | -0.08 | 0.49 | 0.26 | -0.29 | 0.43 | 0.41 | 0.48 | 0.40 | 0.23 | 0.39 | 0.43 | 0.47 | 0.47 | 1.00 | | | |
| 18. Closest friend | 0.11 | 0.00 | 0.03 | 0.01 | 0.20 | 0.16 | -0.07 | 0.18 | 0.19 | 0.14 | 0.18 | 0.07 | 0.18 | 0.14 | 0.14 | 0.13 | 0.27 | 1.00 | | |
| 19. Job control | 0.28 | -0.12 | -0.08 | -0.07 | 0.37 | 0.30 | -0.31 | 0.44 | 0.47 | 0.48 | 0.44 | 0.20 | 0.42 | 0.45 | 0.39 | 0.46 | 0.46 | 0.25 | 1.00 | |
| 20. Engagement | 0.15 | 0.01 | 0.00 | 0.06 | 0.26 | 0.37 | -0.19 | 0.53 | 0.47 | 0.32 | 0.53 | 0.12 | 0.46 | 0.35 | 0.25 | 0.29 | 0.36 | 0.16 | 0.37 | 1.00 |

Note. Correlations below 0.30 are bolded.

Table 7 *Pattern and Structure Matrix for EFA with Oblimin Rotation of Three Factor Solution of Work-Related Wellbeing Items*

| Item | Pattern Coefficients | | | Structure Coefficients | | | Communalities |
|--|--|----------------------------|------------------------------|--|----------------------------|------------------------------|---------------|
| | Factor 1 Work- Related Affect | Factor 2 Job Demands | Factor 3 Job Resources | Factor 1 Work- Related Affect | Factor 2 Job Demands | Factor 3 Job Resources | |
| I leave work feeling like I have done a good day's work | 0.79 | 0.03 | -0.02 | 0.79 | 0.10 | -0.51 | 0.63 |
| I am regularly able to do what I do best | 0.71 | -0.06 | -0.09 | 0.76 | 0.08 | -0.54 | 0.59 |
| In the past seven days, I have done my best to be fully engaged at work | 0.63 | -0.07 | -0.05 | 0.66 | -0.07 | -0.43 | 0.43 |
| Felt that you provided great service to your customers | 0.63 | 0.05 | 0.10 | 0.57 | 0.08 | -0.31 | 0.33 |
| I am enthusiastic about my job | 0.61 | -0.09 | -0.23 | 0.75 | 0.03 | -0.59 | 0.58 |
| The job I do makes a meaningful contribution | 0.57 | -0.01 | -0.17 | 0.68 | 0.08 | -0.52 | 0.47 |
| Do you regularly have to let down friends and family owing to job demands and/or are unable to pursue leisure interests, e.g. sports and hobbies due to work commitments | -0.03 | 0.76 | 0.02 | 0.02 | 0.75 | -0.18 | 0.57 |
| Had to regularly work extended hours, e.g. early mornings and/or late evenings | -0.10 | 0.60 | -0.01 | -0.04 | 0.59 | -0.12 | 0.36 |

| | | | | | | | |
|---|-------|-------------|--------------|------|------|-------|------|
| Overall, how satisfied are you with the balance between your work and other aspects of your life such as time with your family or leisure | 0.21 | 0.49 | -0.09 | 0.31 | 0.53 | -0.36 | 0.36 |
| My supervisor cares about my wellbeing | -0.19 | 0.01 | -0.86 | 0.35 | 0.23 | -0.74 | 0.57 |
| I am appreciated for the work that I do | 0.06 | 0.04 | -0.71 | 0.50 | 0.25 | -0.75 | 0.57 |
| My work provides me with opportunities to grow and learn | 0.13 | -0.08 | -0.63 | 0.52 | 0.11 | -0.69 | 0.49 |
| I have the resources (equipment, tools, and supplies) to do my job well | 0.05 | 0.08 | -0.58 | 0.42 | 0.25 | -0.63 | 0.40 |
| I am satisfied with my workplace relationships | 0.15 | 0.04 | -0.57 | 0.51 | 0.21 | -0.68 | 0.47 |
| I have control over the important aspects of my job | 0.28 | 0.06 | -0.43 | 0.56 | 0.21 | -0.63 | 0.44 |
| Felt that you are part of the team | 0.20 | 0.06 | -0.40 | 0.46 | 0.19 | -0.55 | 0.33 |
| I am able to detach from work when I am not there | - | - | - | - | - | - | 0.23 |
| There is someone at work who is one of my closest friends | - | - | - | - | - | - | 0.12 |
| Felt future career prospects at your company were limited | - | - | - | - | - | - | 0.27 |
| Been unable to find time during the working day to eat a regular, healthy diet | - | - | - | - | - | - | 0.21 |

Note. Major loadings for each item are bolded. Items containing (-) were deleted.

4.3.3. Internal consistency

The descriptive statistics for the scales are reported in Table 8. With the exception of Job Demands (Factor 2), all of the factors have Cronbach's alpha levels above the recommended level of 0.70 (Nunnally, 1978). Additionally, all of the sample means are comparable to corresponding international population means (Brief Resilience Scale (Smith et al., 2008), Flourishing Scale (Diener et al., 2010), and Depression, Anxiety, and Stress sub-scales (Henry & Crawford, 2005)).

Table 8 *Descriptive Statistics for the Scales (N = 11,532)*

| Scale | No. of items | Sample <i>M</i> (<i>SD</i>) | Population <i>M</i> (<i>SD</i>) | Cronbach's α (95% CI) |
|--------------------------------|--------------|-------------------------------|-----------------------------------|------------------------------|
| Work-Related Affect (Factor 1) | 6 | 23.97 (3.65) | - | 0.85 (0.85, 0.86) |
| Job Demands (Factor 2) | 3 | 10.65 (2.51) | - | 0.64 (0.63, 0.65) |
| Job Resources (Factor 3) | 7 | 26.52 (4.62) | - | 0.85 (0.84, 0.85) |
| Resilience | 6 | 3.64 (0.70) | 3.5 (0.68) | 0.84 (0.84, 0.89) |
| Flourishing | 8 | 47.56 (5.85) | 44.97 (6.56) | 0.87 (0.87, 0.87) |
| Depression | 7 | 2.73 (3.24) | 2.83 (3.87) | 0.88 (0.88, 0.88) |
| Anxiety | 7 | 1.96 (2.36) | 1.88 (2.95) | 0.73 (0.72, 0.74) |
| Stress | 7 | 4.25 (3.36) | 4.73 (4.20) | 0.84 (0.83, 0.84) |

Note. Population means were sourced for: Brief Resilience Scale (Smith et al., 2008), Flourishing Scale (Diener et al., 2010), and Depression, Anxiety, and Stress Scales (Henry & Crawford, 2005).

4.3.4. Validity

Construct validity results are presented in Table 9. Convergent validity could only be evaluated for the Work-related Affect scale due to a lack of comparative scales. Discriminant validity was evaluated for all three scales.

The Work-related Affect Scale shows evidence of convergent validity as it is highly correlated with the Flourishing Scale ($r = 0.51$). With respect to discriminant validity, the results were more varied with evidence of both small and medium correlations between scales. The Work-related Affect Scale demonstrates a positive medium correlation with the Brief Resilience Scale ($r = 0.31$), a negative medium correlation with the Depression sub-scale ($r = -0.38$) and small negative correlations with the Anxiety ($r = -0.20$) and Stress sub-scales ($r = -0.29$).

The Job Demands Scale demonstrated good evidence of discriminant validity. The Job Demands Scale demonstrates positive small correlations with the Brief Resilience ($r = 0.12$) and Flourishing Scales ($r = 0.19$), and negative small correlations with the Depression ($r = -0.20$), Anxiety ($r = -0.16$) and Stress sub-scales ($r = -0.28$).

