UNDERSTANDING AND MEASURING WELLBEING

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LIST OF ABBREVIATIONS

Abbreviation	Definition
BMI	Body Mass Index
CES-DS	Centre for Epidemiological Studies Depression Scale
CFS	Cystic Fibrosis Syndrome
DSM	Diagnostic and Statistical Manual
ESS	European Social Survey
FS	Flourishing Scale
ICD	International Classification of Diseases
IT	Information technology
JARS	Journal Article Reporting Standards
LPASS	Lifestyle Physical Activity and Sedentary Scale
MDE	Major Depressive Episode
MHF	Mental Health Continuum
MHC-SF	Mental Health Continuum – Short Form
nef	New Economics Foundation
NGO	Non-governmental organisations
NZ	New Zealand
OECD	Organisation for Economic Co-operation and Development
ONS, UK	Office of National Statistics, United Kingdom
OOS	Occupational Overuse Syndrome
PERMA	Positive emotion, engagement, relationships, meaning, accomplishment
PPI	Positive Psychology Intervention
QOL	Quality of Life
RE-AIM	Reach, Efficacy, Adoption, Implementation, Maintenance
SPANE	Scale of Positive and Negative Experience
SWI	Sovereign Wellbeing Index
SWLS	Satisfaction With Life Scale
US	United States (of America)
WHO	World Health Organization

NOMENCLATURE

Term/symbol	Definition
CI	Confidence Interval
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
d	Cohen's measure of effect size
df	Degrees of freedom
EFA	Exploratory Factor Analysis
GFI	Goodness of Fit Index
ITT	Intention-To-Treat
ICC	Intraclass Correlation
kg	Kilogram
MDS	Multidimensional scaling
n	Number of cases in a subsample
N	Total number of cases
OR	Odds Ratio
%	Percentage
p	*p*-value, statistical significance
r	Pearson correlation coefficient
RMSEA	Root Mean Square Error of Approximation
SD	standard deviation
t	*t*-test statistic

PUBLICATIONS ARISING FROM DOCTORAL THESIS

Peer-reviewed journal publications and author contributions

1. Hone, L. C., Jarden, A., & Schofield, G. (2013). Psychometric properties of the Flourishing Scale in a New Zealand sample. *Social Indicators Research*. Contributions: Hone (80%), Schofield (10%), Jarden (10%)

2. Hone, L. C., Jarden, A., & Schofield, G. (2014). An evaluation of positive psychology intervention effectiveness trials using the re-aim framework: A practice-friendly review. *Journal of Positive Psychology*. Contributions: Hone (80%), Schofield (10%), Jarden (10%)

3. Hone, L. C., Jarden, A., Schofield, G., & Duncan, S. (2014). Measuring flourishing: The impact of operational definitions on the prevalence of high levels of wellbeing. *International Journal of Wellbeing*. Contributions: Hone (80%), Schofield (5%), Jarden, (10%), Duncan (5%)

4. Hone, L. C., Jarden, A. Schofield, G., & Duncan, S. (2015). Flourishing in New Zealand workers: Associations with lifestyle behaviours, physical health, psychosocial, and work-related indicators. *Journal of Occupational and Environmental Medicine.* Contributions: Hone (80%), Schofield (5%), Jarden (5%), Duncan (10%)

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2. Hone, L. C., Jarden, A., & Schofield, G. *RE-AIMing positive psychology interventions for greater real world impact*. Paper presented at the Fourth Australian Positive Psychology & Well-being Conference's Emerging Researchers' Findings. Melbourne, Australia. 7-9th February 2014.

3. Hone, L. C., Jarden, A., & Schofield, G. *RE-AIMing positive psychology interventions for greater real world impact.* Presentation at the 3rd NZAPP Conference. Auckland, NZ. 6-7th June 2015.

4. Hone, L. C., Jarden, A., & Schofield, G. *RE-AIMing positive psychology interventions for greater real world impact.* Fourth World Congress on Positive Psychology. Florida, USA. 25-28th June.

5. Hone, L. C., Sansom, L., King, V., & Teagarden, P. *The trials and triumphs of applying positive psychology in workplace settings.* Symposium at the Third World Congress on Positive Psychology. Los Angeles, USA. 27-30th June 2013.

6. Hone, L. C., Jarden, A., & Schofield, G. *Psychometric Properties of the Flourishing Scale in a New Zealand sample.* Poster presentation at the Third World Congress on Positive Psychology. Los Angeles, USA. 27-30th June 2013.

7. Hone, L. C. *Using Positive Psychology to Promote Resilience in the Aftermath of the Christchurch (NZ) Earthquakes.* Workshop at the Third World Congress on Positive Psychology. Los Angeles, USA. 27-30th June 2013.

8. Hone, L. C. *Overview and introduction to positive psychology.* Presentation at the 2nd NZAPP Conference. Auckland, NZ. 8-9th June 2013.

9. Hone, L. C., Jarden, A., Schofield, G., & Duncan, S. *Measuring flourishing: The impact of operational definitions on the prevalence of high levels of wellbeing.* Presentation at the 2nd NZAPP Conference. Auckland, NZ. 8-9th June 2013.

10. Alloro, L., Felps, P., Hone, L. C., & Niemiec, R. *When happiness has a bad day.* Symposium at the Fourth World Congress on Positive Psychology. Florida, USA. 25-28th June 2015.

11. Hone, L. C., Parks, A., & Pressman, S. *The future of Positive Psychological Interventions.* Symposium at the Fourth World Congress on Positive Psychology. Florida, USA. 25-28th June 2015.

12. Hone, L. C. *Practising Well: The why and how of wellbeing for lawyers.* Presentation at the Crown Solicitors Conference. Christchurch, NZ. 15th May 2015.

13. Hone, L. C. *Promoting Wellbeing in Schools.* Presentation at the New Zealand Boarding Schools Association annual conference. Wellington, NZ. 27th May 2015.

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.

Lucy C. Hone

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PREFACE

"It started out as a feeling, which then grew into a hope, which then turned into a quiet thought, which then turned into a quiet word. And then that word grew louder and louder 'til it was a battle cry" (Spektor, The Call, 2008).

The above words sum up my doctoral studies, which started out with a feeling - that we needed to do more to prevent the burgeoning crisis of mental illness, that we need to protect against depression and anxiety and promote population flourishing. Then came a sense of hope, in the shape of new academic disciplines - resilience science and positive psychology - which prompted me to fly to Auckland and meet with Grant Schofield, professor of public health at AUT. In that initial meeting the hope and quiet thoughts turned into quiet words, making me believe I was capable of doctoral research, and that the time was right for an investigation questioning positive psychology's limited public health impact.

Three weeks into my PhD studies, my hometown of Christchurch was hit with a 6.3 magnitude earthquake that destroyed over 70 per cent of our city, killed 185 people in one of our nation's deadliest peacetime disasters, and wrecked over 100,000 homes. It was February 2011 and the battle to help my city and its inhabitants recover was on. Here was "the call"; my life's defining moment.

Or so I thought. Three years later, in the last year of my PhD, in May 2014, my 12-year old daughter, Abi, was killed in a tragic car accident on a public holiday weekend. All PhDs are journeys; I was told at the outset to expect a roller coaster ride. But these last four years have taken me to places I never anticipated going: to the very edge of human experience. Losing our beautiful girl tested my own wellbeing, and capacity for resilience, to the limits. The irony of undertaking a PhD in the psychology of wellbeing over this time has certainly not escaped me. My awareness of academic research on resilience, and the determinants of wellbeing, has helped me cope with the loss of Abi I'm sure. But the biggest additional test has been enduring these events, and continuing on with my PhD.

When we lost Abi our lives changed forever. In that agonising second the policeman told us that she, and our friends, Ella and Sally, had been killed, our life path split. In just

one second I could see our anticipated trajectory (the path I thought our life was on) and visualise a fork – an alternative, unexpected road opening up before us. A road that I, nor any others travelling it with me, ever imagined we'd have to go down. And yet here we are. Losing Abi is the hardest thing in my life. I've had to work so hard every day to forge forward in this unknown, unexpected, unwanted land. In post-quakes Christchurch we'd already been forced to come to terms with one "new normal", and now we face another, utterly unfathomable, unanticipated norm.

The emotional toll of the death of a child is well recognised and considerable. From resilience studies I was aware of the associated risks, the steps required to accept her loss and the "secondary losses" associated with her death. I knew pretty quickly I wasn't prepared to lose my PhD on top of the loss of our beautiful daughter. Six weeks after Abi died, I became increasingly frustrated that, at a time when my studies were progressing so well and I could see the light at the end of my academic tunnel, my brain had been sufficiently traumatised to push work, concentration, and sustained focus, beyond my grasp, again. I ranted for a week and then, adamant that this was one secondary loss I wasn't prepared to accept, determined I'd work for just one hour a day to keep my head in the game. Just do one task every day I told myself, keep it simple, keep it small; ask for help when you need it. Goal setting, hope theory, thinking traps, self-efficacy, resilience strategies and cognitive behavioural theory all came to my rescue - those, and the ever-understanding, empathetic husband at my side. I was determined to keep my head in the game, resolved not to lose traction. One of our sons gently reminded me that Abi wouldn't want me to give up on my PhD. "She was so proud of you", you said. So, on July 16th 2014, six weeks after she died, I started again.

My PhD is dedicated to Trevor, to the man with sufficient foresight, faith and trust in me that he didn't think it nuts to study resilience psychology in Philadelphia, USA (even when I was a mother of three primary-aged children living in Christchurch, New Zealand). You have supported me the whole way, learning about operationalisations and epidemiology as we pace the beach with Jack The Dog each morning; and giving me the space and time to lose myself to the process in these final months. Only you and I know what we have accomplished together, how heart broken we are - and will remain for the rest of our lives. I absolutely know that I could never, would never, have achieved this work without you.

To our sons, Ed and Paddy, who have also lost so much, and demonstrated amazing resilience and dignity over the last four years, may you always follow your dreams and make your life count.

To our dear, little Abi, whose ambitious dreams were cut so brutally short, we will never forget you, ever.

ABSTRACT

There is growing interest and application worldwide in the science of wellbeing. Considerable empirical evidence indicating the importance and potential benefits of population wellbeing promotion (such as reducing the burden of mental illness and enhancing employee performance and productivity) provides strong arguments for wellbeing to become part of the governmental and organisational policy agenda. Although health agencies around the world nominally recognise health as more than the absence of disease, and policy documents now make reference to wellbeing promotion, they continue to operate under a deficit model.

This thesis investigates the reasons for this disconnect between scientific evidence and real world practice, taking both an international and national perspective. In particular, it focuses on the understanding and measurement of wellbeing, and flourishing, a term commonly used to describe high levels of wellbeing. By examining current conceptualisations and operationalisations of wellbeing (and flourishing), exploring their epidemiology, and evaluating intervention effectiveness research, it gives greater clarity to the questions of what is wellbeing?, how is it measured?, who has wellbeing?, and how can wellbeing be promoted?

Knowledge gaps highlighted in the literature and practice give rise to a series of studies that become the starting point for epidemiological research on wellbeing, and flourishing, in New Zealand. Study 1 found that 24% of New Zealand adults were flourishing, providing a baseline measure for future comparison. It also investigated the impact of operational definition on epidemiology: by calculating the prevalence of flourishing according to different operationalisations it found that national flourishing prevalence ranged from 24% to 47% depending on the operationalisation used. The outcomes from this study spawned the next two studies. Study 2 addressed the lack of evidence concerning lay perspectives of wellbeing with qualitative work exploring New Zealand workers' conceptualisations of wellbeing, highlighting similarities and differences between lay and academic models. New Zealand workers were less likely than academic researchers to consider achievement, engagement, and optimism as important for wellbeing, and considered physical health, work-life balance,

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and feeling valued as more important instead. Study 3 expanded the limited psychometric evidence supporting key wellbeing measures by demonstrating the validity and reliability of the Flourishing Scale among a nationally representative sample of adult New Zealanders (N = 9,646), and providing population benchmarks. Study 4 contributed additional epidemiological evidence exploring the characteristics and determinants of flourishing among a large sample of New Zealand workers (n = 5,549). One in four New Zealand workers were categorised as flourishing. Being older and married, reporting greater income, financial security, physical health, autonomy, strengths awareness and use, work-life balance, job satisfaction, participation in the *Five Ways to Wellbeing*, volunteering, and feeling appreciated by others, were all significantly associated with worker flourishing, independent of socio-demographics.

Having explored extant conceptual and operational definitions of wellbeing, their psychometric utility, and resultant epidemiology, this thesis switched to focus on interventions. Study 5, an evaluation of intervention effectiveness research using the RE-AIM framework common to public health (Reach, Efficacy, Adoption, Implementation, Maintenance), found substantial limitations within the existing evidence-base concerning limited sample representativeness, and a paucity of evidence regarding intervention maintenance (reported in 16% of the studies) and implementation costs (reported in 2.5% of studies). The large proportion of trials relying on specialist agents (45%) and researchers (30%) for delivery was identified as an additional factor limiting mass-market dissemination of wellbeing interventions in naturalistic contexts. Study 6, a qualitative study exploring New Zealand workers' self-reported pathways to wellbeing, indicated workers' awareness of some evidence-based strategies (such as the *Five Ways to Wellbeing,* practicing gratitude and mindfulness) but greater endorsement of traditional pathways such as exercise (endorsed by 78%), hobbies (41%), healthy eating (35%), and sleep (27%).

The body of knowledge comprising these doctoral studies therefore aims to further the understanding and measurement of wellbeing among researchers, policy-makers, and oragnisational decision-makers, equipping them with the necessary evidence and psychometric tools to enable the promotion of population wellbeing to become a reality.

CHAPTER 1

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INTRODUCTION

Background

Public health has traditionally focused on pathology, viewing health as the absence of disability, disease, and premature death. But the transition from acute and infectious to chronic and modifiable causes of disease and death requires a broader approach to public health. While previously it was understandable to make identifying and treating disease the primary focus for science and policy, the circumstances and epidemiology of the 21st century require different tactics.

In its definition of health as "a state of complete physical, mental and social well-being and not only the absence of disease and infirmity" (1948) the World Health Organization (WHO) has nominally recognised this for almost 70 years.

Ten years later, arguing against using the absence of mental illness as a criterion for mental health, claiming that it was the "business of science to explore human potentialities and the conditions furthering their realization" (1958, p. 31), Jahoda paved the way for Seligman and Csikszentmihalyi to call for a "redirection of scientific energy" (2000, p. 13). Urging psychologists to go beyond their existing focus on helping those who suffer, they outlined a new framework for studying the factors enabling individual and population flourishing. Under the banner heading of positive psychology, the discipline of psychology has successfully affected a paradigm shift in its conceptualisation of wellbeing as a complete state, advocating for the promotion of population wellbeing alongside the treatment and prevention of illness (for example see Huppert, 2009; Keyes, 2007b; Seligman, 2011).

Several strands of evidence combine together to make a compelling case for the promotion of wellbeing at the population level. For instance, research now conclusively shows wellbeing is more than the absence of disease (Keyes, 2002, 2005); that many of the determinants of wellbeing are not the same as the determinants of illness (Huppert,

2009); that talk and drug therapies alone are having no impact on the prevalence, burden or early age of onset of mental disorders (Insel & Scolnick, 2006; Kessler et al., 2005); and that practicing specific cognitive and behavioural strategies is effective in promoting wellbeing and reducing depression (Sin & Lyubomirsky, 2009). However, despite public health research showing that "no mass disease or disorder has ever been controlled or eliminated through individual treatment" (Albee, 2006, p. 449), and that the majority of people who develop disorder come not from the high risk group, but from the general population (Rose, 1992, 2008), public health has failed to make population wellbeing promotion a priority. Policymakers remain stuck in a deficit model, and the theoretical and empirical output of positive psychology has made no discernible impact on population health.

Critics may dispute this fact and point to the inclusion of wellbeing promotion as part of national mental health strategies and recently published guidelines for measuring wellbeing (OECD, 2013), but in reality, the focus, funding and measurement of public health remains steadfastly pathological. Evidence of policy-makers' limited understanding of the construct of wellbeing and their failure to adopt research findings accrued over the last decade of wellbeing science can be found throughout current policy documents.

For example, the WHO's Mental Health Action Plan calls for the identification of protective factors for mental health and wellbeing, and lists overall functioning and quality of life among its recommended health outcome data, but provides no guidelines for the achievement of these goals (World Health Organization, 2013). The only strategies for promotion and prevention it does suggest are for mass media campaigns targeting discrimination, and programmes targeting vulnerable groups such as children exposed to adverse life events (World Health Organization, 2013). Similarly, wellbeing promotion in New Zealand's current mental health plan targets people with disabilities, long-term physical health conditions, and low-prevalence conditions such as psychotic disorders (Mental Health Commission, 2012).

Not all the blame should be directed towards the field of public health, however. Despite the considerable progress positive psychology has made in the empirical study of wellbeing over the last 15 years, limitations and unresolved conflicts in the field's

understanding and measurement of wellbeing continue to hamper its real world application, and as such are partly responsible for its negligible public health impact.

This thesis therefore considers current theoretical, conceptual, and operational models of wellbeing, noting their limitations and utility from a public policy-maker's perspective. Given that organisations have been identified as important, convenient, and effective settings for chronic disease prevention (Aldana et al., 2005; Neville, Merrill, & Kumpfer, 2011), and in line with the Ottawa Charter's settings-based approach to wellbeing promotion (World Health Organization, 1986), it also focuses on research enabling wellbeing promotion in organisational contexts. It explores the epidemiology of wellbeing among the adult New Zealand population and among New Zealand workers, and evaluates the evidence supporting wellbeing interventions' readiness for mass-market implementation in real world contexts, such as organisations.

In summary, in order for population wellbeing promotion to become a reality, policy and organisational decision-makers need to be assured that there is robust theoretical and empirical evidence surrounding the definition, measurement and promotion of wellbeing. Only then will public and organisational health be encouraged to confidently list asset-based metrics among key outcome indicators and take positive psychology research seriously.