The Job Resources Scale shows some evidence of discriminant validity; however, the results were varied with evidence of both small and medium correlations between scales. The Job Resources Scale demonstrates a positive medium correlation with the Flourishing Scale ($r = 0.44$), a positive small correlation with the Brief Resilience Scale ($r = 0.28$), negative medium correlations with the Depression ($r = -0.36$) and Stress sub-scales ($r = -0.30$) and a negative small correlation with the Anxiety sub-scale ($r = -0.20$).

Table 9 *Correlations Between the Scales (Work-related Affect, Job Resources, and Job Demands) and Existing Scales (Brief Resilience, Flourishing, Depression, Anxiety, and Stress).*

| Scales | Existing Scales | Pearson Correlation Coefficient (r) | Strength of Correlation |
|---------------------|--------------------------|---|-------------------------|
| Work-related Affect | Flourishing [†] | 0.51 | Large |
| | Resilience [∞] | 0.31 | Medium |
| | Depression [∞] | -0.38 | Medium |
| | Anxiety [∞] | -0.20 | Small |
| | Stress [∞] | -0.29 | Small |
| Job Demands | Flourishing [∞] | 0.19 | Small |
| | Resilience [∞] | 0.12 | Small |
| | Depression [∞] | -0.20 | Small |
| | Anxiety [∞] | -0.16 | Small |
| | Stress [∞] | -0.28 | Small |
| Job Resources | Flourishing [∞] | 0.44 | Medium |
| | Resilience [∞] | 0.28 | Small |
| | Depression [∞] | -0.36 | Medium |
| | Anxiety [∞] | -0.20 | Small |
| | Stress [∞] | -0.30 | Medium |

Note. † Convergent validity; ∞ Discriminant validity. All correlations are significant at the $p < 0.01$ level.

4.4. Discussion

Overall, 16 of the 20 work-related items were deemed suitable for factor analysis. Factor analysis revealed the presence of three factors as each of the 16 items loaded strongly on one of the three extracted factors. Six of the items loaded strongly on Factor 1 (Work-Related Affect). Three of the items loaded strongly onto Factor 2 (Job Demands), and seven of the items loaded strongly onto Factor 3 (Job Resources).

The Work-related Affect factor contains items on strengths use, engagement, job meaning, job fulfilment, and job enthusiasm. Some of these items (i.e., job enthusiasm, job fulfilment) are consistent with previous measures of work-related affect such as the Job-Related Affective Wellbeing Scale (Van Katwyk et al., 2000) and the Job Affect Scale (Brief, Burke, George, Robinson, & Webster, 1988); however, the other items (i.e. strengths use, engagement, and job meaning) are more consistent with emerging conceptualisations of

work-related affect. For instance, Cropanzano and Wright (2001) argue that work-related affect can capture other work experiences regarding engagement, occupational stressors, burnout, and job satisfaction. Other researchers have measured work-related affect using a variety of scales and items that encompass job satisfaction, negative mood, job-induced tension, occupational stress, burnout and engagement (Anshel, 2000; Bateman & Organ, 1983; Stewart & Barling, 1996). As the Work-related Affect factor encompasses a range of experiences and emotions it allows for a more comprehensive view of work-related wellbeing as a multidimensional construct.

Additionally, the Work-related Affect factor demonstrates internal consistency which suggests the items within the factor can be used as a reliable scale. The factor also demonstrates evidence of convergent validity as it is highly correlated with the Flourishing Scale. This was to be expected considering both the factor and scale measure similar constructs (e.g. purpose and meaning, engagement, strengths use, and positive affect). In regards to discriminant validity, the results were somewhat varied. The Work-related Affect factor had medium correlations with the Brief Resilience Scale and the Depression sub-scale, and small correlations with the Anxiety and Stress sub-scales. To date, the Brief Resilience Scale has not been evaluated for discriminant validity so there is no comparative data. The discriminant validity of the DASS scales, however, has been evaluated with similar findings. Crawford and Henry (2003) reported that although the DASS scales possess adequate discriminant validity, the convergent validity of the DASS is more impressive. Overall, there is some evidence of discriminant validity but further testing with unrelated scales would be needed to be confident in the use of the Work-related Affect factor as a valid scale.

The three items that loaded strongly on Factor 2 (Job Demands) are consistent with previous items used to assess job demands. For example, the work-to-family conflict items from Voydanoff (2004) and the job demands items from the Job Content Questionnaire (Karasek, 1985). The items are also consistent with the JD-R (Job Demands-Resources) model which refers to job demands as “those physical, social, or organizational aspects of the job that require sustained physical and psychological (i.e., cognitive or emotional) effort, and are, therefore, associated with certain physiological and psychological costs” (Schaufeli et al., 2009, p. 894).

The items within the Job Demands factor did not demonstrate internal consistency which suggests the items cannot be used to form a reliable scale. This may be attributed to the

number of items within the factor. Scales with fewer items tend to be less reliable (Raubenheimer, 2004). There was evidence of discriminant validity as the Job Demands factor demonstrated low correlations with the Brief Resilience Scale, the Flourishing Scale, and the Depression, Anxiety, and Stress sub-scales. Further refinement of the Job Demands factor is needed before it can be used as a valid and reliable scale. As such, the three Job Demands items should be used individually in any future analyses.

The seven items that loaded onto Factor 3 (Job Resources) are also consistent with previous scales and models. For instance, the job resources items in the Healthy Organization Barometer (Lindström, Hottinen, & Bredenberg, 2000). Similarly, the JD-R model refers to job resources as the “physical, social, or organizational aspects of the job that may: (1) reduce job demands and the associated physiological and psychological costs, (2) be functional for achieving work goals, or (3) stimulate personal growth, learning, and development” (Schaufeli et al., 2009, p. 894). JD-R items include autonomy, social support, opportunities to learn, and managerial stress which are consistent with the items in Factor 3.

The Job Resources factor demonstrated internal consistency which suggests the items can be used together to form a reliable scale. The Job Resources factor also demonstrated small correlations with the Brief Resilience Scale and Anxiety sub-scale, and medium correlations with the Flourishing Scale and Depression and Stress sub-scales. These results are somewhat varied and establish some evidence of discriminant validity. Further validity testing is needed before the validity of the Job Resources factor can be confirmed.

One of the limitations of this study regards the use of EFA. Because EFA is data driven as opposed to theory driven, it can be difficult to replicate the results (Cunningham, 2008). In addition, every item loads onto each extracted factor so items that are not intended to reflect a specific factor are still specified as loading onto that factor (Matsunaga, 2015). To confirm whether the factors developed in this study did, in fact, measure their proposed constructs, they could be subjected to Confirmatory Factor Analysis in a new data set. Moreover, as the data were not collected for the purposes of this analysis, there were many constraints. For example, when measuring convergent validity, one must examine the correlations between constructs that are assessed using at least two different methods. In this study, the Flourishing Scale was used to compare the convergent validity of the Work-related Affect factor and the Job Resources factor. No comparative scale was available for testing the convergent validity of the Job Demands factor. Ideally, correlations between the three factors

and other related scales (two per factor) would be compared; however, data restriction did not allow for this. Similarly, because data were collected at a single time point, test-retest reliability could not be assessed. If the scales are to be used in future studies, researchers should evaluate the test-retest reliability of each scale to provide further evidence of scale reliability. Despite these limitations, the study provided two useful work-related wellbeing scales (Job Resources and Work-related Affect) that can be used to evaluate employee work-related wellbeing.

4.5. Conclusion

The findings indicate that the work-related wellbeing items of the Wellbeing360™ are not unidimensional and in fact form three factors (Work-related Affect, Job Resources, and Job Demands). The Work-related Affect and Job Resources factors demonstrate evidence of internal consistency and some evidence of construct validity and thus can be used as valid and reliable scales of work-related wellbeing. Further evidence of construct validity, however, should be provided before the validity of the scales can be truly established. The Job Demands factor did not demonstrate internal consistency and displays some evidence of construct validity. As such, the Job Demands factor needs further refinement before use as a valid and reliable scale.