Statement of Purpose

The studies that make up this doctoral thesis have been shaped by my work as a wellbeing and resilience practitioner, particularly from my efforts to assist local community groups and organisations in the aftermath of the Canterbury earthquakes. The series of quakes that devastated the city of Christchurch from 2010 to 2012 presented all Cantabrians with substantial psychosocial challenges both in the immediate aftermath of the four big quakes and thousands of aftershocks, and till this day as the long journey towards citywide recovery continues. This work brought me into direct contact with a wide variety of organisations wishing to promote and protect their employees' wellbeing (among them Land Search And Rescue, the Department of

Conservation, the Heart Foundation, Fletcher EQR, Crown Solicitors, the Ministry of Education, and a large number of schools across Christchurch). In doing so it afforded me unique insights regarding the decision-making and challenges surrounding the promotion of wellbeing in real world organisational contexts.

Fifteen years since Seligman and Csikszentmihalyi (2000) published their framework for a new science of positive psychology, a considerable body of theoretical and empirical wellbeing research has amassed to guide this process, but working with human resource managers highlighted several limitations among extant knowledge, unresolved conflicts and specific evidence gaps thwarting the widespread application of positive psychology within public health and organisations. For my PhD I was determined to undertake translational work and combine research and practice, with the goal of integrating academic knowledge with my experience in workplaces and schools. The post-quake environment created unprecedented demand for, and interest in, organisational wellbeing promotion; the challenge lay in convincing funders and practitioners that positive psychology sufficiently understood wellbeing and how to promote it, and offered the psychometric measurements to rigorously monitor progress and cost-effectiveness.

This overarching aim of this research is therefore to deliver additional evidence required by decision-makers and practitioners to precipitate the promotion of population wellbeing. Studies indicating the relatively small proportion of the population currently flourishing (for example, 18% of US adults and 16% of Europeans) and the risk factors associated with anything less than flourishing (Keyes, 2005), indicate the scope and importance of wellbeing promotion. Using mixed methodology, I adopted a targeted approach to a multi-layered problem, addressing limitations and gaps in the evidence that are hindering the widespread dissemination of positive psychology in organisational and public health contexts. One of the unique contributions of this body of work lies in its adoption of a public health approach to the application of positive psychology research in an occupational health setting.

The specific objectives of the series of studies that contribute to the overarching aim were as follows:

1. To empirically investigate the similarities and differences between common

academic theoretical, conceptual, and operational definitions of wellbeing and flourishing.

2. To explore conceptualisations of wellbeing among New Zealand workers.

3. To examine the psychometric properties of the Flourishing Scale (FS; Diener et al., 2010) in a New Zealand sample.

4. To conduct epidemiological research into wellbeing and flourishing in New Zealand.

5. To review the evidence supporting positive psychology interventions' effectiveness when applied in real world settings.

6. To explore pathways to wellbeing among New Zealand workers.

Definition of key terms

Wellbeing: For the purposes of this research the term "wellbeing" refers to the subjective experience of internal phenomenon. It is intentionally used in preference to "subjective wellbeing" which is a term frequently used in psychology to describe the combination of life satisfaction and emotional balance. Similarly, it is used in preference to "psychological wellbeing", a term used by psychologists to refer more narrowly to psychological functioning. Because researchers frequently use "mental health" and "positive mental health" in place of "wellbeing", I have adopted their phraseology in places where it makes more sense to do so rather than alter it to "wellbeing". I have not used "mental health" because of the negative connotations associated with the phrase (Stewart-Brown, 2013). My decision to use the word "wellbeing" throughout accords with the WHO's definition of health as "a state of complete physical, mental and social well-being" (1948). I therefore regard wellbeing as a component of overall health and this thesis focuses on the mental and social aspects of the WHO's definition. In chapters 5 and 6 the term is written "well-being" (as opposed to my preference for "wellbeing") in accordance with the style of the journals in which the studies have been published.

Flourishing: For the purposes of this research the term "flourishing" refers to high levels of experienced wellbeing. The precise diagnosis of flourishing, whether it is a categorical or continuous definition, is explored in more depth in Chapter 2.

Public health and public health policy: For the purposes of this research the term "public health" refers to "all organized measures (whether public or private) to prevent disease, promote health, and prolong life among the population as a whole. Its activities aim to provide conditions in which people can be healthy and focus on entire populations, not on individual patients or diseases. Thus, public health is concerned with the total system and not only the eradication of a particular disease" (World Health Organization, 2015). The WHO currently identifies three main public health functions: the assessment and monitoring of the health of communities and populations at risk to identify health problems and priorities; the formulation of public policies designed to solve identified local and national health problems and priorities; and to assure that all populations have access to appropriate and cost-effective care, including health promotion and disease prevention services.

Mental health policy/plan: For the purposes of this research the term "mental health policy" refers to the "official statement of a government which defines the vision and details an organized set of values, principles, objectives and areas for action to improve the mental health of a population. A mental health plan details the strategies, activities, timeframes and budgets that will be implemented to realize the vision and achieve the objectives of the policy as well as the expected outputs, targets and indicators that can be used to assess whether implementation has been successful" (World Health Organization, 2013, p. 38). In New Zealand, the mental health development and addiction service development plan (2012) explicitly states the following bodies are responsible for the plan's implementation: the Ministry of Health, District Health Board planners and funders, District Health Board providers, nongovernmental providers, primary care providers, Health Workforce New Zealand, other organisations responsible for workforce development and other government agencies (such as Department of Labour and Department of Education). In terms of resources it refers to the funds, workforce, infrastructure and energy of all stakeholders (Mental Health Commission, 2012).

Statement of the problem

The recent accumulation of a considerable body of theoretical and empirical wellbeing

research has lead to a growing awareness among researchers and decision-makers of the individual, organisational, and societal benefits associated with wellbeing, and the potential opportunity that organisations represent for mass-market promotion of wellbeing (for a New Zealand specific review of workplace wellbeing see Russell, 2009). However, in order for this to occur, and before organisations invest in the type of comprehensive and holistic wellbeing programmes that are likely to result in sustainable benefits (and therefore significantly impact public health), decision-makers need to be assured of the following: 1) that wellbeing can be reliably measured using rigorously validated psychometric measures; 2) that we, as practitioners and academics, are confident of the definition of wellbeing and related constructs; and 3) that there is evidence of these programmes' effectiveness when applied in real world contexts. Only then can organisations invest in wellbeing with a hope of measuring programme effectiveness and establishing returns on investment.

Despite the substantial academic progress made in the study of wellbeing over the last two decades, and many in the field being focused on the promotion of population wellbeing (Huppert, 2004; Keyes, 2007a; Seligman, 2011), lack of agreement exists over the theoretical, conceptual and operational definition of both flourishing and wellbeing. While researchers generally agree that wellbeing is a multi-dimensional dynamic construct, and that flourishing refers to high levels of wellbeing (Diener et al., 2010; Fredrickson & Losada, 2005; Huppert & So, 2009; Keyes, 2002; Seligman, 2011), no internationally agreed upon definition of wellbeing currently exists and its measurement remains haphazard (Diener, 2009; Diener & Seligman, 2004; Forgeard, Jayawickreme, Kern, & Seligman, 2011). In their review of the peer-reviewed positive psychology literature, Donaldson and colleagues found 31 different scales were used to assess wellbeing, or its aspects, and that researchers often referred to terms such as wellbeing, life satisfaction, and happiness interchangeably (Donaldson, Dollwet, & Rao, 2014). Similarly, a review conducted for this thesis found 33 different scales used in positive psychology intervention research (Hone, Jarden, & Schofield, 2015). The presence of multiple operational definitions represents a challenge for policy-makers and employers wanting to promote and measure wellbeing. The first three studies in my doctoral thesis therefore aim to give clarity to the conceptual and operational definition of wellbeing and flourishing. In other words, they investigate the questions of

what is wellbeing? and how it is measured? Additional studies consider who has
wellbeing? and how it is promoted? Figure 1 provides an outline of the key research
questions addressed by this thesis, and the specific studies conducted to investigate
them.

What is wellbeing?	How do we measure wellbeing?	Who has wellbeing?	How can wellbeing be promoted?
Chapter 2: Review of theoretical, conceptual and operational definitions of wellbeing	Chapter 2: Impact of operational definition on national prevalence rates	Chapter 2: Prevalence of flourishing among adult New Zealanders	Chapter 5: Lifestyle behaviours, physical health, psychosocial, and work-related indicators of flourishing among New Zealand workers
Chapter 3: Conceptualisations of wellbeing among New Zealand workers	Chapter 4: The psychometric properties of the Flourishing Scale	Chapter 5: Prevalence and charateristics of flourishing among New Zealand workers	Chapter 6: Review of intervention effectiveness research
			Chapter 7: Pathways to wellbeing among New Zealand workers

Figure 1. Key research questions and specific studies conducted to investigate them

The first study of this PhD, presented in Chapter 2, reviews four theoretical, conceptual,
and operational definitions of flourishing, and compares their similarities and
differences. Given the number of different flourishing operationalisations being used in
international epidemiology, this study uses a nationally representative sample of adult
New Zealanders to explore the impact of operational definition on epidemiology,
calculating national prevalence rates of flourishing according to each of the four
different conceptual and operational models.

Because the study in Chapter 2 reports a lack of published evidence on lay perceptions
of wellbeing, Chapter 3 investigates lay conceptualisations of wellbeing in a sample of
New Zealand workers. It does so using a prototype analysis methodology to

simultaneously explore the structure of wellbeing, and examine alignment between academic models of wellbeing and workers' perceptions.

For wellbeing outcomes to guide policy in an effective and meaningful way, assessment using reliable, valid, and responsive measurement tools is vital (Diener, Lucas, Schimmack, & Helliwell, 2009). Being such a new field, however, many of positive psychology's outcome measures require further validation. Preliminary validation studies have indicated the utility of the Flourishing Scale (FS; Diener et al., 2010), a brief wellbeing measure popular with New Zealand organisations (L. Scopes, Vitality Works, personal communication, November 11th 2013), but further testing of the FS's psychometric validity and generalisability is required. This is the topic of investigation in Chapter 4.

Having considered the conceptualisation and operationalisation of wellbeing (in other words, what is wellbeing? and how is it measured?), this doctoral thesis then turns its attention towards epidemiology (in other words, who has high levels of wellbeing?). More specifically, Chapter 5 studies the prevalence, characteristics and associations of flourishing among New Zealand workers. This addresses the complete absence of epidemiological research on flourishing in New Zealand and answers a call from the Mental Health Foundation for an annual wellbeing survey using a representative sample to enable a baseline measure for prevalence flourishing to be calculated (Norriss, 2010). Based on the assumption that "well-being would prevail when pathology was absent" (Huppert & So, 2013, p. 838) epidemiology has traditionally focused on disease. But a growing body of research challenges this assumption, asserting that mental health and mental illness are two separate, albeit related, continua (Keyes, 2002, 2005). As Pawelski argues, studying flourishing provides us with "knowledge that would not be available to us if we simply studied the negative, no matter how comprehensively we did so" (Pawelski, 2011, p. 9). The epidemiology of flourishing is therefore now regarded as an important research focus, providing vital evidence to support effective population intervention programmes, and the subject of substantial international investigation. To date empirical research has reported that 18% of US adults are flourishing (Keyes & Grzywacz, 2005), 20% of South African adults are flourishing (Keyes et al., 2008), 8% of South Koreans are flourishing (Y.-J. Lim, Ko, Shin, & Cho, 2013b), 44% of Chinese adults are flourishing (Yin, He, & Fu, 2013) and 16% of Europeans are

flourishing (Huppert & So, 2009). No New Zealand-specific empirical data for population flourishing currently exists however, prompting the two studies in this thesis that investigate the prevalence of flourishing: one among adult New Zealanders (Chapter 2), another among New Zealand workers (Chapter 5).

The remaining studies making up this body of work focus on activities and strategies that promote wellbeing. To date positive psychology has shown that, through engaging in certain types of intentional activities, it is possible to enhance individual wellbeing (Lyubomirsky, Sheldon, & Schkade, 2005); and two meta-analyses have indicated the *efficacy* of positive psychology interventions (PPI) to promote wellbeing and reduce depressive symptoms (Bolier et al., 2013; Sin & Lyubomirsky, 2009). However, how effective these interventions are when implemented in real world contexts, such as organisations, remains unknown. This is because efficacy trials typically recruit homogenous, motivated participants, often undergraduate psychology students participating for class credits, and researchers have yet to provide persuasive evidence that these interventions, when used in real world settings, are beneficial (Parks, Della Porta, Pierce, Zilca, & Lyubomirksy, 2012). While empirical and anecdotal evidence indicates that PPI effectiveness trials are being carried out in real world settings, a review of this next, critical, phase of intervention research has yet to be conducted. Chapter 6 therefore reviews PPI effectiveness studies, systematically evaluating their methodological and reporting quality. It addresses gaps in the extant literature in three ways by: 1) assessing the scope and nature of PPI effectiveness research; 2) quantitatively evaluating the extent to which published PPI effectiveness trials report on issues affecting external validity; and 3) making recommendations for future research design and reporting. It does so by using an evaluation tool popular in public health called RE-AIM that assesses intervention utility according to an intervention's Reach, Efficacy, Adoption, Implementation and Maintenance (RE-AIM; Glasgow, Vogt, & Boles, 1999). Reporting across these five dimensions (explained further in Chapter 6), will provide greater clarity for researchers, practitioners, and human resource management decision-makers as to where, when, and how various PPIs have been tested in real world contexts, allowing informed decision-making regarding their suitability and readiness for mass-market dissemination.

Finally, Chapter 7 explores New Zealand workers' perceptions of activities used to

promote their individual wellbeing using content analysis. In this respect, the final two studies address the question of how wellbeing is currently being promoted.

Significance of the research

The academic field of wellbeing research is advancing globally (for a comprehensive assessment of the field's size, reach, impact and growth see Rusk & Waters, 2013), and awareness of the associated benefits of wellbeing is prompting considerable interest in its application in organisational contexts. One of positive psychology's aims is to increase population wellbeing, with Seligman setting a goal of achieving 51% global flourishing by 2051 (2011), compared to current estimates ranging from 8% among South Koreans (Y.-J. Lim et al., 2013b) to 41% in Denmark (Huppert & So, 2013). But in order for wellbeing science to gain traction in public and organisational health, several weaknesses in its measurement must be addressed. The series of studies that follow target specific research limitations and identify evidence-gaps seen from a practitioner and policy-maker's perspective, and contain several novel contributions to the body of literature both in New Zealand and on an international level.

Firstly, the literature review in Chapter 2 draws together frequently used conceptualisations and operationalisations of flourishing. It is anticipated that this review will become a useful guide for wellbeing researchers and practitioners, creating as it does the first summary of the main instruments available to measure population flourishing, comparing the way the components are combined, and the categorical definitions operationalised, as well as reviewing the psychometric research supporting them. Furthermore, this study makes two additional contributions to the body of knowledge. Using a large nationally representative sample, and survey data containing sufficient variables, it calculates the prevalence of flourishing among adult New Zealanders for the first time using Huppert and So's operationalisation and thereby allowing international comparison against 23 European countries (Huppert & So, 2009). This provides a much-needed baseline measure of population flourishing in New Zealand. Uniquely, this study also applies three alternative conceptual and operational definitions of flourishing to the same dataset in order to explore the impact of operational definition on prevalence rates. It is hoped that this study will highlight for

researchers and practitioners the significant influence their choice of measurement tool has on epidemiology, and assist with selection of appropriate measurement tools.

Continuing with the issue of wellbeing conceptualisation, Chapter 3's exploration of New Zealand workers' perspectives of wellbeing is also likely to add substantial evidence to the body of knowledge. Not only is this study significant in that it examines, for the first time, alignment between lay conceptions of wellbeing and academic models, but using a prototype analysis to explore the structure of wellbeing breaks new ground. It is anticipated that this research could make an important contribution to the scientific understanding of the construct of wellbeing by revealing that it is not a classically organised construct, but is in fact prototypically organised. In other words, rather than theorising that certain components are necessary and sufficient for wellbeing, researchers may need to acknowledge that wellbeing is less rigidly structured, with some instances recognisably closer to the prototype model than others. Chapter 3 explains more about prototypically organised constructs and the research methods used to identify them.

The extent to which workers' conceptions of wellbeing correspond with researchers' theoretical models is also an important question worthy of empirical investigation. Because it is possible that workers' efforts to maintain and promote their own wellbeing may relate to (and therefore be limited by) their own perception of the concept, investigating workers' perspectives on what constitutes wellbeing and how they go about promoting it will provide insights into how well public health and/or health and productivity management messages around wellbeing are 'getting through' to employees. Furthermore, in fields such as human resources and psychology, where assessment frequently relies on self-report questionnaires, it is essential to be confident that what the investigator is measuring corresponds with the concept of wellbeing in the mind of participants. Investigating workers' perceptions of wellbeing could therefore inform, and perhaps refine, existing models and measurements of wellbeing.

Given that no internationally recognised gold-standard measurement tool for flourishing exists, and driven by the practical demands of human resource management seeking a brief, theoretically sound, measure of flourishing, the research in Chapter 4 seeks to expand upon the nascent evidence-base supporting the psychometric

properties of the Flourishing Scale (Diener et al., 2010). Using a nationally representative sample of New Zealand adults to test the properties of the FS adds evidence of the psychometric validity and reliability of a scale previously only tested on convenience samples. Presenting comprehensive national norms for the FS has the additional benefit of: 1) providing useful benchmark data for practitioners and researchers seeking to use a brief validated measure of flourishing among adult populations, and 2) allowing international comparisons.

The epidemiological research into the prevalence and associations of flourishing among New Zealanders workers in Chapter 5 is novel to both the international and the New Zealand setting, and is significant on several levels. Traditionally restricting psychometrics to risk factors, affect balance, life satisfaction, job satisfaction and engagement, as the key metrics predicting employee and organisational performance (Page & Vella-Brodrick, 2009), the field of occupational health has lagged behind positive psychology's understanding of wellbeing as a multi-dimensional concept. The international evidence-base concerning employee flourishing is currently extremely limited, and non-existent in New Zealand. Given we only know what we measure, if we continue to focus on measuring risk factors and engagement we will never know about the characteristics and determinants of employee flourishing. Accordingly, by expanding upon the limited evidence-base concerning employee flourishing and demonstrating the findings of epidemiological research on flourishing to the occupational health sector, there is potential for this study to influence future occupational health practice both here in New Zealand, and internationally.

Finally, this thesis adds to the body of knowledge concerning wellbeing intervention, by providing a much-needed review of positive psychology intervention research and conducting qualitative research exploring alignment between workers' self-reported pathways to wellbeing and evidence-based activities. As previous studies have already reported the efficacy of a number of such interventions (Bolier et al., 2013; Sin & Lyubomirsky, 2009), a review of effectiveness research is now required. The review in Chapter 6 lists the location, setting, duration of intervention/follow up, type of delivery agents and type of participants, as well as assessing the quality of each study's methodology and reporting. This type of examination provides clarity for researchers, practitioners, and decision-makers as to where, when, and how PPIs have so far been

tested in real world contexts, thereby assessing their suitability and readiness for mass-market dissemination. The decision to use the RE-AIM (Glasgow et al., 1999) framework to evaluate PPI effectiveness trials also introduces this useful tool, designed to evaluate the public health impact of physical health interventions, to the field of positive psychology. An acronym for Reach, Efficacy, Adoption, Implementation, and Maintenance, using RE-AIM brings a critical and systematic approach to intervention evaluation, acknowledging the importance of internal and external validity for meaningful intervention research. By offering recommendations for future reporting of effectiveness trials it is hoped this review study will assist in the accumulation of high quality evidence better informing the future translation of evidence to practice. Finally, qualitative work comparing New Zealand workers' self-reported experience of pathways to wellbeing against evidence-based activities will inform health promotion agents of potential targets for intervention, and indicate current awareness levels that can serve as benchmarks for future study comparison.

The wider implication of this research is that it strengthens the case for public health to adopt wellbeing metrics and interventions, and strengthens the case for wellbeing promotion within organisations. The implementation of positive psychology theory, research, and intervention within the private sector has several benefits. Firstly, it benefits individual employees by providing them with access to professional development and wellbeing initiatives independent of public or personal funding, and in the type of social and structured environment identified as convenient and conducive to sustained behavior change (Neville et al., 2011). Additionally, it offers improved employee health, staff morale, job satisfaction, discretionary effort, and stress reduction for employees, and financial benefits for employers in the form of reduced healthcare costs, absenteeism, presenteeism, workplace accidents, increased performance and productivity, enhanced creativity and engagement, and improved staff retention (Russell, 2009). Society benefits when the promotion and protection of population wellbeing occurs independent of personal or public funding (Williams & Bruno, 2007) and from a reduction in the indirect workplace costs associated with ill health from presenteeism, not working, reduced work hours and absenteeism (see Holt, 2010, for a New Zealand perspective on the indirect costs of ill health; and New Zealand Treasury, 2012, for direct health costs in New Zealand). Ultimately, it is anticipated that

the promotion of population wellbeing will have widespread social, economic and physical health consequences, and crucially, may see the reduction in prevalence of mental disorders.

The research conducted across these studies should be considered in light of the following de-limitations.

Study de-limitations

1. This research is carried out from a psychological and social science perspective, and the data used is subjective. Throughout this thesis, the term subjective refers to the Organisation for Economic Co-operation and Development's (OECD) definition meaning that only the person under investigation can provide this information and these evaluations are of internal experience not external phenomenon (OECD, 2013). Investigations into the construct of wellbeing are carried out from a psychological and social science perspective. Accordingly, keyword literature searches were confined to psychological and social science databases, and objective list and capabilities approaches (Sen, 1999) to the assessment of wellbeing fall beyond the scope of this research. Although some of the data does reflect objective variables (such as education and income), no objective data from outside sources was collected in the course of this research. This decision was taken partly on practical grounds (the collection of objective data was considered beyond the scope of the current research) and also in recognition of the large body of Quality of Life research that already features objective data.

2. Because much of positive psychology research focuses on flourishing (the term commonly used to describe high levels of wellbeing) some of the studies that make up this body of work examine flourishing specifically, while others consider the construct of wellbeing more broadly. Decision-making around when to study wellbeing as the outcome variable, and when to study flourishing, was governed by previous research studies with the intention of building on existing evidence. In Chapter 3, however, wellbeing was selected as the target outcome because I considered an investigation of workers' perspectives on flourishing too narrow a research focus, and believed studying the broader

construct of wellbeing was a more valuable contribution to the evidence.

3. The research samples in this body of work comprised adult New Zealanders and therefore study findings cannot be generalised to other populations. This decision was influenced by practical grounds (limited time and resources) and also because much of my work in the post-quake environment involved adults. It was not the intention of this thesis to investigate Māori wellbeing independently, but where possible results indicate differences in ethnicity.

4. This PhD's epidemiological research relies upon data from the Sovereign Wellbeing Index Round 1 (Human Potential Centre, 2013), which includes the following de-limitations:

   a. The survey completion rate of 26% raises questions over the representativeness of the sample. However, relatively low response rates do not necessarily produce non-representative findings and the fact that the sample demographics align with the most recent NZ census data suggests the SWI Round 1 to be a nationally representative sample.

   b. As the current studies only use data from Round 1 of the survey, which is therefore cross-sectional, it is not possible to draw any conclusions regarding causality. As with all cross-sectional surveys, the data can only be used to analyse associations between independent and dependent variables.

   c. Epidemiology was limited by the variables covered by the SWI Round 1. My thesis would have benefited from the inclusion of additional variables, particularly missed days at work and objective productivity indicators, but the number of variables was restricted in consideration of participant burden.

5. Much of this body of work is open to bias caused by the researcher's subjectivity. The studies appearing in Chapters 2, 3, 6 and 7 required decision-making around thresholds, coding, and scoring which subjects the results to researcher bias. In order to keep this to a minimum, each of these procedures was conducted working in collaboration with other experienced researchers. Details of this process are covered within the methods section of each study.

Thesis structure

Figure 1 (p. 29) summarises the overall structure of this thesis and the research questions investigated. It consists of eight related chapters, four of which contain studies published as scientific manuscripts in relevant peer-reviewed journals, and one of which is currently under review. Figure 2 outlines the studies covered in each chapter.

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│  Chapter 1. Introduction                                       │
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│  Chapter 2 (Study 1). Measuring wellbeing/flourishing: The     │
│  impact of conceptual and operational definitions on the       │
│  prevalence of high levels of wellbeing (published)            │
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                              ↓
┌──────────────────────────────────────────────────────────────┐
│  Chapter 3 (Study 2). Conceptualisations of wellbeing:         │
│  Insights from a prototype analysis on New Zealand workers      │
│  (submitted)                                                    │
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│  Chapter 4 (Study 3). Psychometric properties of the           │
│  Flourishing Scale in a New Zealand sample (published)         │
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│  Chapter 5 (Study 4). Flourishing in New Zealand workers:      │
│  Associations with lifestyle behaviours, physical health,       │
│  psychosocial, and work-related indicators (published)         │
└──────────────────────────────────────────────────────────────┘
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│  Chapter 6 (Study 5). An evaluation of positive psychology     │
│  intervention effectiveness trials using the RE-AIM             │
│  framework: A practice-friendly review (published)             │
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│  Chapter 7 (Study 6). Pathways to wellbeing among New          │
│  Zealand workers (submitted)                                   │
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│  Chapter 8. Discussion                                         │
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Figure 2. Chapter outline showing the individual studies that make up this thesis

Chapter 1 provides the background for the thesis, outlining the rationale and significance of my work.

Chapter 2 focuses on the multiplicity of conceptual and operational approaches in the study of wellbeing. It has two parts. The first part reviews the current literature on the psychometric assessments of high levels of wellbeing (known as flourishing), exploring their psychometric properties and utility. Part two investigates the impact of operational definition on the prevalence of flourishing using a nationally representative sample of adult New Zealanders, and reports the variation in prevalence rates according to the different operationalisations.

Chapter 3 maintains the focus on conceptualisations, investigating New Zealand workers' perspectives on wellbeing in a three-part study using prototype analysis methodology. Study 1 invites workers to list the components of wellbeing in a free-response format and analyses responses to identify the most frequently endorsed components. Study 2 asks a second sample of workers to rank the components from Study 1 according to how central (or important) they consider them to the concept of wellbeing. Study 3 evaluates the impact of component centrality on workers' perceptions of wellbeing.

Chapter 4 continues the exploration of operationalisations, investigating the psychometric properties of one of the field's newer outcome measures, the Flourishing Scale (Diener et al., 2010).

Chapter 5 builds upon the epidemiology of flourishing in New Zealand begun in Chapter 2, examining the prevalence and characteristics of flourishing among a large sample of New Zealand workers.

Chapter 6 evaluates positive psychology intervention (PPI) effectiveness research. It has two main components, the first a review of intervention studies detailing the scope and nature of PPIs, the second a systematic quantitative evaluation of the extent to which published PPI effectiveness trials report on issues beyond efficacy, in particular those relating to generalisability.

Chapter 7 uses content analysis to investigate self-reported pathways to wellbeing among New Zealand workers.

Chapter 8 concludes the thesis with a broad discussion integrating findings from across the studies and outlining research limitations. It reviews which of the study aims have been accomplished and contributions to the body of knowledge. Recommendations for future research and practice are made according to each of the four different areas covered: conceptualisations and operationalisations of flourishing, and their impact on epidemiology; intervention effectiveness research; public health; and occupational and organisational health.

It is important to note that due to the nature of this thesis' format (i.e., presenting chapters as peer-reviewed scientific papers) some duplication of material occurs (and American spelling is used in published papers). Each chapter is preceded by a preface, which links the material but also introduces a personalised angle justifying the decision-making surrounding my research goals and direction. It is hoped that the prefaces therefore assist with structure and flow, adding coherence to the overall thesis document.

CHAPTER 2

MEASURING FLOURISHING: THE IMPACT OF OPERATIONAL DEFINITIONS ON THE PREVALENCE OF HIGH LEVELS OF WELLBEING

Preface

In the selection of a psychometric measure to investigate wellbeing, epidemiologists and organisational health decision-makers are looking for a relatively short, empirically validated measure. They also need to be confident of its theoretical foundations.

A multitude of outcome measures are now available for wellbeing assessment; some multidimensional assessments have been used in international epidemiological studies investigating the prevalence of flourishing, for instance among nationally representative American (Keyes, 2002, 2005) and European samples (Huppert & So, 2009). However, I wanted to know more about the similarities and differences between these operationalisations and the question of their criterion-related validity (that is, how findings on these measures correlate with those on other theoretical models of flourishing) had not been studied. I therefore leveraged the opportunity of having access to a nationally representative dataset of adult New Zealanders, comprising a wide variety of wellbeing variables, to investigate the impact of operational definition on the epidemiology of flourishing. This provided the opportunity to test the various models' validity, and also to estimate the national prevalence of flourishing among adult New Zealanders for the first time. It allowed me to get a great deal clearer about the different theoretical, conceptual and operational definitions of wellbeing and flourishing, their respective utilities and psychometric rigour. The manuscript resulting from this chapter has been published in the International Journal of Wellbeing (Hone, Jarden, Schofield, & Duncan, 2014).

Abstract

The epidemiology of flourishing is an important research topic prompting international interest in its psychometric assessment. But the need to measure human feelings and functioning at the population level has resulted in the creation of a multitude of different conceptual frameworks of flourishing: a term now commonly used to describe high levels of subjective wellbeing. Not only do different researchers theorise and conceptualise flourishing in different ways, but also the categorical diagnosis of flourishing is dependent upon the various combinations of components, and researcher determined thresholds, used in each operationalisation. The multiplicity of approaches is potentially limiting the usefulness of the resultant epidemiology. This paper comprises two parts: Part 1 identifies four operationalisations of flourishing in the psychological literature, reviews their psychometric properties, and utility; Part 2 investigates the impact of operational definition on the prevalence of flourishing using the Sovereign Wellbeing Index survey, a sample of 10,009 adult New Zealanders, and reports substantial variation in prevalence rates according to the four different operationalisations: Huppert and So (24%), Keyes (39%); Diener et al. (41%); and Seligman et al. (47%). Huppert and So's model was the only one of the four to require endorsement of one particular variable, making it the most stringent criteria for flourishing, while the other three were more flexible in their categorisation. Cross-tabulation analysis indicated strong agreement between our replications of Keyes' and Seligman et al.'s models (81%), and between Diener et al. and Seligman et al.'s models (80%). Agreement between Seligman, and Huppert and So's, operationalisations was moderate (74%). Taken together, and in line with recent OECD recommendations, our findings reinforce the need for greater international collaboration and conceptualisation consensus when measuring flourishing. In the absence of any published empirical research investigating perceptions of flourishing among laypersons, a prototype analysis investigating alignment between lay and academic conceptualisations of flourishing is recommended.

Introduction

The epidemiology of high levels of wellbeing, referred to here as flourishing, is an important research topic fuelling substantial international interest in its psychometric measurement. Based on the assumption that "well-being would prevail when pathology was absent" (Huppert & So, 2013, p. 838), epidemiology has traditionally focused on disease. But a growing body of research challenges this assumption, asserting that mental illness and mental health are two separate, albeit related, continua (Keyes, 2002, 2005). Population-based studies investigating prevalence and characteristics of mental health, in addition to mental illness, are therefore vital for providing evidence to support effective population intervention programmes (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011). In other words, "as a society, we need to know how people can flourish" (Dunn & Dougherty, 2008, p. 314).

Michaelson and colleagues' have identified eight benefits to measuring population wellbeing: to assess change over time; to review and evaluate policy decisions; to enable international comparisons; to assess subgroup differences; to identify future areas of need or opportunity; to evaluate potential impact of policy proposals; to shape content and delivery of policy; and to inform targeting of new policies according to population subgroups (Michaelson, Abdallah, Steuer, Thompson, & Marks, 2009). The growing evidence-base of the desirable correlates of high levels of wellbeing (for review see Diener et al., 2010), and the risks to individual and societal-level functioning associated with low levels of wellbeing (Keyes, 2002, 2005, 2010), is convincing policy makers of the importance of complementing objective indicators (e.g. gross domestic product, literacy, and life expectancy) with assessment of subjective wellbeing (Weijers & Jarden, 2013). As a result, the last decade has seen several countries devise national, or multi-national, surveys designed to empirically measure wellbeing as a multi-dimensional construct. Current national wellbeing surveys come from a variety of sources, both national statistics offices and non-official sources, including for example the European Social Survey (ESS; Jowell & The Central Co-ordinating Team, 2003), the Sovereign Wellbeing Index (SWI; Human Potential Centre, 2013), the Australian Unity Wellbeing Index (Cummins, Eckersley, Pallant, van Vugt, & Misajon, 2003) and Statistics Canada's General Social Survey (Statistics Canada, 2011).

Measures of wellbeing are not only important for governments and decision-makers in organisations, but for the general public too, with polls reflecting a growing appetite among citizens for governments to attend to subjective wellbeing. In one poll, for example, given the choice between pursuing wealth or happiness, 81% of adults aged 15 and over (n = 1,001) believed directing policy towards promoting greater happiness should be the government's primary purpose (Easton, 2006). In another poll, economic measures such as GDP were endorsed as a measure of national wellbeing by just 30% of respondents (n = 6,870), compared to 79% endorsing 'life satisfaction' as a measure of national wellbeing (ONS UK, 2011). The Organisation for Economic Co-operation and Development's (OECD) recently published guidelines on measuring subjective wellbeing have also acknowledged the merit of assessing the views of individuals, providing "an overall picture of well-being that is grounded in people's preferences, rather than in a priori judgments about what should be the most important aspects of well-being" (OECD, 2013, p. 183) .

However, for wellbeing outcomes to guide policy in an effective and meaningful way, systematic assessment using reliable, valid, and responsive measurement tools, as well as representative population samples, is required (Diener et al., 2009). While substantial progress has been made over the last two decades, with researchers in general consensus that wellbeing is a multi-dimensional construct, and that flourishing refers to high levels of wellbeing (Diener et al., 2010; Fredrickson & Losada, 2005; Huppert & So, 2009; Keyes, 2002; Seligman, 2011), the current measurement of wellbeing is haphazard (Diener, 2009; Diener & Seligman, 2004; Forgeard et al., 2011). The presence of multiple measures of flourishing makes it necessary to compare and contrast these models and measures.

This paper has two objectives: Part one reviews the current literature on the most popular psychometric assessments of flourishing, drawing together, for the first time, frequently used conceptualisations and operationalisations. While our review does not claim to be exhaustive, it is, to the best of our knowledge, the first of its kind to summarise the main instruments available to measure population flourishing. We begin with a historical review of the psychometric assessments, providing details on each of the researchers' theoretical and conceptual definitions of flourishing, methodologies for

categorical diagnosis, and extant evidence of scale reliability and validity. As the theoretical evidence-base for each component indicator of flourishing has been reviewed elsewhere (for example, see Forgeard et al., 2011; Michaelson et al., 2009) this is not the purpose of our investigation; our focus is on comparing the way the components are combined, and categorical definitions of flourishing operationalised, as well as reviewing the research supporting them. Part two investigates the impact of operational definitions on the prevalence of flourishing in New Zealand. Using a large nationally representative sample, and survey data containing sufficient variables, it examines differences and similarities of the prevalence of flourishing as a consequence of conceptualisation and operational definition.