Chapter 5. Paper 2- Determining the work-related predictors of high work-related affect

Preface

In the previous chapter, it was established that the work-related wellbeing items of the Wellbeing360™ formed three factors, two of which are widely studied predictors of wellbeing (Work Demands and Work Resources), and the other a comprehensive work-related outcome (Work-related Affect). The Job Demands-Resources (J D-R) model proposes that work resources may buffer the effects of job demands on work-related outcomes and are, therefore, considered more important predictors of employee wellbeing. What is unknown, is which job resources are the most significant predictors of work-related outcomes. The current chapter will explore which work demands and which work resources are the most significant predictors of work-related affect. Findings from this study can be used by practitioners to inform wellbeing practices, which represents a significant and unique contribution to the wellbeing literature.

Abstract

Background: Workplace wellbeing assessments measure general and work-related aspects of wellbeing. Ideally, they will also consist of both global and driver measures of wellbeing. When designing an assessment or intervention, it is important to recognise and understand what drives employee wellbeing so that necessary changes can be made to the work environment (Juniper et al., 2009). Particularly, the components of the work environment that organisations can alter.

Aim: The purpose of this paper will be to determine the most significant job resources and demands that predict work-related affect.

Methods: Data ($N = 11,532$) were collected and provided by Vitality Works, a commercial organisation who specialise in workplace health and wellbeing assessment and promotion. Data consisted of responses from New Zealand and Australian adults aged 18 years and over to the Wellbeing360™, a web-based survey designed to measure wellbeing in the workplace. The specific variables of interest for this study were Job Resources (seven items), Job Demands (three items), and Work-related Affect (seven-item scale developed in Paper 1). Binary logistic regression was used to examine the relationships between Work-related Affect and Job Resources/Demands variables. The ten Job Resources and Demands items were entered into the model as predictor variables. The dependent variable was Work-related Affect. Age, Gender, and Country of Birth were entered into the model as control variables. Odds ratios were estimated for each of the predictor variables. The level of significance was set at alpha level 0.05.

Results: After adjusting for all the variables in the model, all of the independent variables were significant predictors of high work-related affect. The most significant predictors of work-related affect were six of the seven Job Resources items (development opportunities (OR 1.82, 95% CI 1.67, 1.99), job control (OR 1.77, CI 1.63, 1.93), appreciation (OR 1.73, CI 1.57, 1.89), workplace relationships (OR 1.70, CI 1.53, 1.89), resources (OR 1.51, CI 1.39, 1.65), belonging (OR 1.43, CI 1.32, 1.54), respectively) followed by the three Job Demands items (work extended hours (OR 0.84, CI 0.80, 0.89), letting down friends/family (OR 0.84, CI 0.80, 0.90), work-life balance (OR 1.17, CI 1.10, 1.25), respectively). The seventh Job Resources item (supportive supervisor) was the weakest predictor and negatively associated with high work-related affect (OR 0.91, CI 0.83, 0.98).

Conclusions: The most significant predictors of high work-related affect were development opportunity, job control, and appreciation. As such, organisations looking to improve how employees feel toward their job should focus their attention on demonstrating genuine appreciation, increasing job control and development opportunities for their employees through methods such as job crafting.

5.1. Background

Employee wellbeing assessment regards the measurement of general and work-related wellbeing in the workplace (Page & Vella-Brodrick, 2009). With the growing interest in employee wellbeing assessment, there has been the development of many associated scales. Such scales include global and evaluative items which give an indication of the level of wellbeing within an organisation. Additionally, these scales include items that assess the predictors of general and work-related wellbeing (Jarden & Jarden, 2017). Of particular interest to organisations, is the work-related predictors of wellbeing because these are components of the workplace that organisations have the ability to change.

The most widely studied group of work-related predictors are occupational stressors because of their effects on organisational outcomes. Occupational stress is a major problem for organisations due to lost productivity, absenteeism and the cost of stress-related disability claims (Cooper & Cartwright, 1994; King, 1995). Moreover, occupational stress can have a significant impact on individuals with known links to coronary heart disease, mental collapse, job dissatisfaction, accidents, and family difficulties (Cooper & Cartwright, 1994). Some of the causes of occupational stress are factors central to the job. These factors are best understood using the job demands-resources model (J D-R) which postulates that working conditions can be divided into two categories: job demands and job resources (Demerouti et al., 2001). Job demands are aspects of the job such as work overload, emotional and physical demands, and work-life balance that require effort and can result in fatigue. Job resources are aspects of the job that encourage personal growth, learning and development, and motivation. These include factors such as autonomy, performance feedback, social support, development opportunities and support from a supervisor (Bakker & Demerouti, 2007; Bakker & Schaufeli, 2008).

The J D-R model suggests that job resources can reduce or buffer the effects of job demands on work-related outcomes (Demerouti et al., 2001). Job demands can lead to negative outcomes such as burnout; however, these types of outcomes can be reduced with

access to job resources such as managerial and social support (Bakker & Demerouti, 2007; Bakker & Schaufeli, 2008). Although the effects of job resources and job demands and work-related outcomes are well established, it is unknown which types of job resources and demands are the most significant predictors of work outcomes (e.g. work-related affect). It is necessary to understand which resources and which demands have the greatest effect on work-related wellbeing outcomes so that organisations can target the components of their workplace that will have the greatest effect on employee wellbeing.

The Wellbeing360™ is a workplace wellbeing assessment that has been developed by Vitality Works, an organisation who specialise in the assessment and promotion of wellbeing in the workplace. The Wellbeing360™ has already been widely used in New Zealand and measures work-related predictors of wellbeing such as job resources and job demands. The assessment also includes items that measure work-related affect. At present, the assessment is used to demonstrate the level of wellbeing in individual employees and what domains they may be lacking wellbeing (e.g. work domain). Though the data collected from the assessment is used to demonstrate the predictors of an individual's wellbeing, it is yet to be used to establish the overall predictors of wellbeing, particularly those work-related predictors.

Understanding the key determinants of work-related wellbeing will allow organisations to change the key aspects of their workplace that are most likely to influence their employee's wellbeing. For example, if having a supportive supervisor was deemed to be a significant predictor of work-related wellbeing, organisations could use this information to allocate resources that will help train their supervisors to be more effective leaders. Therefore, the focus of this paper will be determining the most significant work-related predictors (job demands and job resources) of work-related wellbeing.

5.2. Methods

5.2.1. Participants

Data consisted of 11,532 responses to the Wellbeing360™ wellbeing assessment tool. Participants were working adults (51.40% females) from 20 independent organisations (across nine industries) in New Zealand and Australia. Participants were aged between 18 and 83 with a mean age of 41 years.

5.2.2. Procedures

Data were collected between October 2015 and October 2016 by Vitality Works. Most respondents are employed by clients of Vitality Works and were invited to complete the

Wellbeing360™ by their employer; however, one organisation is an industry association that invited their members. Participation was voluntary, and informed consent was deemed to have been given once respondents had read, signed, and dated the consent form. Participants were also invited to give consent for the use of their anonymous data in academic research (see Appendix 1). Data were provided by Vitality Works in the form of an anonymised excel spreadsheet. Ethics approval was granted by Auckland University of Technology Ethics Committee on 27 September 2016 (AUTEK Reference number 16/179).

5.2.3. Measures

The Wellbeing360™ is a wellbeing assessment tool that was developed by a team of wellbeing experts from Vitality Works and academic institutions over the past ten years. The tool is used by Vitality Works to assess the state of wellbeing in various organisations. The Wellbeing360™ was designed to inform organisations about the wellbeing of their employees to identify areas for intervention and monitor the effectiveness of workplace wellbeing programmes. The web-based survey consists of 116 items that capture wellbeing (e.g. life satisfaction, resilience, and flourishing), health and lifestyle (e.g. physical activity, nutrition, cigarette and alcohol consumption, body mass index, and sleep) and socio-demographic factors (e.g. age, gender, country of birth). The specific variables of interest for this study were Work-related Affect (six items), Job Demands (three items), and Job Resources (seven items) all of which were determined in Paper 1.

Work-related Affect

Work-related Affect was used to represent an employee's work-related wellbeing because it incorporates how employees feel about their job, whether they are fulfilled and engaged in their work, and whether their strengths are utilised in their work. The scale consists of six items such as "I am enthusiastic about my job". These items are answered using a 5-point Likert scale which ranges from (1) "Strongly disagree" to (5) "Strongly agree" (see Appendix 5). As such, the minimum overall score is six ("Strongly disagree" selected for all six items) and the maximum overall score is 30 ("Strongly agree" selected for all items). The internal scale reliability and underlying factor structure of the six-item Work-related Affect Scale were determined in Paper 1 ($\alpha = .65$).

Job Demands

The three Job Demands items are as follows: Item one ("Overall, how satisfied are you with the balance between your work and other aspects of your life such as time with your family

or leisure”) is answered using a 5-point Likert scale which ranges from (1) “Very dissatisfied” to (5) “Very satisfied”. Item two (“Do you regularly have to let down friends and family owing to job demands and/or are unable to pursue leisure interests”) and item three (“Had to regularly work extended hours”) are answered using a 5-point Likert scale which ranges from (1) “All of the time” to (5) “Never” (see Appendix 6).

Job Resources

There were seven Job Resources items such as “I am appreciated for the work that I do”. Six of the items are answered using a 5-point Likert scale which ranges from (1) “Strongly disagree” to (5) “Strongly agree”. One of the items “Felt that you are part of the team” is answered using a 5-point Likert scale which ranges from (1) “Never” to (5) “All of the time” (see Appendix 7). As such, the minimum overall score is seven (1 selected for all items) and the maximum overall score is 35 (5 selected for all items).

Demographics

Age was one of the independent continuous control variables. The minimum age was 18 years and the maximum was 83 years. *Gender* is one of the independent control variables. Males were coded 1, females were coded 2, gender diverse was coded 3, and unspecified was coded 4. *Country of birth* was one of the independent control variables. This variable determined whether participants were born in New Zealand or Australia or born in other countries. Participants born in New Zealand and Australia were coded as 1 and participants born in other countries were coded as 0.

5.2.4. Analysis

Data were imported from the Excel spreadsheet into the Statistical Package for the Social Sciences (version 22; Chicago: SPSS Inc.). Before analysis, data were screened for possible violations of EFA assumptions. A spot check of several combinations of variables was conducted to check for linearity. If there was evidence to suggest curvilinear relationships between variables, data were deemed unsuitable for binary logistic regression (Tabachnick & Fidell, 2014). A scatterplot of standardised residuals was also checked for evidence of homogeneity of variance and linearity. Tolerance and variance inflation factor statistics were checked for evidence of multicollinearity. The Durbin-Watson statistic was used to establish the assumption of independent errors (Durbin & Watson, 1951). Data were also screened for missing data and outliers. Binary logistic regression was used to assess the impact of job resources and demands on the likelihood of experiencing good work-related affect. The

dependent variable was work-related affect. The mean and median for the scale was 24, the upper quartile was 26, and one standard deviation from the mean was 27.6. Based on these values, scores that were 27 and above were chosen to represent high work-related affect.

The seven Job Resources items and three Job Demands items were entered into the model as continuous independent/predictor variables. Age, gender, and country of birth were entered into the model as continuous independent control variables. Odds ratios were estimated for each of the predictor variables independently (unadjusted), and while holding all other variables in the model constant (fully adjusted). Variables with the highest regression coefficients were deemed the strongest predictors of high work-related affect. A *p*-value of less than 0.05 was considered statistically significant.

5.3. Results

5.3.1. Participants

Participant demographic information is presented in Table 5. Data consisted of 11,532 participants 51.40% of which were female. Participants were aged between 18 and 83 with a mean age of 41.2 years. 65.70% of participants were born in either New Zealand or Australia with the remaining participants born in Pacific Island, Asian, Middle Eastern, African, American, European and other countries. Participants worked in nine different industries with the majority working in transport, postal and warehousing (37.70%) and public administration and safety (31.70%) industries.

5.3.2. Prevalence of high work-related affect

Statistics regarding the prevalence of high work-related affect in the sample are presented in Table 10. Overall, 23.0% of the participants demonstrate high work-related affect. There is a slightly higher prevalence of high work-related affect among female employees (24.0%) compared to male employees (21.8%). Except for employees under 20 years old (23.0%), high work-related affect becomes more prevalent with age. 48.3% of 70-year-olds and over demonstrating the presence of high work-related affect compared to 17.0% of 20 to 29-year-olds. Participants born in countries other than New Zealand and Australia demonstrate a much higher prevalence of high work-related affect (44.4%) compared to those born in New Zealand and Australia (21.7%). The industry with the highest prevalence of high work-related affect was education and training with 46.2%. The industry with the lowest prevalence of high work-related affect was professional, scientific and technical services with 15.5%.

Table 10 *Prevalence of High Work-related Affect*

| Demographic | | High Affect % (95% CI) |
|------------------|---|------------------------|
| Gender | Female | 24.00 (22.91, 25.08) |
| | Male | 21.80 (20.71, 22.87) |
| Age | Under 20 | 23.00 (11.68, 33.15) |
| | 20-29 years | 17.00 (15.43, 18.58) |
| | 30-39 years | 17.90 (16.51, 19.30) |
| | 40-49 years | 23.80 (22.27, 25.31) |
| | 50-59 years | 28.70 (26.86, 30.57) |
| | 60-69 years | 34.80 (31.70, 37.96) |
| | 70 and over | 48.30 (35.69, 60.98) |
| Country of Birth | New Zealand/Australia | 21.70 (20.77, 22.63) |
| | Other | 44.40 (42.85, 45.94) |
| Industry | Mining | 18.30 (14.88, 21.67) |
| | Electricity, gas, water, and waste services | 17.80 (15.50, 20.12) |
| | Construction | 32.30 (15.80, 48.71) |
| | Transport, postal and warehousing | 27.00 (25.68, 28.32) |
| | Financial and insurance services | 23.90 (11.59, 36.24) |
| | Professional, scientific and technical services | 15.50 (13.58, 17.35) |
| | Public administration and safety | 21.70 (20.35, 23.03) |
| | Education and training | 46.20 (26.99, 65.32) |
| | Health care and social assistance | 32.10 (27.84, 36.37) |
| Total | | 23.00 (22.23, 23.76) |

5.3.3. Predictors of high work-related affect

Data were screened to determine whether any assumptions has been violated. There were no concerning outliers and the data contained no missing values with each variable having 11,532 cases. A check of several combinations of variables revealed no evidence of curvilinear relationships. The scatterplot of standardised residuals showed that the data met the assumption of homogeneity of variance and linearity. Tests regarding the assumption of collinearity indicated that multicollinearity was acceptable. The data met the assumption of independent errors (Durbin-Watson value = 1.88). Table 11 summarises the descriptive statistics for all the variables included in the analysis.