Part One: Literature review

Methods

Search strategy: Operationalisations of flourishing were identified by several means. Keyword searches in psychological and social science databases were conducted using the following MeSH terms and text words: "flourish*" in combination with "measur*" or "assess*" or "evaluat*" or "scale"[1]. The search was restricted to peer-reviewed studies published in the English language. No time criteria were applied. We also checked the references from the studies retrieved.

Results

A total of 71 citations were found and reviewed across the CINAHL (6), MEDLINE (22), Psychology and Behavioral Sciences Collection (5) and PSYCInfo databases (38). Our search revealed four different conceptualisations and operational definitions of flourishing currently used within the psychological literature: Keyes', Huppert and So's, Diener et al.'s, and Seligman et al.'s.

The first contemporary use of the term flourishing among psychologists to describe high levels of wellbeing was by Corey Keyes. Using a representative sample of adult Americans (n = 3,032), Keyes categorised adults free of mental disorder as either

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[1] We based our search around the concept of flourishing as, in our experience, this is the most frequently used term to describe high levels of wellbeing, as opposed to concepts such as thriving which in psychology refers more narrowly to personal growth associated with adverse experience (Carver, 1998).

flourishing, moderately mentally healthy, or languishing (Keyes, 2002). Following on from Keyes, Huppert and So took advantage of the opportunity afforded by the addition of a new wellbeing module to the 2006/7 European Social Survey (ESS; Jowell & The Central Co-ordinating Team, 2003) to conduct the first cross-national epidemiological studies of flourishing (Huppert et al., 2009). While Huppert and So's studies cite Keyes' research, they chose not to adopt his operational definition, instead devising, operationalising and testing their own theoretical and conceptual framework. Next came Diener and colleagues' Flourishing Scale (FS; Diener et al., 2010). The scale was created in acknowledgement that using the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) and an affective measure such as the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) only evaluated emotional wellbeing, and therefore failed to assess areas of positive functioning which evidence indicates to be vital for wellbeing (such as competence, self-acceptance, meaning and relatedness, as well as optimism, giving, and engagement, see Brown, Nesse, Vinokur, & Smith, 2003; Putnam, 1995; Ryan & Deci, 2001; Ryff, 1989; Seligman, 2006). Finally, the most recent operationalisation of flourishing is the PERMA-Profiler, an acronym representing Seligman's theory that wellbeing requires high levels of positive emotions, engagement, relationships, meaning, and accomplishments (PERMA; Seligman, 2011). Each of these four different theoretical models, conceptual operationalisations, and the body of science supporting them, is reviewed in greater detail below. They are depicted in Figure 3.

Keyes

Flourishing

- *Emotional Wellbeing*
  - Positive affect (happy)
  - Positive affect (interested)
  - Life satisfaction

- *Social Wellbeing*
  - Social contribution
  - Social integration
  - Social actualisation
  - Social acceptance

- *Psychological Wellbeing*
  - Self-acceptance
  - Environmental mastery
  - Positive relationships
  - Personal growth
  - Autonomy
  - Purpose in life

Huppert & So

Flourishing

- *Positive Apprasial*
  - Positive emotion

- *Positive Functioning*
  - Engagement
  - Competence
  - Meaning
  - Positive reslationships

- *Positive Characteristics*
  - Emotional stability
  - Vitalty
  - Optimism
  - Resilience
  - Self-esteem

Diener et al.

Flourishing

- Purpose and meaning
- Positive relationships
- Engagement
- Social contribution
- Competence
- Self-acceptance
- Optimism
- Self-esteem

Seligman et al.

Flourishing

- Positive emotion
- Engagement
- Positive relationships
- Meaning and purpose
- Accomplishment / competence

Figure 3. Four different conceptualisations of flourishing

Note: See Appendix C for SWI indicator items and thresholds selected to replicate each of these conceptualisations for the purposes part two of this study.

Keyes' operational definition

Derived by examining the Diagnostic and Statistical Manual's internationally agreed upon diagnostic criteria and identifying each symptom's opposite (DSM; American Psychiatric Association, 1987), Keyes' polythetic approach requires the combined presence of high levels of emotional, psychological and social wellbeing symptoms (Keyes, 2002). Hence, in the same way that a diagnosis of depression requires indications of anhedonia and malfunctioning, Keyes requires the presence of hedonic symptoms and positive functioning to be classified as flourishing. His conceptualisation provides self-report assessment of how individuals see themselves functioning personally, as well as evaluating how they see themselves functioning in society. This model of flourishing is underpinned by three theoretical origins: 1) Diener's studies on emotional wellbeing (Diener, 2009), 2) Ryff's distinction between hedonic (subjective or emotional) wellbeing and eudaimonic (psychological) wellbeing (Ryff, 1989), and 3) his own studies on social wellbeing (Keyes, 1998).

The 14-item Mental Health Continuum Short Form (MHC-SF; Keyes, 2005) was developed by Keyes in answer to demands for a brief self-rating assessment tool combining all three components of wellbeing. Three items represent emotional wellbeing, six items represent psychological wellbeing, and five items represent social wellbeing. Each item is scored according to respondents' experiences over the last month on a 6-point Likert scale ('never', 'once or twice', 'about once a week', '2 or 3 times a week', 'almost every day', or 'every day') – see Appendix C. This response option was selected to provide a clear standard of mental health assessment and categorisation similar to the DSM methods for assessing Major Depressive Episode. Keyes suggests mental health can be categorised using thresholds for each of the items: participants responding 'almost every day' or 'every day' to one of the three symptoms of emotional wellbeing, and to six of the eleven symptoms of psychological and social wellbeing, are categorised as flourishing. Subscales, dimensions, and indicator items of the MHC-SF are presented in Table 1.

Table 1. Subscales, dimensions, and indicator items on the MHC-SF

Component of flourishing	MHC-SF indicator item During the past month, how often did you feel…
Emotional wellbeing	
Positive affect	happy
Positive affect	interested in life
Life satisfaction	satisfied
Social wellbeing	
Social contribution	that you had something important to contribute to society
Social integration	that you belonged to a community
Social actualisation	that our society is becoming a better place for people like you
Social acceptance	that people are basically good
Social coherence	that the way our society works makes sense to you
Psychological wellbeing	
Self-acceptance	that you liked most parts of your personality
Environmental mastery	good at managing the responsibilities of your daily life
Positive relations with others	that you had warm and trusting relationships with others
Personal growth	that you had experiences that challenged you to grow and become a better person
Autonomy	confident to think or express your own ideas and opinions
Purpose in life	that your life has a sense of direction or meaning to it

Studies using the MHC-SF have reported wide variation in prevalence rates of flourishing from 8% among South Korean adults (Young-Jin Lim, Ko, Shin, & Cho, 2013a), to 49% among US college students (Keyes et al., 2012), 20% flourishing among adult South Africans (Keyes et al., 2008) , 23% flourishing among Egyptian adolescents (Salama-Younes, 2011), and 44% flourishing among Chinese adults (Yin et al., 2013). Epidemiological studies using the MHC-SF report flourishing is associated with superior physical, psychological, and psychosocial functioning (Keyes, 2005).

A considerable body of evidence exists to support the reliability, validity, and utility of the Mental Health Continuum (MHC). For example, various formats of the MHC have been used to predict the future risk of mental illness among adults (Keyes, Dhingra, &

Simoes, 2010), the risk of all-cause mortality (Keyes & Simoes, 2012), the risk of suicidality among college students (Keyes et al., 2012), and to predict work-related productivity and health care use (Keyes & Grzywacz, 2005). It has also been used in behavioural genetics research to examine the heritability of flourishing (Kendler, Myers, Maes, & Keyes, 2011). The MHC-SF has shown excellent internal consistency and discriminant validity in adolescents and adults across several different countries including the US, the Netherlands, Egypt and South Africa (Keyes, 2006; Keyes & Grzywacz, 2005; Keyes et al., 2008; Lamers et al., 2011; Salama-Younes, 2011). Lamers and colleagues reported the MHC-SF's test-retest reliability at four time points over nine months using item response theory (Lamers et al., 2011). Factor analyses have confirmed the MHC-SF's three-factor structure of emotional, psychological and social wellbeing (Gallagher, Lopez, & Preacher, 2009; Joshanloo, Wissing, Khumalo, & Lamers, 2013; Keyes et al., 2008; Lamers et al., 2011; Yin et al., 2013) and metric invariance across cultures (Joshanloo et al., 2013). The MHC-SF has been used in a number of national surveys: the US Panel Study of Income Dynamic's Child Development Supplement (Keyes, 2009); the South Africa Fortology study (Keyes et al., 2008); and the Canadian Community Health Survey (Hubka & Lakaski, 2013).

Huppert and So's operational definition
Huppert and So's theoretical and conceptual definition of flourishing was designed to mirror the internationally agreed upon methodology used in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013), as well as the International Classification of Diseases (World Health Organization, 1993), requiring the presence of opposite symptoms to Major Depressive Episode (DSM-IV), Depressive Episode (ICD-10), and Generalised Anxiety Disorder (terminology common to both systems). Identifying the opposite symptoms of these mental illnesses gave Huppert and So a list of ten positive features (competence, emotional stability, engagement, meaning, optimism, positive emotion, positive relationships, resilience, self-esteem, and vitality). They then used ESS data, from a representative sample of 43,000 Europeans, to test their conceptual and operational definition of flourishing, analysing responses from the survey's ten items most closely corresponding to the identified positive features, plus one-item assessing life satisfaction (2013). Exploratory factor analysis revealed the presence of three factors, which they referred to as

'positive characteristics' (comprising emotional stability, vitality, optimism, resilience, and self-esteem), 'positive functioning' (comprising engagement, competence, meaning, and positive relationships), and 'positive appraisal' (comprising life satisfaction and positive emotion). Based on factor analysis, inter-item correlations and data distribution, Huppert and So proposed a categorical diagnosis for flourishing that required a strong endorsement of positive emotion, plus a strong endorsement of four out of five 'positive characteristic' features and three out of four 'positive functioning' features (Huppert & So, 2013). Like Keyes, this method intentionally mirrors the DSM's methodology by not requiring the simultaneous presence of all symptoms, but a specified number. These researchers' conceptualisation also covers both the eudaimonic and hedonic aspects of wellbeing, with the first factor representing hedonia, the second two eudaimonia (for greater explanation of the difference between hedonia and eudaimonia see Ryan & Deci, 2001). Accordingly flourishing "is the combination of feeling good and functioning effectively" (2013, p. 838). Each item is scored according to respondents' experiences using three different Likert scales, with experiences assessed over a range of different time periods, and some items are reverse coded – see Appendix C. Due to the different response scales used in the ESS, Huppert and So chose to categorise a feature as present when participants indicated they 'agree' on the seven items using a 5-point scale from 'strongly agree' to 'strongly disagree'. For emotional stability or vitality to be categorised as present, participants were required to respond 'all or almost all of the time' or 'most of the time' on a 4-point scale. However, the data showed such a strong negative skew on the remaining three items that they required 'strongly agree' responses on the two 5-point scales, and 8-10 on the one 0-10 scale. In this sense, Huppert and So's categorisation of flourishing is partly driven by the data's distribution, although they also report that each threshold corresponded to one category above the mean for each item as support for their methodology. Features of flourishing and indicator items from the ESS are presented in Table 2.

Table 2. Features of flourishing and indicator items from the ESS

Component of flourishing	ESS indicator item
Competence	Most days I feel a sense of accomplishment from what I do
Emotional stability	(In the past week) I felt calm and peaceful
Engagement	I love learning new things
Meaning	I generally feel that what I do in my life is valuable and worthwhile
Optimism	I am always optimistic about my future
Positive emotion	Taking all things together, how happy would you say you are
Positive relationships	There are people in my life who really care about me
Resilience	When things go wrong in my life it generally takes me a long time to get back to normal (reverse score)
Self-esteem	In general, I feel very positive about myself
Vitality	(In the past week) I had a lot of energy

Applying their operational definition to the ESS Round 3 (2006/7) dataset Huppert and So reported that 16% of Europeans were flourishing. National prevalence rates across participating countries showed wide variation from less than 10% in Slovakia, Russia and Portugal, to 41% in Denmark (Huppert & So, 2013). Other than the original study reporting a Spearman correlation between flourishing and life satisfaction of .34 ($p <$ .01), to the best of our knowledge no other studies have assessed the convergence of Huppert and So's model with other wellbeing measures, and the second part of the current study is the first to report prevalence rates of flourishing using their model outside of Europe.

Diener et al.'s operational definition

Diener and colleagues' created the Flourishing Scale (FS; 2010) as a brief summary measure of psychological functioning, designed to complement other measures of subjective wellbeing. The FS was first introduced as the Psychological Flourishing Scale in a 12-item format (Diener & Biswas-Diener, 2008) but has since been refined to eight items. Based upon earlier humanistic psychology theories, the FS assesses several identified universal human psychological needs, combining these with other theories of wellbeing (Diener et al., 2010). Specifically, the eight-item scale combines dimensions of wellbeing that Ryff (1989), and Ryan and Deci (2001), suggest are important for positive

functioning (such as competence, self-acceptance, meaning and relatedness), with optimism, giving, and engagement, which have also been shown to contribute to wellbeing (Brown et al., 2003; Csikszentmihalyi, 1990; Putnam, 1995; Scheier, Carver, & Bridges, 2001; Seligman, 2006). It is only designed to capture eudaimonic/psychological wellbeing and has previously been used alongside the Scale of Positive and Negative Experience, which assesses hedonic/emotional wellbeing (Diener et al., 2010; Silva & Caetano, 2011a).

Each item is phrased in a positive direction using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Scores are compiled by adding respondents' scores from each item on the scale together to form one score of psychological wealth (ranging from 8 to 56). While the 12-item version of the FS suggested thresholds categorising participants as flourishing or not flourishing, no such thresholds have been published for the 8-item version. However, a high score on the scale indicates respondents have a positive self-image in important areas of functioning, and many psychological resources and strengths (Diener et al., 2010). Using a representative sample of adult New Zealanders to assess national flourishing, Hone et al. (2013) report mean FS scores of 43.82 (SD = 8.36).

Several studies have so far confirmed the validity, reliability, and the invariant one-factor structure of the 8-item FS across different populations (Diener et al., 2010; Hone et al., 2013; Khodarahimi, 2013; Silva & Caetano, 2011a; Telef, 2011). Dogan et al. used the FS in a study examining the relationship between flourishing, self-esteem, emotional self-efficacy, affect balance on happiness (Dogan, Totan, & Sapmaz, 2013), and the FS was also used alongside other wellbeing measures to test the effectiveness of an on-line occupational health programme in Germany (Feicht et al., 2013). Components of flourishing and indicator items from the Flourishing Scale are presented in Table 3.

Table 3. Components of flourishing and indicator items from the Flourishing Scale

Component of flourishing	FS indicator item
Purpose/meaning	I lead a purposeful and meaningful life
Positive relationships	My social relationships are supportive and rewarding
Engagement	I am engaged and interested in my daily activities
Social contribution	I actively contribute to the happiness and wellbeing of others
Competence	I am competent and capable in the activities that are important to me
Self-respect	I am a good person and live a good life
Optimism	I am optimistic about my future
Social relationships	People respect me

Seligman et al.'s operational definition

Seligman theorises that wellbeing has five components that can be defined and measured as separate, but correlated, constructs (Positive emotions, Engagement, Relationships, Meaning in life, and Accomplishments; PERMA, Seligman, 2011), based on the theoretical grounds that these are what individuals chose freely, "for their own sake" (2011, p.97). The centrality of the theoretical and conceptual role of flourishing to Seligman's interpretation of positive psychology is illustrated in his most recent book, Flourish, in which he writes: "I now think that the topic of positive psychology is well-being, that the gold-standard for measuring well-being is flourishing, and that the goal of positive psychology is to increase flourishing" (Seligman, 2011, p. 13).

The PERMA-Profiler was created in the absence of a brief, validated instrument that specifically measures all five PERMA domains (PERMA-P; Butler & Kern, in press). Hundreds of theoretically relevant items were compiled to create the measure, tested in a series of studies involving 11,905 participants worldwide, and refined to produce the final measure (for greater detail on the theoretical grounding and methods of testing the PERMA-P see Butler & Kern, in press). The 16-item PERMA-P has three items representing each of the five PERMA components, and one item representing 'overall wellbeing'. The general wellbeing question serves as a comparison with other population-based surveys. Each item is scored on an 11-point Likert scale, anchored by 0 (never) to 10 (always), or 0 (not at all) to 10 (completely), while experiences are assessed via a range of different time periods, for example, 'in general', 'how often', 'to

what extent', and 'how much of the time'. Although Seligman lists his criteria for flourishing as being in the upper range of positive emotion, engagement, positive relationships, meaning, and positive accomplishment, Butler and Kern (2013) do not provide thresholds for a categorical diagnosis of flourishing. Instead this research team advocates a 'dashboard' approach to reporting results whereby the three scores of each component are averaged to produce a single component score ranging from 0-10 (higher scores indicate greater wellbeing) and the five component scores are reported as a dashboard of PERMA scores. This, they argue, highlights particular strengths and weaknesses better, whereas a global score lacks the specificity required for targeted intervention and measuring component change over time (Butler & Kern, in press). As Forgeard et al. mention, "Just as we do not have a single indicator telling us how our car is performing (instead, we have an odometer, a speedometer, a gas gauge, etc.), we suggest that we do not want just one indicator of how well people are doing" (Forgeard et al., 2011, p. 97). As yet, no empirical evidence of dashboard statistics, scale norms, or psychometric properties of the PERMA-P have been published. Butler and Kern suggest their studies demonstrate the scale's acceptable reliability and test-retest stability however, and that factor-analysis confirms the five factor structure (Butler & Kern, in press). Components of flourishing and indicator items from the PERMA-P are presented in Table 4.