Table 11 *Descriptive Statistics for the Items and Scales (N = 11,532)*

| Domain | Item | <i>M (SD)</i> |
|--------------|--|------------------------------------|
| Work-related | Felt that you provided great service to your customers | 4.11 (0.76) |
| Affect | I am enthusiastic about my job | 3.98 (0.85) |
| | I am regularly able to do what I do best | 3.93 (0.83) |
| | I leave work feeling like I have done a good day's work | 3.85 (0.80) |
| | The job I do makes a meaningful contribution | 4.01 (0.77) |
| | In the past seven days, I have done my best to be fully engaged at work | 4.09 (0.79) |
| | Scale average | 23.97 (3.65) |
| | Job | Felt that you are part of the team |
| Resources | I am appreciated for the work that I do | 3.70 (0.92) |
| | My work provides me with opportunities to grow and learn | 3.77 (0.93) |
| | My supervisor cares about my wellbeing | 3.84 (0.97) |
| | I have the resources (equipment, tools and supplies) to do my job well | 3.77 (0.89) |
| | I am satisfied with my workplace relationships | 3.89 (0.79) |
| | I have control over the important aspects of my job | 3.53 (0.93) |
| Job Demands | Overall, how satisfied are you with the balance between your work and other aspects of your life such as time with your family or leisure | 3.53 (0.98) |
| | Do you regularly have to let down friends and family owing to job demands and/or are unable to pursue leisure interests, e.g. sports and hobbies due to work commitments | 3.68 (1.07) |
| | Had to regularly work extended hours, e.g. early mornings and/or late evenings | 3.45 (1.22) |

The full model containing all predictors was statistically significant, $\chi^2(8, N = 11,532) = 536.43, p < 0.01$, which indicates that the predictors, as a set, could differentiate between respondents who reported high work-related affect and those who did not. The model accounted for 27.0% (Cox and Snell R square) and 41.0% (Nagelkerke R squared) of the variance in work-related affect and accurately classified 85.2% of cases. Table 12 shows the unadjusted and fully adjusted odds ratios for high work-related affect for each of the work demands, work resources, and demographic variables assessed. Items are presented in order of significance (starting with the greatest predictor of high work-related affect). The unadjusted analyses suggest that there are significant associations between high work-related affect and each of the independent variables. The most significant associations are as follows. The odds of having high work-related affect were 4.44 times greater with every 1-unit increase in workplace relationships, 3.90 times greater with every 1-unit increase in appreciation, and 3.73 times greater with every 1-unit increase in job control.

In the fully adjusted model, all the independent variables remain significant predictors of high work-related affect; however, the order of significance differs. After adjusting for all other predictors in the model, the odds of having high work-related affect were 1.82 times greater with every 1-unit increase in development opportunities, 1.77 times greater with every 1-unit increase in job control, and 1.73 times greater with every 1-unit increase in appreciation. The six greatest predictors of high work-related affect (both in the unadjusted and fully adjusted models) were six of the seven Job Resources items. The weakest predictors in the model were age and having a supportive supervisor (the seventh Job Resources item). After adjusting for all other predictors in the model, the odds of having high work-related affect were 1.03 times greater with every 1-unit increase in age. Supportive supervision was negatively associated with high work-related affect (OR 0.90, 95% CI 0.83 to 0.98), which indicates that the odds of having high work-related affect were lower for respondents with greater supervisor support.

Table 12 *Logistic Regression Predicting Likelihood of Reporting High Work-related Affect*

| Item | Unadjusted Odds Ratio (95% CI) | Fully Adjusted Odds Ratio (95% CI) |
|---|--------------------------------|------------------------------------|
| My work provides me with opportunities to grow and learn (WR) | 3.70 (3.45, 3.98)** | 1.82 (1.67, 1.99)** |
| I have control over the important aspects of my job (WR) | 3.73 (3.47, 4.02)** | 1.77 (1.63, 1.93)** |
| I am appreciated for the work that I do (WR) | 3.90 (3.61, 4.20)** | 1.73 (1.57, 1.89)** |
| I am satisfied with my workplace relationships (WR) | 4.44 (4.09, 4.83)** | 1.70 (1.53, 1.89)** |
| I have the resources (equipment, tools and supplies) to do my job well (WR) | 3.29 (3.05, 3.53)** | 1.51 (1.39, 1.65)** |
| Felt that you are part of the team (WR) | 2.79 (2.61, 2.98)** | 1.43 (1.32, 1.54)** |
| Gender | 1.13 (1.03, 1.23)* | 1.29 (1.16, 1.43)** |
| Had to regularly work extended hours, e.g. early mornings and/or late evenings (WD) | 0.95 (0.92, 0.99)* | 0.84 (0.80, 0.89)** |
| Do you regularly have to let down friends and family owing to job demands and/or are unable to pursue leisure interests, e.g. sports and hobbies due to work commitments (WD) | 1.04 (1.00, 1.09)* | 0.84 (0.80, 0.90)** |
| Overall, how satisfied are you with the balance between your work and other aspects of your life such as time with your family or leisure (WD) | 1.63 (1.55, 1.72)** | 1.17 (1.10, 1.25)** |
| Country of birth | 0.81 (0.74, 0.89)** | 0.87 (0.78, 0.98)* |
| My supervisor cares about my wellbeing (WR) | 2.32 (2.19, 2.47)** | 0.91 (0.83, 0.98)* |
| Age | 1.02 (1.02, 1.02)** | 1.03 (1.03, 1.03)** |

Note. Work Resources (WR), Work Demands (WD). *Significantly different from reference group ($p < 0.05$). **Significantly different from reference group ($p < 0.01$).

5.4. Discussion

Overall, the results emphasise the importance that access to job resources has on work-related wellbeing. After adjusting for every other variable in the model each of the independent variables remained significant predictors of high work-related affect; however, (besides supportive supervisor) the Job Resources items (development opportunities, job control, appreciation, workplace relationships, material resources, and belonging) were stronger predictors than the Job Demands items (work extended hours, letting down family/friends, work-life balance). Of the seven Job Resources items, development opportunities was the strongest predictor of high work-related affect. In other studies, development opportunity has shown to have positive effects on other work-related and wellbeing outcomes such as turnover, job satisfaction, customer satisfaction, productivity, profit, and flourishing (Harter et al., 2003; Hone, Jarden, Duncan, et al., 2015; Rowden, 2002). The New Economics Foundation also promotes learning as one of the five ways to wellbeing as it has positive associations with life satisfaction, optimism, and efficacy (C. Hammond, 2004). Adult learning is clearly a significant predictor of both general and work-related wellbeing.

Job control was also an important predictor of high work-related affect. In previous research, job control has also been linked to other work outcomes such as job satisfaction, organisational commitment, work-life spill over, and performance (Bailyn, 1989; de Jonge et al., 2000; Goldstein, 2003; Marshall & Cooper, 1976; Spector et al., 2000). Moreover, job control has been associated with both physical and mental wellbeing outcomes. For instance, a longitudinal study design on London civil servants reported that job control predicted coronary heart disease (Bosma et al., 1997). Additionally, Bond and Bunce (2001) found that increasing employee's job control not only improves work performance; however, also improves mental wellbeing and reduces absenteeism. Together, these results highlight the importance of increasing employee job control as it has both work-related and general wellbeing benefits.

To a similar degree, appreciation was also a strong predictor of high work-related affect. Being appreciated at work is also correlated with flourishing and has shown to be one of the most significant contributors to work wellbeing (Dickson-Swift et al., 2014; Hone, Jarden, Duncan, et al., 2015). Receiving appreciation from an organisation not only gives employees a form of positive reinforcement, it also lets employees know that the work they are doing matters to the organisation. Although appreciation can be given in different ways,

research has shown that for appreciation to be received well, it must be given in an authentic and genuine way, tailored to the needs of each employee (White, 2014).

The findings are also consistent with concepts of the Job Demands-Resources (JD-R) model (Demerouti et al., 2001). The JD-R model proposes that access to sufficient job resources can buffer the effects of job demands on employee wellbeing (Demerouti et al., 2001). The findings from this study demonstrate that job resources are, in fact, more important predictors of work-related wellbeing than job demands. However, supportive supervision (one of the job resources items) was one of the lowest predictors and was negatively associated with high work-related affect which is inconsistent with the JD-R literature. Having a supportive supervisor is thought to help employees to see their job demands from another perspective and can offer protection against ill health (Väänänen et al., 2003). Our findings suggest that having a supportive supervisor has a negative effect on high work-related affect which is counter-intuitive. It may be that supportive supervision is important for other work-related outcomes such as burnout whereas our study measured work-related affect as the outcome. Overall, the findings suggest that employees who are given sufficient resources are better equipped to deal with job demands and thus any demands have a lesser effect on their wellbeing.