Table 4. Components of flourishing and indicator items from the PERMA-Profiler

Component of flourishing	PERMA-P indicator item
Positive emotion	In general, how often do you feel joyful?
	In general, how often do you feel positive?
	In general, to what extent do you feel contented?
Engagement	How often do you become absorbed in what you are doing?
	In general, to what extent do you feel excited and interested in things?
	How often do you lose track of time while doing something you enjoy?
Positive relationships	To what extent do you receive help and support from others when you need it?
	To what extent have you been feeling loved?
	How satisfied are you with your personal relationships?
Meaning	In general, to what extent do you lead a purposeful and meaningful life?
	In general, to what extent do you feel that what you do in your life is valuable and worthwhile?
	To what extent do you generally feel that you have a sense of direction in your life?
Accomplishment	How much of the time do you feel you are making progress towards accomplishing your goals?
	How often do you achieve the important goals you have set for yourself?
	How often are you able to handle your responsibilities?
General wellbeing	Taking all things together, how happy would you say you are?

Discussion

The current review identified four ways different research teams have theorised, conceptualised, and operationalised flourishing, and the published empirical research supporting each model. These four research teams (Keyes; Huppert & So; Diener et al.; and Seligman et al.) have operationalised flourishing differently, but are all in agreement on two matters: one, that flourishing refers to high levels of subjective wellbeing; and two, that wellbeing is a multi-dimensional construct that cannot be adequately measured using single-item assessment (see Forgeard et al., 2011, for a review of the theories underlying each of the wellbeing components). As our review

indicates, not only do they theorise and conceptualise flourishing differently, but also the diagnoses of flourishing are dependent upon the various response scales, combinations of components, and researcher-determined thresholds, employed. As we are mindful that different research questions demand different types of psychometric assessment, it is not the aim of our literature review to pigeonhole these models for specific purposes, but to emphasise their similarities and differences enabling users to select the appropriate tool for their particular needs. We will turn our attention to these now.

In terms of similarities, all four adopt the theoretical model combining feeling and functioning originally brought together in a conceptual model of flourishing by Keyes (Keyes, 2002). This is important, as studies indicate the usefulness and need of making this distinction for epidemiology (Keyes & Annas, 2009; Keyes & Simoes, 2012). As a result, and as depicted in Figure 3, considerable conceptual overlap exists. Engagement appears in all four operationalisations, although in Keyes' model it falls within the emotional wellbeing component as an item assessing 'interest'. All four require endorsement of positive relationships reflecting the important evidence-based role that relationships have for flourishing. Meaning and purpose also feature in all four operationalisations, although Keyes refers more narrowly to 'purpose in life', Huppert and So to 'meaning', while Diener et al. and Seligman et al. use a broader definition grouping both constructs together (for an empirical investigation of the differences between these two constructs see George & Park, 2013). Three require endorsement of positive emotion (Keyes, Huppert and So, and Seligman et al.), and Diener et al.'s Flourishing Scale is often used alongside the Scale of Positive and Negative Affect to achieve simultaneous assessment of emotional wellbeing (for example see Diener et al., 2010; Silva & Caetano, 2011a). Accomplishment appears in the Huppert and So model, Seligman et al.'s definition, and that of Diener et al.'s (in the form of the 'competence' item); the closest construct in Keyes' version is 'environmental mastery'. The closely associated constructs of self-acceptance and self-esteem feature in three operationalisations (Keyes', Huppert and So's, and Diener et al.'s), but not in the Seligman et al. model. Two key advantages common to all four models are their brevity and clarity: they all assess the multi-dimensional nature of subjective wellbeing in less than 20 questions; and none of them require expert delivery. Additionally, all four

measures produce data that can be easily interpreted by a wide range of potential end-users working in clinical, policy, and population health promotion contexts. For tools being used in public health these are important considerations; longer surveys may offer greater psychometric rigor, but are not practical.

In terms of differences between the conceptualisations, it is noteworthy that only Keyes includes life satisfaction in his operationalisation. While single-item life satisfaction measures, traditionally employed by national statistics offices, have empirically been shown to be inadequate measures of population subjective wellbeing, their complete omission among three of these operationalisations is noteworthy. Given the empirical evidence indicating that life satisfaction and flourishing are separate, but related constructs (for example see Huppert & So, 2013), we suggest adding an item assessing life satisfaction alongside Huppert and So, Diener et al. and Seligman et al.'s measures to give a more rounded picture of wellbeing. Other conceptual differences include that optimism only features in two of the four operationalisations (Huppert and So, and Diener et al.), while vitality, and resilience, only appear in Huppert and So's definition. Huppert and So acknowledge that they intentionally omitted constructs that others deem components of optimal functioning, such as autonomy, on the grounds that its opposite does not feature in the DSM or ICD diagnostic criteria for depression or anxiety (the basis of their ten component conceptualisation). Furthermore, the inclusion of the five social wellbeing items in Keyes' model offers the additional benefit of evaluating individuals' views of their functioning in public life, taking it beyond a measure of purely personal feeling and functioning.

In terms of operationalisational differences, it should be noted that selecting thresholds according to data distribution makes Huppert and So's model the only one in which individual flourishing depends on how well others are doing. The Seligman et al. model is also unique in that it offers brevity while incorporating more than one item per construct as recommended in psychometricians (OECD, 2013).

The most striking difference between the four, however, lies in the imbalance between the substantial body of cross-cultural empirical evidence supporting the psychometric properties and utility of Keyes' model, and the relative paucity of published research behind the three more recently developed models. While psychometric support for,

and cross-cultural use of, the Flourishing Scale is growing; Huppert and So's model has not been validated by further studies as far as we know. The second part of the current study is the only example of their model being used to determine national flourishing prevalence outside of Europe. Further testing to determinate the PERMA-P's discriminate, predictive, and convergent validity is understood to be forthcoming. Overall, we concur with Butler and Kern that "developing a valid measure of psychological constructs is a long process" (in press, p.18) and more evidence supporting the reliability, validity, and utility of the three newer models is required. In particular, future studies testing the predictive validity of the three newer models alongside Keyes' model would be most helpful for policy makers.

The four conceptual and operational definitions of flourishing reviewed here were devised on a theoretical basis. Our review highlights their commonalities and areas of difference. What it does not tell us, and what we perceive as a gap in the academic literature, is how closely these theoretical conceptualisations of flourishing reflect laypeople's real world understanding of what it is to be flourishing. While we acknowledge The Mental Health Foundation NZ's conversations with New Zealand Māori around the concept of flourishing, this involved a process of "creative inquiry" rather than empirical analysis (Blissett, 2011, p. 2). Similarly, we are aware of the rigorous process Statistics Canada underwent in selecting a psychometric measure for the 2012 round of the Canadian Community Health Survey, but their workshops involved expert, not lay, participants (Hubka & Lakaski, 2013), as did formation of the PERMA-P (Butler & Kern, in press). The failure to agree upon a definition suggests that researchers are unclear of what to include and exclude in their definition of flourishing. With four different models to choose between, and three of them so newly devised, we suggest it would be useful and timely to investigate alignment between real world, and academic, understandings of flourishing. The extent to which lay conceptions of flourishing correspond with these models is an empirical question that can and should be answered. For a construct receiving focused academic interest, such as flourishing, it is essential to be confident that what the investigator is measuring corresponds with the concept of flourishing in the mind of participants. We therefore suggest a useful direction for future research would be a prototype analysis (Rosch, 1975) investigating how the layperson perceives the construct of flourishing. Prototype analysis is

particularly suited to investigating natural language concepts such as flourishing, which have a "fuzzy collection of features" determining category membership (Lambert, Graham, & Fincham, 2009, p. 1195), and has been effective methodology for studies investigating similar constructs such as gratitude (Lambert et al., 2009), forgiveness (Kearns & Fincham, 2004), and love (Fehr, 1988). The two-step process of prototype analysis, whereby participants are requested in the first stage to freely list all features they associate with flourishing, and subsequently asked to rank them in order of centrality to the construct of flourishing, serves two important purposes. First, the free-response stage will inform researchers of any missing components of flourishing laypeople consider important that are not covered by the four current versions. Second, ranking each component's centrality enables researchers to establish which of the four models of flourishing reviewed here most closely reflects the lay prototype. A greater understanding of this alignment may therefore facilitate the refinement of the construct's measurement, and further inform end-users' decision making when selecting appropriate measurement tools.

Part Two: Investigating the impact of operational definitions on the prevalence of flourishing

Methods

Participants

Participants were obtained from the Sovereign Wellbeing Index (SWI) Round 1 dataset (N = 10,009), a large nationally stratified, representative, random sample of adults over the age of 18 in New Zealand (Jarden et al., 2013). The SWI's response rate of 26% may raise some concerns over response bias. Given that the sample accords with the New Zealand Census demographic data, we conclude this sample is generally representative of the adult population of NZ, and therefore the impact of the response rate on the accuracy of prevalence estimates reported here is deemed to be minimal. In this study ages ranged from 18 to 111 years, (M = 44.21, SD = 16.40). Females comprised 53% of the sample. The majority (76%) were European/other, 13% were Māori/Pacific Islander, and 11% were Asian. Sixty one per cent were married or living with a partner, 25% were single or never married, 11% were permanently separated or divorced, and 3% were

widowed. Just over a quarter had been educated to the end of secondary school, 25% had an apprenticeship, diploma, or trade certificate, and 32% had gone to university. The majority (59%) were employed, 34% were not in the labour force and 7% were unemployed. The sample aligned with population parameters from the NZ census (Statistics New Zealand, 2006). For more descriptive statistics see the SWI Executive Report (Human Potential Centre, 2013).

Measures

Keyes' flourishing: Keyes' MHC-SF was replicated using selected items from the SWI. While the SWI contains 87 items assessing wellbeing, the fit between SWI variables and MHC-SF was not perfect. For the MHC-SF items evaluating 'social contribution' and 'social integration' we were forced to choose the SWI item most closely capturing the original construct. Full details of selected items and thresholds on the survey's various response scales selected to diagnose flourishing are listed in Appendix C. In the absence of any suitable SWI item representing 'social coherence' it had to be excluded from our analysis. The MHC-SF requires individuals to report experiencing at least seven of the 14 symptoms 'everyday' or 'almost everyday' rated on a 6-point Likert scale to be categorised as flourishing. The absence of any questions in the SWI relating to 'social coherence' meant that instead of requiring individuals to endorse one of the three emotional wellbeing items, and six out of 11 symptoms of 'positive functioning' (social wellbeing and psychological wellbeing combined), we required one of three emotional wellbeing items and six out of ten symptoms of 'positive functioning' to be diagnosed as flourishing in the SWI replication of Keyes' model. Additionally, because the SWI used a variety of different response scales (not just the 6-point Likert scale of the MHC-SF), we selected appropriate categorical thresholds replicating the sense of the MHC-SF as best we could, but also basing our decisions on theoretical justification and face validity. Two authors (LH and AJ) independently reviewed the relevant SWI items selecting appropriate thresholds around responses characteristic of a flourishing person. Comparison of selected thresholds across all 47 SWI items revealed inter-rater agreement of 71%, which were debated further until consensus was reached. See Discussion for more on thresholds.

Huppert and So's flourishing: Having modelled the SWI survey on the ESS Round 6 we were able to replicate the questionnaire items in Huppert and So's (2013) operationalisation of flourishing. While the SWI used the same questions as the ESS however, the response scales were slightly different. While replicating the original authors' methodology of basing thresholds on descriptive statistics would have allowed for accurate international comparison, we choose to determine each item's threshold according to theoretical justification and face validity, as described above. This approach was deemed preferable considering a primary purpose of our study was to compare operational definitions, so adopting a threshold methodology that we could apply uniformly both within each operationalisation and across the four operationalisations was important. Furthermore, we wanted to avoid making (potentially erroneous) assumptions about the prevalence of flourishing that taking a data-driven approach to defining thresholds involves.

Diener et al.'s Flourishing scale: The inclusion of the 8-item Flourishing Scale in the SWI enabled exact replication of Diener et al.'s operationalisation of flourishing. In its original 12-item format, with scores ranging from 12 to 84, Diener and Biswas-Diener (2008) suggested summed scores 60 and above represented flourishing, while summed scores below 60 indicated the absence of flourishing. As the published studies using the 8-item FS only report mean and percentile rank scores, and no cut points or component combinations required for categorical diagnoses (Hone et al., 2013; Silva & Caetano, 2011a), we determined that individuals with total scores of 48 and above be categorised as flourishing (remembering that scores range from 7 to 56, and the response scale ranged from 1 being 'strongly disagree' and 7 being 'strongly agree' on the 8-item FS). While we acknowledge the somewhat arbitrary nature of this threshold for categorisation, we again justify selection on rational and theoretical grounds rather than offering numerical justification: total scores of 48 and above require individuals to 'agree' (6) or 'strongly agree' (7) on average across the scale's eight items. In this sense our approach mirrors Keyes', and Huppert and So's, in not requiring the simultaneous presence of all symptoms.

Seligman et al.'s flourishing: Seligman's PERMA-Profiler was replicated using selected items from the SWI. Given the scale's authors have not devised a categorical diagnosis

of flourishing using the PERMA-P, and have not identified thresholds at this time (Kern, 2013), we devised our own categorical diagnosis mirroring Keyes', and Huppert and So's, empirically-supported schema. Again, the variety of response scales used in the SWI forced us to select thresholds for each component, and as above, these were selected on theoretical grounds and face validity rather than data-driven. To be categorised as flourishing therefore required individuals to endorse four out of five components of PERMA, where endorsement meant scoring above our identified threshold on two of any three items belonging to each component. Like Keyes, and Huppert and So's, conceptualisation, this method mirrors the DSM's methodology of requiring the simultaneous presence of a majority, but not all, of the symptoms.

Statistical analysis

Calculating the prevalence of flourishing: Categorical diagnoses of flourishing according to our interpretation of the four different operational definitions were applied to the SWI data to estimate prevalence of flourishing among New Zealand adults. This was achieved by following several steps. First, we created new dichotomous variables distinguishing between those participants endorsing each individual component of flourishing and those not, by determining appropriate response thresholds. Our methodology and rationale for establishing thresholds is detailed in the measures section above (also see Appendix C). We then replicated each of the four different operational definitions' combinations of components to distinguish between flourishers and non-flourishers.

Investigating the relationship between different operationalisations of flourishing: First we conducted cross tabulation analysis to investigate percentage agreement and Spearman's correlation between each of the four flourishing measures. Next we used pairwise McNemar tests for related samples to determine if the differences between pairs of measures were significant, and Cochrane's Q test to determine significance between all four measures. Finally, Cronbach's alpha was calculated to analyse internal consistency between measures.

Results

Calculating the prevalence of flourishing

In this study, 39% of adults met the criteria for flourishing according to our replication of Keyes' model, 24% met the criteria for flourishing according to our replication of Huppert and So's model, 41% met the criteria for flourishing according to our replication of Diener et al.'s model, and 47% met the criteria for flourishing according to our replication of Seligman's model.

Reliability analysis

Reliability analysis indicated that internal consistency between the four SWI replications of different categorical diagnoses of flourishing was relatively good, with a Cronbach alpha coefficient of .83. A two-way random effects model, where both people effects and measures effects are random, indicated that the average intraclass correlation between any two measures was .53, CI [.49, .56]. The average intraclass correlation across all four measures was .82, CI [.79, .84].

Investigating the relationship between different operationalisations

Cross tabulation analysis revealed that the SWI replications of Keyes' and Seligman et al.'s operationalisations of flourishing were the most closely related (81% agreement, *r* = .62), followed by the SWI replications of Diener et al. and Seligman et al.'s operationalisations (80% agreement, *r* = .59), Keyes' and Huppert and So's operationalisations (78% agreement, *r* = .54), Diener et al. and Keyes' operationalisations (77% agreement, *r* = .52), Diener et al. and Huppert and So's operationalisations (75% agreement, *r* = .48), and Seligman et al. and Huppert and So's operationalisations (74% agreement, *r* = .53). See Table 5 for percentage of agreement and Spearman's correlations between each of the four operationalisations.

Table 5. Percentage of agreement and Spearman's correlations for different operationalisations of flourishing

	Keyes % agreement	Correlation	Huppert & So % agreement	Correlation	Diener % agreement	Correlation	Seligman % agreement	Correlation
Keyes	1	1						
Huppert & So	78%	.54*	1	1				
Diener et al.	77%	.52*	75%	.48*	1	1		
Seligman et al.	81%	.62*	74%	.53*	80%	.59*	1	1

* Significance level is .05

Discussion

Part two of this paper estimated flourishing prevalence rates among 10,009 adult New Zealanders, according to replications of each of the four frequently used operationalisations of flourishing identified in part one, using the SWI variables and dataset. Results indicated there was a substantial difference in prevalence rates of flourishing depending upon the operationalisation employed, ranging from 24% (Huppert & So), to 39% (Keyes), 41% (Diener et al.), and 47% (Seligman et al.). The low prevalence rate of flourishing from the SWI replication of Huppert and So's conceptualisation (24%) most likely reflects their more stringent theoretical and conceptual criteria for flourishing: to be categorised as flourishing participants are required to endorse the one item representing positive emotion (which only 41% of the sample did), plus three out of four components of 'positive functioning', and four out of five components of 'positive characteristics'; thereby only allowing participants to score below the thresholds on two out of ten items. In contrast, participants could score below the thresholds on six out of 13 components in the SWI replication of Keyes' operationalisation and still be categorised as flourishing, and seven out 15 items in the SWI replication of Seligman et al.'s operationalisation. In only requiring an average score of over 48, our interpretation of Diener et al.'s operationalisation also allowed greater flexibility across components than Huppert and So's. This is the most striking difference between these four definitions, and the cause of the variation in prevalence rates. It is important to note that the use of different response formats in the SWI survey meant that some of the variation in prevalence rates between our study and previous studies might be due to the use of different thresholds, making for potentially inaccurate international comparisons. For example, New Zealand's 24% flourishing according to our replication of Huppert and So's model may not be directly comparable to the Danes' 41% flourishing or Portugal's 10% flourishing diagnosed using the same model (Huppert & So, 2013). However, by applying consistent methodology for selecting thresholds across all four models in our study, we are confident that the flourishing prevalence rates according to the four different models are comparable with each other in our study.