Job resources can also be thought of as one's basic psychological needs at work as many of the items are consistent with the three basic psychological needs of Self-Determination Theory (SDT), which are autonomy, competence, and relatedness. Specifically, job control reflects autonomy, work relationships and belonging reflect relatedness, and opportunities for development and material resources reflect competence. Satisfying these basic psychological needs at work (that is supplying employees with sufficient resources) can buffer the negative effects of job demands.

Job resources such as development opportunities, job, control, and appreciation are all components of work that organisations can target through job crafting. Job crafting focuses on job redesign where employees modify different aspects of their job to fit their needs (Berg, Dutton, & Wrzesniewski, 2008). For example, employees can specify their goals, training and wellbeing needs so that they can be met accordingly (Grant & Ashford, 2008). Job crafting has shown to increase both structural and social job resources which positively affects wellbeing. Additionally, crafting challenging demands is associated with increases in

wellbeing (increased engagement and job satisfaction, and decreased burnout) (Tims, Bakker, & Derks, 2013).

In the past, many job crafting interventions aimed to increase employee wellbeing by creating a balance between an employee's job demands and job resources using a top-down approach (Holman, Axtell, Sprigg, Totterdell, & Wall, 2010). This involved using managerial-driven job crafting interventions; however, recent research has suggested that employees should influence their own job characteristics using an employee-driven approach to job crafting (Tims et al., 2013). This approach involves managers working with their employees to bring about changes to employee job characteristics. This type of approach is not only less costly than management interventions, but may also better accommodate the wellbeing needs of employees while utilising fewer resources (Tims et al., 2013). Using the employee-driven approach managers can improve aspects of work such as development opportunity by working with their employees to design development plans that can identify the areas in which employees seek training, and outline the level of job control in which they seek. Development plans may also offer employees an opportunity to reward and demonstrate a genuine appreciation for employees.

This study focussed on job resources and demands as predictors of high work-related affect, which together correctly classified 85.2% of cases. Other factors that may predict work-related wellbeing, such as personality, work setting, nutrition, sleep, and physical activity, were unaccounted for in these analyses. A further limitation of this study is the cross-sectional nature. Because the questionnaire was distributed at the one-time point it is difficult to determine whether the most significant predictors determined in this analysis are stable over time, or whether workplace wellbeing programmes designed to improve job resources and job demands have an impact on work-related affect. However, this study provides organisations with practical information regarding the key work-related predictors of wellbeing. Further research could evaluate the effectiveness of workplace programmes designed to target the key predictors identified in this study.

5.5. Conclusion

The findings from this study provide practical knowledge which human resource managers can utilise to develop and provide effective policies and workplace wellbeing programmes that target the wellbeing needs of their employees. The most significant predictors of high work-related affect were development opportunity, job control, and appreciation. In order to

positively impact work-related wellbeing, managers should work with their employees through an employee-driven job crafting process. This process may involve collaboratively designing development plans that identify the areas in which employees seek training and outline the responsibilities and level of control in which each employee seeks. Furthermore, development plans may offer an opportunity to reward and demonstrate a genuine appreciation for employees. Adopting an employee-driven approach to job crafting will effectively target employee job resources that are more cost and resource-efficient than previous job crafting methods.

Chapter 6. Discussion

This thesis has reviewed the literature surrounding wellbeing assessment in a workplace context as well as associated issues with wellbeing assessment. The three objectives of the thesis were as follows. The first was to determine the underlying structure of the work-related items in a previously unvalidated measure of wellbeing (Wellbeing360™, Paper 1). The second was to test the reliability (internal consistency) and construct validity (convergent and discriminant) of any resulting scales. The third was to determine the most significant work-related predictors of work-related wellbeing (Paper 2). This chapter will discuss the findings regarding each of these objectives, followed by the strengths and limitations associated with the research (6.2.). Implications for research (6.3.) and practice (6.4.) will also be discussed before conclusions of the research are drawn (6.6.).

6.1. Findings

Objective 1

It was found that 16 of the 20 items mapped onto three factors: Work-related Affect (six items), Job Resources (seven items), and Job Demands (three items). The three factors reflect measures of work-related wellbeing that are consistent with those used in the literature; however, a higher order factor analysis is needed to confirm that these factors measure components of work-related wellbeing. The four items that did not map onto any of the resulting factors were deemed redundant and because they are not associated with any of the extracted factors it is recommended that these items were removed from the assessment.

The results for the underlying structure of the work-related items were consistent with the literature. For example, components of the work environment are commonly understood using the J D-R model which suggests that working conditions can be divided into two categories: Job Demands (Factor 2) and Job Resources (Factor 3). These working conditions are what influence work-related outcomes such as Work-related Affect (Factor 1). Some common job resources within the literature are autonomy, performance feedback, social support, development opportunities and support from a supervisor (Bakker & Demerouti, 2007; Bakker & Schaufeli, 2008). Commonly identified job demands include work overload, emotional and physical demands, and work-life balance. This study also identified material resources and appreciation as job resources as well as working extended hours and letting down friends and family as job demands. These additional components are consistent with definitions of job demands and job resources used in the J D-R literature (see 4.4.) and as

such add to the understanding of which components of the work environment affect wellbeing.

Objective 2

The three factors determined using EFA were treated as scales. Factor 1 (Work-related Affect) demonstrated internal consistency and both convergent and discriminant validity which supports its use as a valid and reliable scale. Convergent validity was established using the Flourishing Scale which was expected to produce a high correlation given the scales measure similar constructs (e.g., purpose and meaning, engagement, strengths use, and positive affect). Discriminant validity was established using comparisons to scales with unrelated constructs (e.g., Brief Resilience and DASS21 Scales).

Factor 2 (Job Demands) did not demonstrate internal consistency. Literature regarding the reliability of scales argues that scales with a greater number of items are more likely to demonstrate internal consistency. As such, the addition of more items to the Job Demands factor should be considered if the factor is to be used as a scale. The Job Demands factor did, however, demonstrate excellent evidence of discriminant validity. This was expected because the scales used in the correlation analyses (Flourishing, Brief Resilience, and DASS21 Scales) measured unrelated constructs. Evidence of convergent validity needs to be established in future research to be confident in the scales validity.

Factor 3 (Job Resources) demonstrated internal consistency and evidence of discriminant validity which supports its use as a valid and reliable scale. There was a medium correlation between the Job Resources factor and the Flourishing Scale which was expected as they measure some of the same constructs (e.g., relationships and competence). There were also medium correlations with the Depression and Stress sub-scales which were unexpected considering the Job Resources factor does not measure either of these constructs. The discriminant validity of the DASS scales, however, has been evaluated with similar findings. Crawford and Henry (2003) reported that although the DASS scales possess adequate discriminant validity, the convergent validity of the DASS is more impressive. Evidence of convergent validity needs to be established in future research to be confident in the scales validity.

Objective 3

The third objective of the thesis was to determine the most significant work-related predictors of work-related wellbeing (Paper 2). Work-related affect (items determined in Paper 1) was chosen to reflect work-related wellbeing because it encompasses many work-related outcomes (e.g. occupational stress, engagement, burnout, and job satisfaction). The ten work-related predictors of work-related affect were the Job Resources and Job Demands items determined in Paper 1. The most significant predictors of work-related affect were six of the seven Job Resources items (development opportunities, autonomy, appreciation, workplace relationships, resources, belonging, respectively) followed by the three Job Demands items (work extended hours, letting down friends/family, work-life balance, respectively) and lastly the seventh Job Resources item (supportive supervisor).

According to the J D-R, model job resources may buffer the effects of job demands on work-related outcomes such as work-related affect (Bakker & Demerouti, 2007). The reason why is different for each resource. For example, job control/autonomy is important for employee wellbeing because it is linked to greater opportunities to face and cope with stressful situations (Karasek, 1998). Social support or positive workplace relationships can help with achieving deadlines and work goals thereby alleviating any work overload. Consequently, job resources are thought to be more important predictors of work-related wellbeing because they give employees the means to cope with job demands.