While related samples Cochrane's Q tests indicated all four operationalisations were significantly different to one another, cross tabulation analysis revealed a strong

agreement between our replications of Keyes' and Seligman et al.'s operationalisations (81%) and Diener et al. and Seligman et al.'s (80%). Even the least comparable operationalisations (Huppert and So and Seligman et al.) indicated moderate agreement (74%). In the absence of an established empirical benchmark stating what degree of agreement is meaningful, or indeed any criterion for interpreting what these levels of agreement mean, it is hard to draw any steadfast conclusions from these findings.

The strengths of this study include: the application of the four operational definitions to a very large, nationally representative, sample of adults allows our results to be compared to other population samples; the prospective nature of the SWI, with two more longitudinal rounds scheduled over the next four years (due in October 2014 and 2016), allowing us to monitor the prevalence of flourishing among New Zealand adults over time using all four operationalisations; and the use of cross-tabulation and pairwise Cochrane's Q tests allowing us to calculate, for the first time, the degree of agreement between the SWI replications of the different measures commonly employed to assess flourishing.

In terms of limitations, we experienced challenges in accurately replicating three of the four operationalisations of flourishing using the available dataset (the FS was replicated exactly). While the SWI's large number of wellbeing variables ($n = 87$) presented us with a compelling opportunity to compare these operationalisations, we acknowledge that the fit was not perfect. Differences in questionnaire items and response formats required us to make subjective decisions regarding the best way to replicate the original models. The challenge was to stay true to the theory and conceptualisation of the original models, while also remaining consistent in our methodology across models. We offer the following four examples of the types of challenges we faced, and our methods for overcoming them.

Firstly, the absence of any categorical diagnosis of flourishing for the Flourishing Scale or PERMA-P required us to devise our own methods. We were guided by Keyes, and Huppert and So, in our methodology. This meant selecting a threshold for flourishing on the FS that allowed endorsement of most, but not all of the scale's eight components (scores ≥ 48, range 7-56, meaning respondents had to score an average of six on the 7-point Likert scale). To be categorised as flourishing in the SWI replication of the PERMA-

P required participants to score above a threshold on two of three items of each component, and four out of the five components overall. While we acknowledge the limitations in our approach, and understand the PERMA-P research team's preference for dashboard reporting, the ability for categorical diagnoses of flourishing is important, providing vital information for decision makers. Not only is the categorical approach the most appropriate method for establishing prevalence of a condition, but comparing average scores provides "no indication of the number of people who have very high (or very low) levels of flourishing" (Huppert & So, 2013, p. 854), both of which are vital epidemiological evidence.

Secondly, the various items selected and response formats used in the SWI frequently differed from those in the original scales. For instance, while the response option for the MHC-SF measured the frequency with which respondents' experienced each component over the past month, several items in the SWI asked respondents "how much of the time during the past week" or "how much of the time would you generally say…". Where possible we used the same items as the original scale, but some could not be matched to an SWI variable (such as 'social coherence'), which meant this component had to be excluded from our analysis. Others were matched, but not perfectly so, leaving us having to choose the item which came closest to representing the original construct. Some of these were far from ideal. For instance, the MHC-SF item for 'social growth' ("during the past month, how often did you feel our society is a good place, or is becoming a better place for all people?") was operationalised using the reverse-scored SWI item "For most people in New Zealand life is getting worse rather than better". Similarly, Keyes' 'social contribution' item assesses respondents' contribution at a societal level, while the SWI item has a more individualistic focus. The MHC-SF's 'social integration' item concerning belonging to a community could be interpreted to refer to any type of group or community, in contrast to the SWI item we were forced to use which reflects respondents' perceptions of people in their local area. In this sense we cannot claim to have replicated Keyes' validated scale completely. The SWI items selected to match the PERMA-P were also not a perfect replication, but we were at least able to include three different items for each PERMA construct, allowing us to represent the original scale well in this regard. Despite these obvious limitations, we maintain that having such a large number of wellbeing variables in the SWI, a large

representative sample, and the FS and ESS models represented in their entirety, made comparison of the four models a worthwhile exercise.

Thirdly, the greatest single challenge involved the decision making around the selection of thresholds differentiating between participants endorsing a component of flourishing and those not endorsing a component. Recently published OECD guidelines on measuring wellbeing suggest the use of thresholds as "one way to manage a large number of scale responses" (OECD, 2013, p. 187). Thresholds provide a useful way of conveying aspects of the data's distribution with a single figure, and are compatible with the SWI's ordinal data. However, the OECD guidelines also caution that great care must be taken when selecting thresholds: "there is considerable risk that a threshold positioned in the wrong part of the scale could mask important changes in the distribution of the data" (2013, p. 188). The OECD recommends examining data distribution (particularly watching for the tendency for strong negative skew common to subjective wellbeing responses), using median and mean statistics to help identify tipping points, and selecting scale values above which empirical evidence suggests positive outcomes are associated. The OECD also acknowledges that a key challenge lies in combining a data-driven approach with the identification of thresholds that are meaningful and have real world utility. With this in mind, and considering the purpose of this study was to examine measurement equivalence across four different operationalisations, we needed to find a methodology we could apply consistently both within each definition, and across all four different operationalisations. Concerned that Huppert and So's approach of selecting thresholds based upon the distribution of data made (potentially erroneous) assumptions about the prevalence of flourishing, and influenced the reported prevalence rates substantially, we instead selected thresholds above which empirical evidence suggests positive outcomes are associated. These were based on face validity, and our theoretical knowledge of flourishing and subjective wellbeing. Essentially, we asked, what is the lowest score a participant could respond to this question and still be deemed to be flourishing? For example, on the SWI question "Please indicate how much of the time during the past week you felt calm and peaceful", we deemed a score of two or above to be characteristic of flourishing, so that participants responded that they felt calm and peaceful at least 'some of the time'. One of the key outcomes to come from conducting this review and analysis is the way it

highlighted the critical role that decision-making regarding the location of thresholds plays in determining prevalence rates of population flourishing, and the challenges involved in using a categorical approach to defining and measuring flourishing. But taking a categorical approach is important: it is the appropriate method for calculating prevalence, and mean scores give no indication of the number of people experiencing high wellbeing (Huppert & So, 2013). Our methodology and rationale for establishing thresholds is detailed in the measures section above (also see Appendix C).

Fourthly, a further limitation is that most components of flourishing were represented by a single-item in the SWI. While it would have been better to have more than one item representing each symptom of wellbeing, reducing the size of error, population studies such as the SWI are designed with considerations of participant overload and time burden in mind. Similarly, the lack of objective measures represents a further limitation. As researchers we appreciate the value of employing subjective and objective measures simultaneously, given their respective ability to provide important insights for policy makers. After all, we want citizens to have "both decent objective standards of living and feel subjectively satisfied with their lives" (Forgeard et al., 2011, p. 99). However, the requirements of balancing questionnaire breadth and depth prevented the inclusion of any data beyond self-report, nor the measurement of other potentially associated variables such as personality traits.

Summary

This paper reviewed the state of research on the psychometric measurement of flourishing, a term used by psychologists and social scientists to describe high levels of wellbeing. Measuring human flourishing is important. Objective measures of progress are informative, but only provide limited insight into prosperity at the population level. A considerable body of empirical evidence now indicates that flourishing is a desirable condition that any community, organisation, or government would benefit from protecting and promoting among its citizens. Measures of flourishing tend to be more stable over time than affect, and international research has indicated significantly better individual and public health outcomes associated with flourishing (Howell, 2009; Huppert, 2004, 2009; Keyes, 2002, 2005, 2010; Keyes & Haidt, 2003). As a result, demand is growing for the collection and publication of measures of subjective

wellbeing and epidemiological work on flourishing. A literature search identified four different theoretical, conceptual, and operational definitions of flourishing currently being used by psychological researchers and statisticians. Starting with Corey Keyes' (2002) model, three more models have recently been devised and conceptualised (Diener et al., 2010; Huppert et al., 2009; Seligman, 2011). Substantially more published research currently supports Keyes' model than the other three. Despite sharing theoretical and conceptual similarities, the four models produce substantially different prevalence rates when replicated using SWI variables and data, therefore limiting the usefulness of the resultant epidemiology. While we recognise that the psychometrics of flourishing is in its infancy, and that substantial empirical progress has been made in this endeavour, for psychometric measures to be useful they must be collated in a consistent manner, which requires a consensus around theoretical, conceptual and operational definitions. Until an identical measurement approach is adopted across countries, we cannot rule out the possibility that observed national differences reflect methodological differences. OECD guidelines on measuring wellbeing emphasise that comparability is of the highest priority: "Whether comparisons are to be made over time or between groups of respondents, the guidelines argue in favour of adopting a consistent measurement approach across all survey instruments, study waves and countries wherever possible, to limit the additional variance potentially introduced by differing methodologies" (OECD, 2013, p. 14). We agree. But, we also understand that this consensus takes time and further research. In light of this, and the lack of published empirical research exploring alignment between lay perceptions of flourishing, we recommend a prototype analysis be conducted to examine alignment between lay and academic conceptions, and investigation of which of the four models reviewed here fits with lay opinion most closely. Cross-cultural prototype studies, looking for similarities and differences in conceptualisation between countries and cultures, may also inform the quest for standardised measurement. Our study suggests that clinicians, policy makers and citizens have much to benefit from standardisation of measurement tools.

CHAPTER 3

CONCEPTUALISATIONS OF WELLBEING: INSIGHTS FROM A PROTOTYPE ANALYSIS ON NEW ZEALAND WORKERS

Preface

The previous study revealed a gap in the academic literature concerning laypeople's real world understanding of what it is to be flourishing and suggested a prototype analysis. The next logical step in this doctoral thesis was therefore to carry out such an investigation, but, because there was no published prototype analysis of wellbeing, and only limited research on lay perspectives on wellbeing, it made more sense to study wellbeing as a broader construct rather than to focus more narrowly on flourishing. This decision was also prompted by my concerns that conducting a prototype analysis on flourishing would not produce such rich data as an investigation into wellbeing. Furthermore, I chose to avoid the concept of 'mental health' as previous studies have reported that this has prompted lay people to focus on mental illness and poor health, therefore entirely missing the construct's positive connotations (Stewart-Brown, 2013; Tennant, Fishwick, Platt, Joseph, & Stewart-Brown, 2006). The next study is therefore a prototype analysis on wellbeing among New Zealand workers. This study is under review with the New Zealand Journal of Human Resource Management as part of a special issue focused on positive psychology at work.

Abstract

The current research investigated New Zealand workers' perspectives of wellbeing. Three studies explored whether workers' conceptualisations of wellbeing are consistent with academic models of wellbeing, and whether the concept of wellbeing is prototypically organised (that is, if not all instances of a concept share all of the features of a prototype). Results indicate that wellbeing is indeed prototypically organised, as participants were able to list components of wellbeing and then demonstrated significant agreement over which components were central (important) to the concept of wellbeing, and which were peripheral (less important). New Zealand workers are less likely than academic researchers to consider the presence of achievement, engagement, and optimism as important for wellbeing. In contrast to current popular academic models, NZ workers viewed physical health, work-life balance, and feeling valued as central components of wellbeing. Implications for human resource managers, employees, researchers and policy-makers are discussed, as well as recommendations for future areas of research.

Introduction

The growing evidence-base of the desirable associations of high levels of wellbeing among workers, and the risks associated with low levels of employee wellbeing (for a comprehensive review see Jeffrey, Mahoney, Michaelson, & Abdallah, 2014), is convincing employers of the importance of complementing objective indicators of organisational success with assessment of employee wellbeing. But any such evaluation requires agreement over what constitutes wellbeing, which research shows is, as yet, far from clear. While several researchers and research teams (for example Diener et al., 2010; Durie, 1994; Huppert & So, 2013; Keyes, 2002; Ryff, 1989; Ryff & Keyes, 1995; Seligman, 2011) have developed theoretical, conceptual and operational models of wellbeing, and there is general agreement that wellbeing is a multi-dimensional concept, that is where the consensus ends. No internationally agreed upon definition of wellbeing currently exists, and its measurement remains haphazard (Diener, 2009; Diener & Seligman, 2004; Donaldson et al., 2014; Forgeard et al., 2011; Hone, Jarden, & Schofield, 2015). For example, Ryff's (1989) model suggests that there are six dimensions of psychological wellbeing (self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth), Seligman's (2011) wellbeing theory has five domains (positive emotions, engagement, relationships, meaning and accomplishment), and Huppert and So (2013) identified ten components of wellbeing as the mirror opposites of common mental disorders symptoms (positive emotions, engagement, competence, meaning, positive relationships, emotional stability, vitality, optimism, resilience, and self-esteem). This makes deciding which model to base a wellbeing strategy upon, and which psychometric tool, or tools, to select for assessment, a conundrum for human resource managers. See Figure 4 for an outline of the main academic models of wellbeing and Hone et al. (2014) and Forgeard et al. (2011) for comprehensive reviews.

Keyes	Frisch	Huppert & So	Diener et al.	Seligman et al.	Durie
• Positive affect (happy) • Positive affect (interested) • Life satisfaction • Social contribution • Social integration • Social actualisation • Social acceptance • Self-acceptance • Environmental mastery • Positive relationships • Personal growth • Autonomy • Purpose in life	• Health • Self-esteem • Goals and values • Money • Work • Play • Learning • Creativity • Helping • Love • Friends • Children • Relatives • Home • Neighborhood • Community	• Positive emotion • Engagement • Competence • Meaning • Positive relationships • Emotional stability • Vitality • Optimism • Resilience • Self-esteem	• Purpose and meaning • Positive relationships • Engagement • Social contribution • Competence • Self-acceptance • Optimism • Self-esteem	• Positive emotions • Engagement • Positive relationships • Meaning and purpose • Accomplish-ment	• Taha tinana (Physical wellbeing) • Taha hinekaro (Emotional wellbeing) • Taha whānau (Social wellbeing) • Taha wairua (Spiritual wellbeing)

Figure 4. Frequently used academic models of wellbeing

A recent New Zealand study revealed the impact of this multiplicity of definitions showing the differing prevalence rates for population flourishing (high levels of wellbeing) calculated using different wellbeing models (Hone et al., 2014). While using one model estimated that 24% of New Zealand adults were currently flourishing, using another model indicated 41%. Furthermore, the same study also highlighted the lack of research investigating lay perceptions of wellbeing, and flourishing specifically, recommending this as an important focus for future research. McMahan and Estes (2011) have investigated lay perspectives of wellbeing among a sample of North American undergraduate students, but their study was limited by their selected methodology. Instead of giving participants free reign to express their own perceptions of wellbeing, participants' were asked to rate 30 specific items of wellbeing selected by the researchers according to previous theoretical studies. Previous qualitative work investigating the barriers to raising population wellbeing found that "the public's responses to the term wellbeing are extremely mixed. Some feel that it is impenetrable and too abstract; some equate it with 'feel-good' products and services (skincare, aromatherapy); some link it to mental health problems" (Mahony, Thompson, & Seaford, 2011, p. 6). While other studies have sought lay perspectives on wellbeing in New Zealand, these have either adopted a capabilities approach (see King, 2007) or used census data from the Household Economic Survey (Cotterell, von Randow, & Wheldon, 2008). We therefore believe it is important to seek lay opinion on the construct of wellbeing in a New Zealand context using less restrictive methodology than previous studies. Given the current interest in, and identified advantages of, promoting employee wellbeing, we are specifically interested in examining New Zealand workers' perspectives.

The extent to which workers' conceptions of wellbeing correspond with researchers' theoretical models is an important question, worthy of empirical investigation, for three reasons. Firstly, it is possible that workers' efforts to maintain and promote their own wellbeing may relate to (and therefore be limited by) their own perception of the concept. Thus investigating workers' perspectives on what constitutes wellbeing may provide insights into how well public health and/or health and productivity management messages around wellbeing are 'getting through' to employees. Secondly, in fields such as human resources and psychology, where assessment frequently relies

on self-report questionnaires, it is essential to be confident that what the investigator is measuring corresponds with the concept of wellbeing in the mind of participants. As the philosopher Wittgenstein said: "the meaning of a word is its use in the language" (Wittgenstein, 1958, S43). Investigating workers' perceptions of wellbeing could therefore inform, and perhaps refine, existing models and measurements of wellbeing. Finally, it is potentially alienating for academia to define wellbeing without inviting lay participation, and intuitively wrong to take a one-sided approach to such an important topic.

The current research seeks to address this evidence gap by examining New Zealand workers' perspectives on wellbeing. We chose to use a prototype analysis (Rosch, 1975) as our methodology because the current disagreement between academic researchers indicates wellbeing may not be definable in a classical sense, but may be prototypically organised. The classical view of concept definition takes an all or nothing approach to category membership, for example, that relationships are seen as a necessary feature of wellbeing and equally important as positive emotions. The prototype approach, in contrast, acknowledges that not all instances of a concept share all the features of a prototypical model. It involves ranking features (as either central or peripheral) rather than identifying critical features (deeming them necessary and sufficient). This is an important distinction for a multidimensional and complex concept such as wellbeing. For example, an individual could be categorised as having high wellbeing (flourishing) if they exercise regularly, have supportive friends, and experience frequent positive emotions, but lack a sense of purpose in their lives. The fact that we currently have so many different conceptual definitions of wellbeing (with some models including components that other models lack) indicates that wellbeing may have a prototype structure. Previous studies haves shown prototype analysis to be particularly suited to investigating natural language concepts with a "fuzzy collection" of features determining category membership (Lambert, Graham, & Fincham, 2009, p. 1195) and researchers have used this methodology to examine the structure of similar psychological constructs such as gratitude (Lambert et al., 2009), forgiveness (Kearns & Fincham, 2004), love (Fehr, 1988), and infidelity (Weiser, Lalasz, Weigel, & Evans, 2014).

In order for a construct to demonstrate a prototype structure, two conditions must be met (Rosch, 1975). First, individuals must be able to list components relevant to the

concept and then reliably rate (agree upon) the centrality of these components to that concept. Second, the centrality rating of each component should influence how individuals think about the concept.

Overview Of Studies

The following studies explored New Zealand workers' perspectives of wellbeing. The purpose of Study 1 was to obtain a list of wellbeing components and reduce this list to a manageable size (e.g., 30) so that a second sample of workers could rank the centrality of each component in terms of its importance to wellbeing in Study 2. In Study 3 we hypothesised that component centrality would influence the way New Zealand workers thought about wellbeing. Implications for human resource managers, employees, researchers and policy-makers are discussed, as well as recommendations for future areas of research.

Study 1

The goal of Study 1 was to compile a list of wellbeing components according to New Zealand workers' perceptions. This was achieved by asking participants to list all the components and indicators of wellbeing they could think of in a free-response format.

Method

Participants

Participants were a convenience sample of 130 New Zealand workers (approximately 55% women). The sample was made up of 66 lawyers from across all regions of New Zealand and 64 teaching staff at a Christchurch high school. Participants ranged in age from approximately 25 to 65 years old. Although no further demographic details were collected to avoid ethics issues, both samples were predominantly NZ European.

Procedure

Participants were invited to participate in the research study via an email invitation and information sheet sent to all staff 6-8 days before the study took place (in accordance with AUT Ethics Procedure: 15/74). Participants were given the following instructions in writing:

> This is a study on what New Zealand workers think of when they consider the

word wellbeing. For example, if you were asked to list the components and indicators of fear, you might write: possible danger occurs, attention is focused on the threat, the heart beats wildly, the person runs as fast as they can. In the current study, we are not interested in fear but in the characteristics of wellbeing. Imagine that you are explaining this term to someone who has no experience of wellbeing (adapted from Fehr & Russell, 1984 Study 6) and answer the following question: What, in your opinion, are the key components and indicators of wellbeing? Please list as many as you can.

Participants were given a page with 13 lines on it and instructed to indicate their consent for participation by ticking the consent box. Responses were collected after five minutes, by the first researcher.

Results

The coding procedure was adapted from Fehr (1988). Firstly, monolexemic linguistic units were identified and extracted, such as "happiness", "relationships", and "optimism". Responses preceded by modifiers were coded as a single item, so that "being tolerant" was coded as "tolerance" and "lots of laughter" as "laughter". When a participant used a phrase, judgment was necessary to establish its coding. For example, "being a member and participant of your community" was divided into two distinctive linguistic units, "community belonging" and "community participation", while "balanced family/work life" and "balance between work and home life" were both coded as "work-life balance" because they were judged to be identical in meaning. A conservative approach to coding was taken throughout this process, so that "positive frame of mind" was coded as "positive frame of mind" and "positive outlook" coded as "positive outlook" in order to maintain the richness of responses. The total number of responses generated was 947, comprising 232 different linguistic units. Participants generated an average of 7.3 linguistic units (5.7 for lawyers and 9.0 for teachers). Raw data is provided in Appendix D.

The next phase involved the first and second authors condensing the 232 linguistic units into component categories, following a procedure adapted from Fehr (1988), Kearns and Fincham (2004), and Weiser and colleagues (Weiser et al., 2014). First, all indicator items were removed as well as any items scored once which did not lend themselves to

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being condensed into larger component categories, such as "thriving not just surviving" and "plenty of water". While we were initially interested in both indicators and components when designing the study and gathering data, we excluded indicators from our analysis as we viewed their investigation beyond the purpose and scope of the study. Single word units, such as "happiness", "gratitude", "community" and "contentment", were classified as distinct components. Component categories emerged quite readily, with linguistic units deemed to be in the same component category if they were a) different grammatical forms of the same word, and b) judged to be similar in meaning. Because our study aimed to explore workers' perspectives of wellbeing, and we were particularly interested in the language they used, we chose to keep components such as "positive attitude" and "optimism" separate, to reflect workers' responses with greater accuracy. Any component category endorsed by less than four of the 130 participants (2% of our sample) was excluded from the final list in order to reduce participant burden in the next phase of this study. We determined the fact that we had so many linguistic units only endorsed once (n = 111) as an indicator of saturation. Final component categories were reviewed, and any discrepancies resolved, by the third researcher.

The coding procedure produced a total set of 27 components of wellbeing. Substantial variability appeared across responses, with no single component mentioned by all 130 participants. Over half the sample (52%) considered good physical health a component of wellbeing, while only 3% suggested accomplishments/achievements. Substantial agreement between workers existed on the following components: good relationships (49%), being happy (38%) and balance/work-life balance (32%). None of the participants endorsed all 27 components. The largest number of components mentioned by participants was ten out of 27 (endorsed by just one participant). Six per cent mentioned 7-9 components, 25% mentioned 5 or 6 components, 66% mentioned less than five, and 2% mentioned none of the 27 components. Components are displayed in Table 6, which shows both the frequency of responses (i.e., the total number of times each component was written across all 130 participants' responses) and the percentage of participants endorsing each component. Table 6 is ranked according to the centrality of each component (i.e., participants' perceptions of its importance to wellbeing), as identified in Study 2.

Table 6. Wellbeing components generated in Study 1, sorted by Study 2 centrality rankings

Component	Study 1		Study 2	
	Frequency	% participants	Centrality (1-8)	SD
Good mental health	37	23.13	7.22	1.01
Good relationships	106	49.41	7.13	0.93
Balance/ work-life balance	45	31.51	6.96	1.17
Good physical health	74	52.15	6.77	1.23
Feeling valued	14	10.91	6.73	1.01
Being resilient/ coping with life	31	17.73	6.72	1.40
Positive attitude	14	10.82	6.66	1.21
Experiencing enjoyment	12	9.26	6.48	1.15
Sense of purpose/ meaning	8	5.37	6.45	1.38
Self confidence & self-esteem	13	9.23	6.42	1.16
Autonomy/having a sense of control over your life	5	3.86	6.40	1.25
Personal satisfaction	9	6.96	6.40	1.12
Being happy	60	38.38	6.33	1.49
Enjoyable work	16	10.84	6.22	1.15
Gratitude	5	3.84	6.21	1.50
Contentment	26	15.32	6.20	1.36
Optimism	4	3.08	6.18	1.44
Feeling energetic/ a sense of vitality	13	10.06	6.15	1.35
Sense of feeling calm/relaxed	27	18.42	6.08	1.55
Being respected	6	4.64	5.90	1.61
Community	9	6.20	5.75	1.23
Manageable (low) stress	16	12.38	5.75	1.43
Engagement/ engaged	14	10.06	5.71	1.06
Mindfulness	4	3.08	5.71	1.62
Financial security	10	7.72	5.67	1.1
Achievements/ accomplishments	4	3.08	5.24	1.18
Faith/spirituality	12	8.52	4.50	2.27

Discussion

The 130 workers in the current study generated 947 responses, comprising 232 different linguistic units (an average of 7.3 linguistic units per participant), which we collapsed to 27 different components of wellbeing. This result compares to other prototype studies of psychological constructs such as forgiveness where 208 undergraduate students produced 2,385 responses, an average of 8.86 per participant and 78 attributes (Weiser et al., 2014), and gratitude where 94 undergraduate students produced 760 responses, an average of 8.35 per participant and 52 features (Kearns & Fincham, 2004).

Both the large number of responses, and the specific content generated, reflects the high levels of awareness regarding wellbeing among NZ workers. However, the low frequency of responses on certain components of wellbeing commonly featured in academic models, and high frequency for components omitted from current wellbeing models, illustrates a lack of alignment between workers' and academics' perspectives. In terms of similarities, the following components suggested by workers also feature in academic models: good relationships; positive emotions (both high and low arousal positive emotions are referred to by workers in various forms including happiness, enjoyment, contentment); satisfaction; community belonging; autonomy; meaning/purpose in life; accomplishment; emotional stability (referred to by workers as a sense of feeling calm/relaxed); engagement; optimism; resilience; self-esteem; vitality (referred to by workers as energetic/vitality); and being respected. This indicates substantial alignment between researchers' and workers' perspectives on wellbeing. However, the low levels of participant endorsement on many of these components show substantial variance in individual worker's perceptions of wellbeing. For instance, only 7% of participants included satisfaction in their list of wellbeing components (which, while named differently by workers, we suggest represents a positive evaluation of oneself and therefore aligns with the academic construct of life satisfaction), 5% included meaning/sense of purpose, 4% included autonomy/having a sense of control over your life, 3% included accomplishments/achievements, and 3% included optimism.

Furthermore, despite its absence from many academic models of wellbeing, physical health was the second most endorsed component among New Zealand workers,

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mentioned by 52% of our sample. Aside from Durie's whare tapa whā model (1994) and Frisch's Quality of Life model (2013), none of the other popular academic models of wellbeing include physical health. Previous studies have shown physical health to be strongly associated with high levels of wellbeing, with a recent study reporting that New Zealand workers with "good/very good health" had 8.4 times greater odds of flourishing than those with "bad/very bad health" (Hone, Jarden, Duncan, & Schofield, 2015). Other components listed by workers, but not included in most academic models of wellbeing, include: balance/work-life balance; feeling valued; positive attitude; enjoyable work; financial security; manageable/low stress; gratitude and mindfulness. Many of these constructs are recognised by academia as strongly associated with wellbeing, but not regarded as components of wellbeing. For example, see Wood and colleagues' (2010) comprehensive review of the close relationship between gratitude and wellbeing, and Fredrickson and colleagues' (2008) study on the positive effects for employees of an eight week programme promoting mindfulness in a workplace setting.

Together these results indicate that there are neither necessary, nor sufficient, components of wellbeing (thereby indicating that it may be a prototypically organised construct) and this organisation is different to current academic models.

Study 2

Study 2 investigated the prototype structure of wellbeing. In other words, we examined whether some components of wellbeing are considered to be more central to the concept, while others are considered more peripheral. For a construct to possess a prototypical structure, participants must be able to make meaningful judgments about whether components are central or peripheral, and substantial agreement on these judgments must exist. The purpose of Study 2 was to gather information regarding the centrality of the components identified in Study 1.

Method

Participants

Participants were 52 New Zealand workers from a different high school in Christchurch. The sample was 86% female, with 13% below 35 years, 50% between 35-50 years, and

37% over 50 years. Although no further demographic details were collected the samples was predominantly NZ European.

Procedure

Participants were invited to participate in the research study via an email invitation and information sheet sent to all staff (in accordance with AUT Ethics Procedure: 15/74). Participants were given the following instructions in writing:

> In a previous study we asked people to list what they thought of as the key components of wellbeing. The most frequent responses are listed alphabetically below. Please read through the entire list and then rate how central (or important) you think each of the components is to the concept of wellbeing by circling a number between 1 and 8 (1 = not at all central/important to 8 = extremely central/important).
>
> We would like you to think not only about your own experiences with wellbeing but the concept of wellbeing in general — what you think are its defining components. Don't worry about why you think something is or isn't central – and please don't confer with colleagues!

Participants were instructed to indicate their consent for participation by ticking the consent box and given five minutes to rate the centrality of the 27 components identified in study one.

Results

Mean centrality ratings for all 27 components are listed in Table 6 (see p. 62). Mean centrality ratings were calculated using data for all available responses. Two indices provided evidence for the reliability of the means. First, we computed the intra-class correlation coefficient (ICC), which is equivalent to the mean of all possible split-half correlations of the 52 judges with respect to the 27 features (ICC = .901, $p < .000$), which indicates excellent inter-rater reliability. For the purposes of intra-class correlation analysis we excluded missing cases listwise ($n = 9$). Further analyses, based on a flipped data matrix and treating the 27 features as cases, and the 52 judges as items, showed the internal consistency of the ratings was exceptionally high ($\alpha = .91$).

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Figure 5 gives a graphic representation of the proximal distances between components derived from conducting multidimensional scaling (MDS) using SPSS. Multidimensional scaling provides a visual representation of the pattern of proximities (i.e., similarities or distances) among a set of objects on two dimensions (Schiffman, Reynolds, & Young, 1981). In other words, the more similar two components' mean scores are, the closer they lie in the multidimensional space, while dissimilar components will be located further apart from one another.
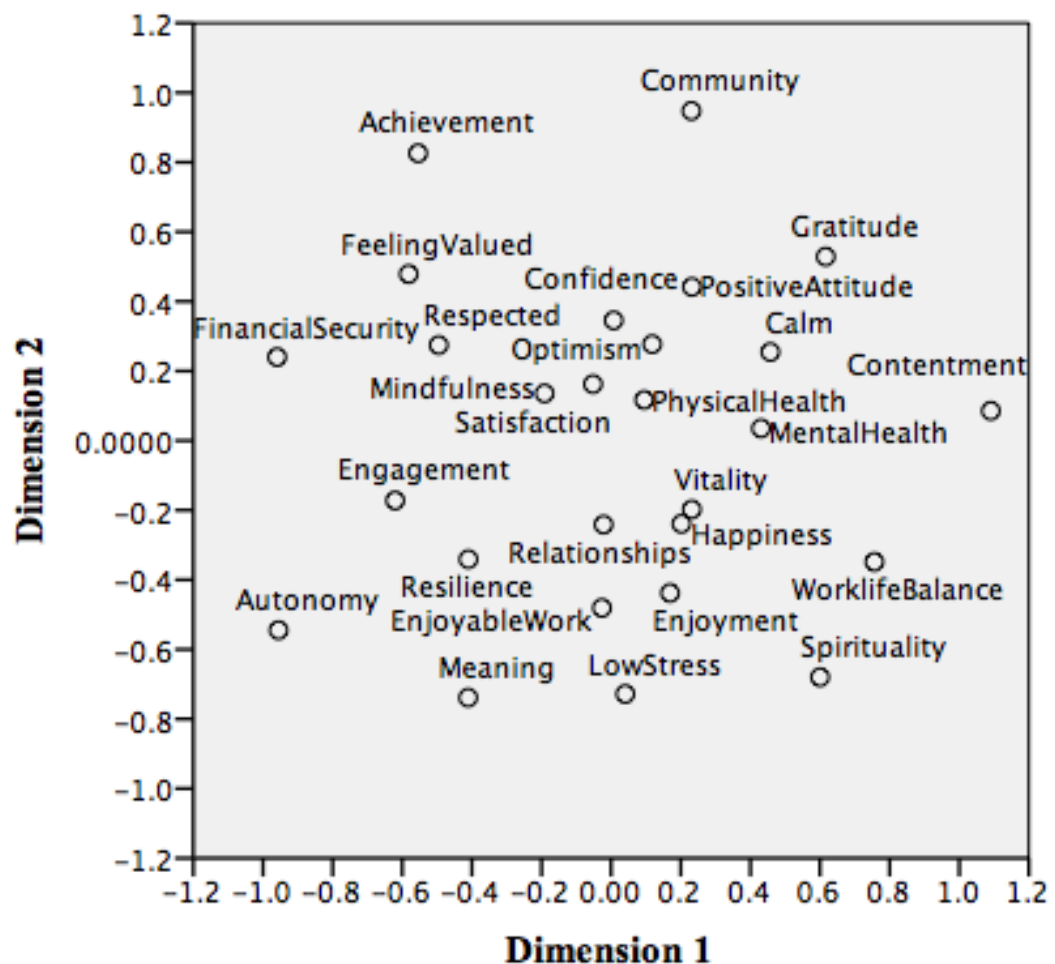
Figure 5. Proximal distances between components (according to centrality)

Comparing mean centrality ratings from Study 2 with percentages of participant endorsements from Study 1, it is apparent that some components were frequently

endorsed and deemed central (important) to wellbeing: good mental health, good relationships, balance/work-life balance, and good physical health. These four were all ranked among the top five according to both centrality and percentage of participant endorsements. Some components endorsed by relatively small proportions of the sample (sense of purpose/meaning and autonomy for example) in Study 1 were given high centrality ratings in this study. Overall however, centrality and endorsement rankings were positively correlated ($r = .597$, $p < .001$). See Figure 6 for a scatterplot graph illustrating the associations between Study 1 and Study 2 component rankings. For example, good relationships was ranked second in Study 1 and second in Study 2, whereas a sense of feeling calm/relaxed was ranked 6th in Study 1 but 19th in Study 2.
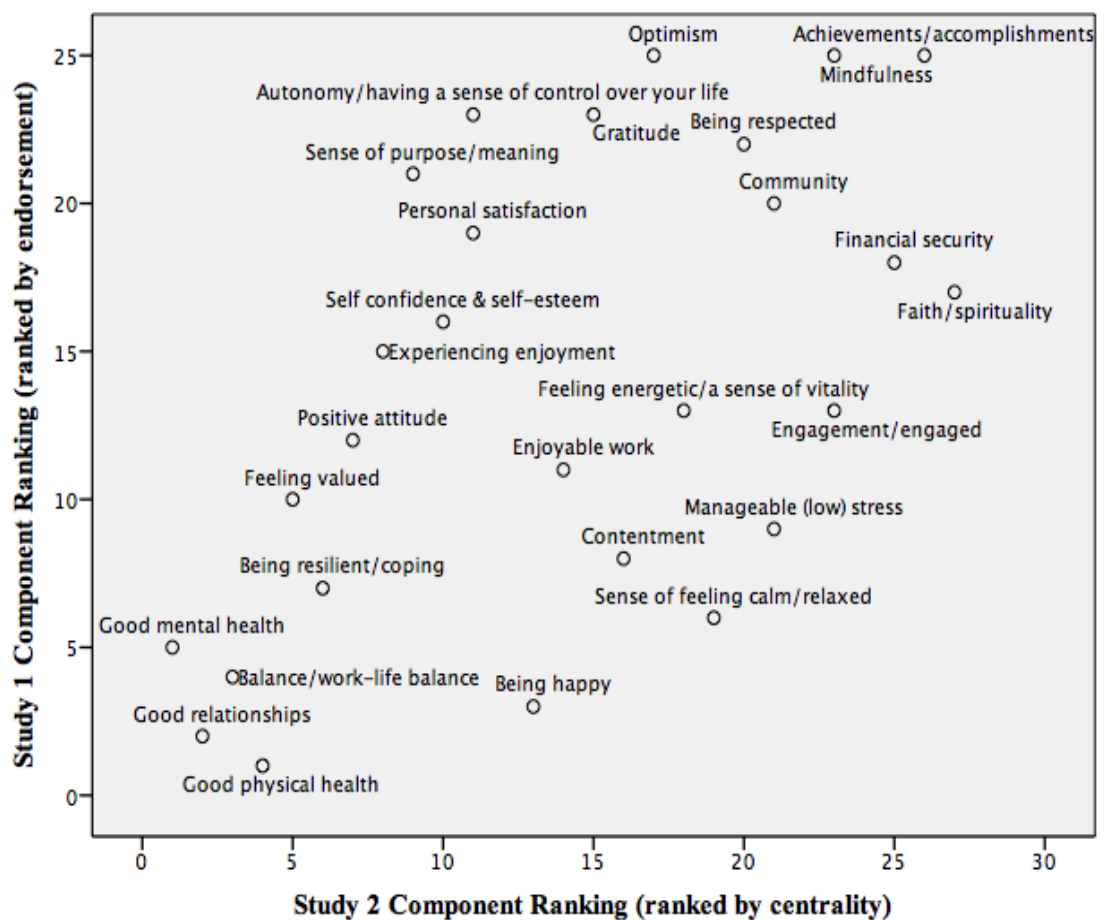
Figure 6. Correlation between each component's endorsement ranking (from Study 1) and centrality ranking (from Study 2)

Discussion

These data show that workers consider some components to be more prototypical of wellbeing than others. To use an analogy, just as an apple is acknowledged to be more prototypical of a fruit than an avocado, Study 2 indicates that these workers view good mental health, good relationships, balance/work-life balance, good physical health, and feeling valued as more prototypical of wellbeing than spirituality, achievements/accomplishments, mindfulness, and engagement. Furthermore, analyses indicated significant reliability among participant ratings, thereby fulfilling the first criterion for demonstrating that a construct is prototypically organised. While differences in frequency and centrality were found, this is a common finding among prototype analyses (Rosch, 1975), and is thought to reflect the fact that frequency and centrality measure different aspects of internal structure. We suggest that compiling a list of wellbeing components in free-response format requires different cognitive processes to ranking a pre-determined list of wellbeing components. Despite differences, correlation analysis revealed component ranking across the two studies to be significantly associated.