The findings from Paper 2 support the theory that job resources are more important predictors of work-related wellbeing and may buffer the effects of job demands on work-related outcomes. It was found that six of the seven Job Resources items were greater predictors of high work-related affect than the three work demands items which was expected. The seventh Job Resources item (supportive supervision), however, was one of the least important predictors and negatively associated with high work-related affect which is inconsistent with the J D-R literature. Supervisor support is thought to help employees to see their job demands from another perspective and can offer protection against ill health (Väänänen et al., 2003). Our findings suggest that supportive supervision has the opposite effect and is detrimental for high work-related affect. It may be that supportive supervision is important for other work-related outcomes such as burnout whereas our study measured work-related affect as the outcome. Overall, these findings provide further evidence of the importance of job resources over job demands.

The provision of job resources can also be linked to SDT which concerns the degree to which individuals can satisfy their basic psychological needs (autonomy, competence, and relatedness). Satisfying these basic needs promotes wellbeing (Ryan et al., 2013). Providing employees with sufficient resources can be thought of satisfying employees work-related psychological needs. Job control satisfies the need for autonomy, development opportunities satisfies the need for competence, and workplace relationships and belonging satisfy the need for relatedness. Additionally, the provision of material resources and supportive supervision can satisfy physical and emotional work-related needs.

6.2. Strengths and limitations

6.2.1. Sample size

Perhaps the greatest strength of this research was the sample size and scope ($N = 11,532$). The sample consisted of roughly 50% females and covered a wide range of ethnicities and job industries. The large sample size allows greater confidence with regards to the representation of the greater population of employees and the subsequent generalisability of the results. Large sample sizes are also favourable because they reduce sample biases (e.g. social desirability effects (Presser & Stinson, 1998)) and increase statistical power (Shum et al., 2013).

6.2.2. Measurement issues

As the data were not collected for the purposes of this research there were some constraints. For instance, ideally, the convergent validity of the Job Demands and Job Resources factors would have been established (Paper 1). However, due to the lack of comparative scales, this was not possible. Best practice in psychometric assessment also requires test-retest reliability to be evaluated (Shum et al., 2013). As data did not consist of repeated measures, test-retest reliability was not performed and thus the assessments stability across time could not be determined. Another limitation regards the use of EFA which is data driven as opposed to theory-driven which make it difficult to replicate the results (Cunningham, 2008). In addition, every item loads onto each extracted factor so items that are not intended to reflect a specific factor are still specified as loading onto that factor (Matsunaga, 2015). Future researchers may wish to confirm whether the factors developed in this study did, in fact, measure their proposed constructs. Items would need to be subjected to Confirmatory Factor Analysis in a new data set.

Additionally, as the study was cross-sectional in nature, it is difficult to determine whether the most significant predictors determined in this analysis are stable over time, or whether workplace wellbeing programmes designed to improve job resources and job demands have an impact on high work-related affect (Paper 2). It should also be noted that work-related predictors of work-related wellbeing are not limited to job demands and job resources. As discussed (see 2.2.2.), there are other work-related predictors of work-related wellbeing (e.g. work setting/environment and personality).

Furthermore, there are many general predictors of work-related wellbeing. For example, nutrition can influence how an employee feels, performs, looks, and sleeps (Hefferon, 2013). Moreover, sleep quality and quantity influences mental health, metabolism, memory and learning, the reproductive system, and helps to restore the cells in one's body (Kryger et al., 2011; Lewis, 2011). Other predictors such as physical activity, substance abuse, and financial resources also affect employee wellbeing (Haas et al., 2004; Hyde et al., 2013; Mackay et al., 2015). Although these are important to consider when developing assessments or designing wellbeing programmes, the focus of this research was on components of the workplace that organisations had the ability to change. Future researchers may wish to consider other predictors of work-related wellbeing.

6.3. Implications for research

The current situation regarding employee wellbeing assessment raises many causes for concern. Research suggests that minimal employee wellbeing assessment takes place and assessments that do take place are typically invalid and unreliable or have been untested for their psychometric properties (Spence, 2015). Comparatively, wellbeing assessments used within the clinical psychology field are rigorously tested before being administered in practice. For example, the Positive and Negative Syndrome Scale has been measured for factor structure and validity, criterion-related validity, construct validity, inter-rater reliability and internal consistency (M. Bell, Lysaker, Beam-Goulet, Milstein, & Lindenmayer, 1994; M. Bell, Milstein, Beam-Goulet, Lysaker, & Cicchetti, 1992; Emsley, Rabinowitz, Torreman, & Group, 2003; Kay, Opler, & Lindenmayer, 1988, 1989; Peralta & Cuesta, 1994). Until the rigorous testing of all wellbeing assessments becomes common practice, the measurement of wellbeing in the workplace may continue to be haphazard.

Perhaps the difference between the testing of clinical and organisational wellbeing assessments can be attributed to the consequences associated with invalid and unreliable

measures. Because the consequences of using an inaccurate clinical measure are so severe (e.g. misdiagnosis) it is imperative that any assessment used is thoroughly tested to ensure confidence in its results. The consequences of inaccurate organisational wellbeing assessments may be less severe (e.g., employees may have to participate in a wellbeing programme) and as such, there is little importance placed on the testing of wellbeing assessments. The difference may also be attributed to the differing goals and priorities of businesses compared to clinicians. For example, clinicians are more likely to place an importance on the accuracy of wellbeing assessments and as such will wait for any necessary psychometric testing. Businesses may be more likely to place an importance on the time it takes to develop a test because they have to meet specific deadlines. Consequently, organisational scale developers may neglect to perform tests of reliability and validity resulting in inconsistent measurement across the field.

This study offers an example of the practices required to ensure the validity and reliability of wellbeing assessments. Additionally, this study offers the contribution of two valid and reliable work-related wellbeing scales (Work-related Affect Scale and Job Resources Scales) that can be used in theory and practice. These scales can be used to assess specific domains of wellbeing. Validation of other existing wellbeing assessments and future assessments is needed to ensure the accurate assessment of employee wellbeing.

This study also offers an insight into the most significant predictors of work-related wellbeing. Previous literature regarding the J D-R model has suggested that job resources are more important predictors of work-related wellbeing than job demands because they can buffer the effects of job demands on work-related outcomes (Bakker & Demerouti, 2007; Bakker et al., 2005; Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007). There is extensive evidence to support this theory and many studies that have looked at the effects of job demands and resources on work-related outcomes such as burnout, engagement, and performance (Bakker et al., 2005; Bakker et al., 2004; Bakker et al., 2007; Demerouti et al., 2001; Schaufeli & Bakker, 2004). However, there has been no study of the effects of job demands and job resources on work-related affect. Moreover, no study has determined which of the job resources have the greatest effect on work-related wellbeing outcomes. What this study offers to the literature is evidence to support the theory that job resources can buffer the effects of job demands on work-related outcomes such as work-related affect. Additionally, this study offers an insight into the most significant predictors of high work-related affect.

That is which of the job resources have the greatest impact on high work-related affect. Overall, this study adds further understanding to the theories surrounding the J D-R model.

6.4. Implications for practice

While valid measures of work-related wellbeing are highly sought after, they are somewhat scarce. Though validation of the work-related items of the Wellbeing360™ was a useful first step toward creating a valid wellbeing measurement tool, there needs to further validation of the other Wellbeing360™ items. Best practice in the use of psychometrics requires confirmation of validity and reliability, and though the work-related items can now be interpreted with confidence, the other items should be interpreted with caution. Unfortunately, this is the case for many wellbeing assessment tools and change is needed regarding psychometric testing practices.

Validation of the work-related items also resulted in an item reduction where the number of work-related items was reduced from 20 to 16 (see 4.3.2.). Reduction of the items ensured that the redundant items (items that weren't measuring the same underlying construct) were not being used unnecessarily. Item reduction also helps reduce the time it takes to complete the questionnaire which can then reduce the effects of survey fatigue. For example, respondents who are overexposed to surveys or survey items can become bored or tired and subsequently, their answers may not reflect what is true (Sharp & Frankel, 1983). When the number of items in a survey or questionnaire is reduced, there is less of a chance that respondents will suffer from survey fatigue (Steeh, 1981). Therefore, their answers are more likely to reflect how they truly think, feel, or behave.

Overall, the factors extracted in Paper 1 are consistent with those mentioned throughout the work-related wellbeing assessment literature. Therefore, practitioners looking to develop their own work-related wellbeing scales should include items that measure job demands, job resources and comprehensive work-related outcomes such as work-related affect. Similarly, human resource managers looking to utilise a work-related wellbeing assessment should consider tools that incorporate these factors. Developing and utilising tools with such factors will ensure a comprehensive measure of work-related wellbeing is performed. Such tools will also ensure that both global and driver measures are considered.

Paper 2 offers organisations and Human Resource Managers practical information regarding the work-related predictors of high work-related affect. This research can be used to inform wellbeing practices within an organisation. For instance, the research shows that

development opportunities, job control and appreciation, and are the most significant work-related predictors of high work-related affect and thus should be the focus of any wellbeing intervention or prevention strategies. This information allows organisations/human resource managers to target the components of the workplace that will have the greatest influence on work-related wellbeing.

Further research is needed, however, regarding the general and other work-related predictors of high work-related affect. While the research in Paper 2 investigates some of the work-related predictors of work-related affect, it neglects to account for the general predictors of high work-related affect (e.g. nutrition, sleep, and exercise) and other work-related predictors (e.g. work setting and personality). Determining the most significant overall predictors of high work-related affect will help organisations to shape the most effective wellbeing strategies.

6.5. Conclusion

Practitioners looking to assess the wellbeing of their employees should utilise work-related wellbeing assessments that have been tested for validity and reliability to ensure the accuracy of the results. Additionally, such tools should include measures of employee job resources, job demands, and work-related outcomes such as work-related affect. This will allow the comprehensive assessment of employee wellbeing. Practitioners and academics looking to develop such tools should consider including these factors and again have any assessments tested rigorously for reliability and validity before administering them in a workplace. Furthermore, practitioners looking to improve the wellbeing of their employees should look to make changes regarding an employee's opportunities for development, job control, and appreciation. These components of the workplace are the most significant predictors of high work-related affect and will have the greatest impact on employee wellbeing.

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Appendix 1. Consent form



Your Paper-based Questionnaire and Consent Form

The Wellbeing 360 is a personalised health evaluation tool. It won't take you long to fill out, so grab yourself a cup of tea or coffee, you should be finished by the time you see the bottom of your cup (15 mins tops).

It's important to remember that your results are completely confidential and no one from your organisation will ever see your personal results, or your score. Your employer will receive a report with aggregated summary data however, which gives them an overview of the overall health of the organisation, and suggestions on which areas will benefit from attention. This report will be used in the planning of future health and wellness programmes and initiatives. No individual will be able to be identified from this report.

Please sign below to acknowledge that you have read and understood the conditions of this health evaluation and agree to these conditions.

I understand that I am giving my consent to completing a wellbeing survey and understand that my responses are confidential, and that my employer will only receive aggregate results. I will allow my anonymous data to be used in academic research.

Name _____

Signed _____

Date _____



Appendix 2. The Brief Resilience Scale

| Please tick the box that applies to you | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|-------------------|----------|---------|-------|----------------|
| I tend to bounce back quickly from hard times | | | | | |
| I have a hard time making it through stressful events | | | | | |
| It does not take me long to recover from a stressful event | | | | | |
| It is hard for me to snap back when something bad happens | | | | | |
| I usually come through difficult times with little trouble | | | | | |
| I tend to take a long time to get over set-backs in my life | | | | | |

Appendix 3. The Flourishing Scale

| Please tick the box that applies to you | Strongly Disagree | Disagree | Slightly disagree | Neither agree nor disagree | Slightly agree | Agree | Strongly Agree |
|---|----------------------|----------|----------------------|----------------------------------|-------------------|-------|-------------------|
| I lead a purposeful and meaningful life | | | | | | | |
| My social relationships are supportive and rewarding | | | | | | | |
| I am engaged and interested in my daily activities | | | | | | | |
| I actively contribute to the happiness and wellbeing of others | | | | | | | |
| I am competent and capable in the activities that are important to me | | | | | | | |
| I am a good person and live a good life | | | | | | | |
| I am optimistic about my future | | | | | | | |
| People respect me | | | | | | | |

Appendix 4. DASS 21 Scale (Depression (d), Anxiety (a), Stress (s))

| Please tick the box that applies to you | Applied to me very much or most of the time | Applied to me a considerable degree, or a good part of the time | Applied to me to some degree, or some of the time | Did not apply to me at all |
|---|---|---|---|----------------------------|
| I found it hard to wind down (s) | | | | |
| I felt that I was using a lot of nervous energy (s) | | | | |
| I tended to over-react to situations (s) | | | | |
| I found myself getting agitated (s) | | | | |
| I was intolerant of anything that kept me from getting on with what I was doing (s) | | | | |
| I found it difficult to relax (s) | | | | |
| I felt that I was rather touchy (s) | | | | |
| I was aware of the action of my heart in the absence of physical exertions (a) | | | | |
| I experienced trembling (a) | | | | |
| I was aware of dryness of my mouth (a) | | | | |

| | | | | |
|---|--|--|--|--|
| I was worried about situations in which I might panic and make a fool of myself (a) | | | | |
| I felt I was close to panic (a) | | | | |
| I experienced breathing difficulty (a) | | | | |
| I felt scared without any good reason (a) | | | | |
| I felt down-hearted and blue (d) | | | | |
| I couldn't seem to experience any positive feeling at all (d) | | | | |
| I was unable to become enthusiastic about anything (d) | | | | |
| I felt I wasn't worth much as a person (d) | | | | |
| I found it difficult to work up the initiative to do things (d) | | | | |
| I felt that I had nothing to look forward to (d) | | | | |
| I felt that life was meaningless (d) | | | | |

Appendix 5. Work-related Affect Scale

| Please tick the box that applies to you | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|--|-------------------|----------|---------|-------|----------------|
| Felt that you provided great service to your customers | | | | | | |
| I am enthusiastic about my job | | | | | | |
| I am regularly able to do what I do best | | | | | | |
| I leave work feeling like I have done a good day's work | | | | | | |
| The job I do makes a meaningful contribution | | | | | | |
| In the past seven days, I have done my best to be fully engaged at work | | | | | | |

Appendix 6. Work Demands items

| Please tick the box that applies to you | Very dissatisfied | | Dissatisfied | Neither Satisfied nor dissatisfied | Satisfied | Very satisfied |
|---|-------------------|--|--------------|------------------------------------|-----------|----------------|
| Overall, how satisfied are you with the balance between your work and other aspects of your life such as time with your family or leisure | | | | | | |

| Please tick the box that applies to you | All the time | Often | Sometimes | A bit | Never |
|--|--------------|-------|-----------|-------|-------|
| Do you regularly have to let down friends and family owing to job demands and/or are unable to pursue leisure interests, e.g. sports and hobbies due to work commitments | | | | | |
| Had to regularly work extended hours, e.g. early mornings and/or late evenings | | | | | |

Appendix 7. Job Resources Scale

| Please tick the box that applies to you | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--|-------------------|----------|---------|-------|----------------|
| I am appreciated for the work that I do | | | | | |
| My work provides me with opportunities to grow and learn | | | | | |
| My supervisor cares about my wellbeing | | | | | |
| I have the resources (equipment, tools and supplies) to do my job well | | | | | |
| I am satisfied with my workplace relationships | | | | | |
| I have control over the important aspects of my job | | | | | |

| Please tick the box that applies to you | Never | A bit | Sometimes | Often | All the time |
|---|-------|-------|-----------|-------|--------------|
| Felt that you are part of the team | | | | | |