Study 3

Studies 1 and 2 indicated that the concept of wellbeing might be structured prototypically. In Study 1, New Zealand workers listed what they considered to be components of wellbeing and in Study 2 a second sample of New Zealand workers ranked those components according to centrality/importance. However, if a concept has a prototype structure this structure should affect how people think about and recognise instances of wellbeing. Hence, in Study 3 we presented a different sample of workers with two scenarios of hypothetical individuals, one composed of components identified as central to wellbeing in Study 2, and one composed from components identified as peripheral. We hypothesised that if central components are more prototypical of wellbeing than peripheral components, participants would view the central scenario as a better representation of wellbeing than the peripheral scenario.

Method

Participants

Participants were 21 New Zealand workers from a third school in Christchurch. The sample was 75% female, with 33% below 35 years, 33% between 35-50 years, and 33% over 50 years. Although no further demographic details were collected the sample was predominantly NZ European.

Procedure

First we separated central from peripheral components of wellbeing by conducting a median split of the centrality ratings from Study 2. While we acknowledge the artificial nature of this procedure, and that centrality is continuous rather than dichotomous, it was necessary for the purposes of the present study. The median was calculated as 6.22. Participants were invited to participate in the research study via an email invitation and information sheet (in accordance with AUT Ethics Procedure: 15/74). Participants were presented with two hypothetical scenarios created by the researchers, one of which described a wellbeing experience using only central words (see Jack's below) and another using only peripheral words (see Julie's below). Because we had intentionally selected only central components for inclusion in Jack's central scenario it had a higher mean centrality score (6.76) than Julie's peripheral (5.60). All components are italicised for readers here, but were not italicised in the scenarios presented to study participants.

Jack's wellbeing: Jack is really *happy*. Right now he feels he's got the *balance between home and work* right in his new job: he's finally managing to get home early enough to spend time with his *family* every night, and his boss's recent praise shows his work is *highly valued*. He feels well *supported by his new colleagues*, and their comments on his *positive attitude* and obvious *resilience* have given him a real boost. What's more the company nurse declared his *physical health* was in good shape last week.

Julie's wellbeing: Julie is fully *engaged with* life. Her new job has given her a greater sense of *financial security*, *stress levels are lower* than at her last company, plus she *feels respected* by clients. On the home front, she's started *helping out with her local community*, which has given her a sense of *accomplishment*. The *mindfulness* podcast she's been listening to actually seems

to be paying dividends - she's getting better at living in the present – combined

with her *strong faith*, she's feeling *contentment*.

Participants were then asked to rate how closely each scenario matched their concept
of wellbeing using a 10-point scale (1 = not at all to 10 = extremely).

Results

Of the two hypothetical scenarios presented, workers scored the central scenario
higher than the peripheral scenario (Jack's mean = 7.81; Julie's mean = 6.52). The mean
difference in scores was 1.29 with a 95% confidence interval ranging from .198 to 2.37.
Next, a mixed between-within subjects' analysis of variance was conducted to explore
the impact of age on participants' scores across the two wellbeing scenarios (while we
did collect data on gender, the two groups were too ill-matched to conduct statistical
analysis). Participants were divided into three age groups (Group 1: < 35 years, n = 7;
Group 2: 35-50 years, n = 7; Group 3: > 50 years, n = 7). Means and standard deviations
are presented in Table 7. There was a significant effect for scenario (Wilks' Lambda =
.67, $F(1, 18)$ = 8.78, p = .008, multivariate partial eta squared = .33) and a significant
interaction effect between participants' ratings of the two wellbeing scenarios and their
age (Wilks' Lambda = .62, $F(2,18)$ = 5.46, p = .014, multivariate partial eta squared =
.38). In other words, workers' selection of the two wellbeing scenarios was moderated
by their age, as indicated in graph format in Figure 7.

Table 7. Descriptive statistics for the two hypothetical wellbeing scenarios

Scenario	Age	*N*	Mean	*SD*
Jack	< 35	7	8.43	.98
Jack	35-50	7	6.86	.90
Jack	> 50	7	7.81	1.22
Jack	Total	21	7.81	1.21
Julie	< 35	7	6.43	1.40
Julie	35-50	7	7.57	1.27
Julie	> 50	7	5.57	2.22
Julie	Total	21	6.52	1.81
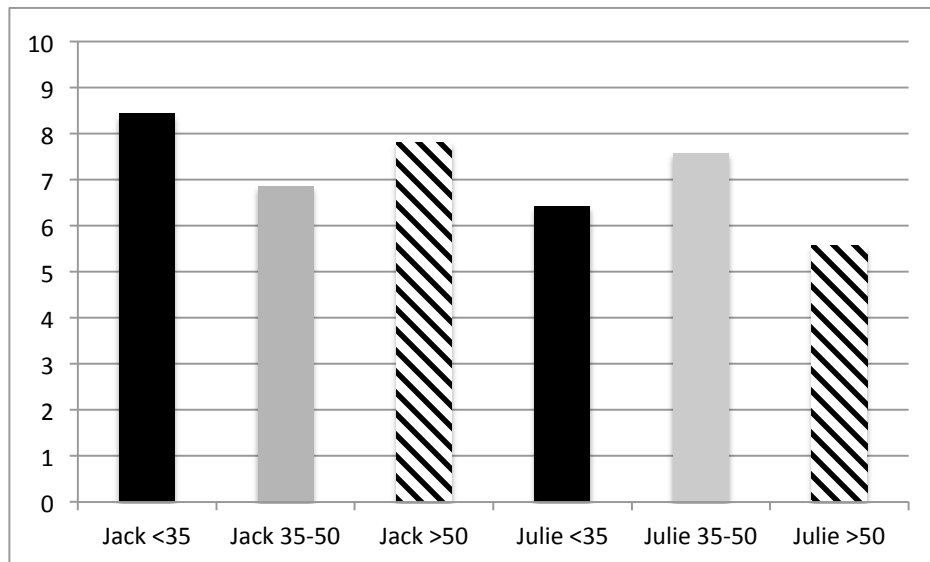
Figure 7. Participant scores for Jack's (central scenario) and Julie's (peripheral scenario) wellbeing, by age group

Discussion

Our analysis shows component centrality does influence New Zealand workers' perception of wellbeing, in that they considered Jack's wellbeing (the scenario containing only central components) to be more prototypical of wellbeing than Julie's scenario (containing only peripheral components). The results of Study 3 thereby confirm that wellbeing is prototypically structured. However, we also note that this was not true of the 35-50 year old age group. This middle aged group scored Julie's wellbeing (the peripheral scenario) higher than Jack's wellbeing (the central scenario). It is hard to know what to make of this particular finding, and, given our small sample size, we recommend future research investigate the interaction between age and component centrality on cognition using larger samples.

Overall discussion

Employee wellbeing is currently a hot topic for human resource management, attracting substantial interest on the back of empirical evidence of its desirable correlates at both the individual and organisational level (for a review of the evidence indicating associations between wellbeing and employee turnover and performance see Page & Vella-Brodrick, 2009). Workplaces set up to foster wellbeing have more creative, more loyal, and more productive staff, and perform better in terms of customer

satisfaction, according to Jeffrey and colleagues' comprehensive literature review on the benefits of focusing on employee wellbeing (2014). Yet the absence of a standardised and universally agreed upon measure of wellbeing, and any investigation examining lay perspectives of wellbeing to date, prompted us to study New Zealand workers' perspectives of wellbeing. Specifically, we were interested in how workers conceptualised wellbeing, and alignment between workers' and academics' conceptualisations of wellbeing.

Conducting, for the first time, a prototype analysis of wellbeing, we found evidence across three studies to support our hypothesis that wellbeing is prototypically structured. In other words, some components of wellbeing are reliably recognised as being more typical of the construct than others. Using components of wellbeing identified by Study 1, participants in Study 2 were able to reach sufficient agreement over which components were central (i.e. important) for wellbeing, and which were peripheral (less important) to satisfy the first criterion for demonstrating a prototype structure. When participants viewed Study 3's two hypothetical scenarios they rated the one containing just central components (Jack's) as more closely resembling their concept of wellbeing than the one containing only peripheral components (Julie's), confirming that component centrality influences workers' perceptions of wellbeing, and thereby satisfying the second criterion for demonstrating that a concept is prototypically organised. Collectively then, these three studies provide preliminary evidence that workers' concepts of wellbeing are structured around a prototype. Instead of requiring necessary and sufficient criteria for category membership (as classically organised constructs do), viewing wellbeing as a prototype provides a more useful description. Wellbeing can be defined as having a "fuzzy collection" (Lambert et al., 2009, p. 1195) of components and levels of wellbeing categorised by the presence or absence of many central components of the prototype. This stands in contrast to Keyes' model of wellbeing (one of the most rigorously validated and widely used in international empirical research), which suggests that positive emotions are a necessary component of a categorical diagnosis of flourishing (Keyes, 2002, 2005; Keyes et al., 2008).

Several other key findings were highlighted by our studies, which we will explore in greater detail below. Firstly, the free-response methodology of Study 1 showed key similarities and differences between academics' and workers' conceptualisations of wellbeing. Our methodological approach expanded upon previous studies investigating lay conceptions of wellbeing which, instead of inviting participants to describe wellbeing using free-response, asked them to rank a list of components identified by researchers and based upon previous theoretical and empirical research (McMahan & Estes, 2011). While we do not deny the merit of McMahan and Estes' approach, we regard eliciting workers' perspectives on wellbeing via free-response is important for a construct receiving focused attention among both academics and practitioners, such as wellbeing.

The current research therefore makes a unique contribution to the science of wellbeing, identifying for the first time components of wellbeing that workers consider important which are not captured by current academic models commonly used in positive psychology research. For example, while researchers have theorised that meaning and purpose, accomplishments, optimism, and autonomy are key components of wellbeing, these were not highly endorsed by our sample of New Zealand workers. Instead, among the components of wellbeing most frequently identified by New Zealand workers were physical health and balance/work-life balance, neither of which feature in any of the most commonly used international academic models. Although, from a New Zealand perspective, it is interesting to note that physical health does feature among the four components of wellbeing in Durie's whare tapa whā model (1994), as does spiritual health which was also identified as a component of wellbeing in Study 1. The omission of physical health from international wellbeing models also stands at odds with the growing body of literature investigating workplace wellbeing, which is substantially focused on physical health. A recent review of 14 key databases across different sciences examining how workplace wellbeing has been discussed and defined identified seven components of workplace wellbeing and calculated that health issues, a health-promoting way of living, and healthy working environments, was the second most frequently written about component, accounting for 18% of peer-reviewed articles published (Laine & Rinne, 2015). This finding combined with the findings of Study 1 indicates that positive psychology researchers are lagging behind other fields in their acknowledgment of the importance of physical health for wellbeing.

Given the strong evidence of the positive association between good physical health and wellbeing, we applaud employers' efforts to promote employee wellbeing by encouraging physical activity, supporting healthy eating, and trying to ensure that work (and work related stress) does not impede good sleep and consequent worker vitality.

Similarly, we draw researchers' attention to the importance of balance/work-life balance revealed by our studies. Work-life balance, while evidently a central concern among workers, remains an ill-defined construct among researchers (Haar, Russo, Suñe, & Ollier-Malaterre, 2014). The combination of balance and work-life balance in this component's title was explicitly chosen in order to accurately depict the breadth of life domains referred to by our sample of New Zealand workers in association with the word 'balance'. For instance, one participant wrote 'balance between competing interests', while others reported 'feeling balance in your life', 'balance between family, work and friends etc.', or 'balance within working life' as key components of wellbeing. The importance of balance between home and work life is supported by empirical evidence from the European Quality of Life Survey showing that poor ratings of work-life balance was the strongest predictor of stress among a sample of 35,000 Europeans (Eurofound, 2013). Similarly, Burke, Burgess and Oberrlaid found that workers in organisations that valued work-personal life balance exhibited higher levels of wellbeing, higher job satisfaction and less intention of leaving the organisation (2004). While some academic researchers (for example Frisch, 2006) have identified achieving balance across different life domains as crucial for wellbeing, its omission from academic models has received previous criticism (Sirgy & Wu, 2009). With this in mind, we recommend human resource practitioners regularly evaluate how employees' work hours fit with all other life domains competing for their time, energy and attention. While some researchers may not consider work-life balance a component of wellbeing on theoretical grounds, those wishing to promote and measure employee wellbeing cannot overlook its importance from a worker's perspective, as revealed in Study 1.

Having noted the differences between workers' and academics' perceptions of wellbeing, we now turn our attention to the similarities revealed by our studies. In particular, we note how workers' perceptions mirror academic models' in their inclusion of both affect (mood) and cognitive evaluation (satisfaction), and the presence

of eudaimonic and hedonic aspects of wellbeing (for a concise explanation of these two streams of wellbeing research see Page & Vella-Brodrick, 2009 p. 443). For instance, workers agree with academics that wellbeing is made up of happiness (hedonic wellbeing) and good relationships, autonomy, and a sense of meaning/purpose (eudaimonic wellbeing). They also concur with the psychological theory that wellbeing encompasses both high and low activation emotions (i.e., happiness and contentment). Furthermore, the substantial alignment between academics' and workers' perspectives is indicated by the fact that 16 of the 27 components of wellbeing identified by workers in Study 1 feature in one or more of the academic models of wellbeing commonly used in positive psychology research: good relationships, good mental health, being resilient/coping with life, sense of purpose/meaning, happiness, autonomy, self-esteem, personal satisfaction, vitality, contentment, optimism, sense of calm, being respected, community, engagement, and achievements.

Conducting this research highlighted the substantial variation in terminology used to define wellbeing. The coding of participants' responses showed that, while we asked about components and indicators in Study 1, participants often reported pathways to wellbeing. This may reflect a fault in the design of our questionnaire in that a second question informing a subsequent study (enquiring about pathways, see Chapter 7) appeared on a second page. But, we suspect it may reflect workers' confusion as to what constitutes a component, indicator or pathway to wellbeing. This confusion mirrors a similar lack of agreement among academics when defining wellbeing. Researchers frequently refer to characteristics, features, components, and dimensions of wellbeing throughout the literature, often interchangeably, but with little differentiation between the uses of these terms. For instance, in her seminal exploration of psychological wellbeing, Ryff (1989) refers to characteristics, dimensions and features all in one paragraph, while Seligman and colleagues' use the words pillars, domains, and components when referring to his PERMA model (Kern, Waters, Adler, & White, 2014; Seligman, 2011). A recent review study (Jayawickreme, Forgeard, & Seligman, 2012) sought to address the problems caused by the multiplicity of theories and terminology within the study of wellbeing, by suggesting an "engine approach" to wellbeing is adopted in future research. This recommended differentiating between inputs (external resources that enable wellbeing such as income and nutrition, and

internal resources such as character strengths and virtues), processes (internal states that influence choices such as experiencing positive emotion and implementing stress reduction strategies), and outcomes (intrinsically valuable voluntary behaviours that reflect the attainment of wellbeing such as relationships, engagement, meaning, and accomplishment). Viewed in this way it can be seen that some of the current academic models of wellbeing are a mixture of inputs, processes and outcomes, and it is interesting to discover that workers' also view wellbeing as a combination of all three. For example, Study 1 showed NZ workers regard wellbeing as a combination of inputs (personality traits such as optimism), processes (subjective states such as experiencing enjoyment and contentment), and outcomes (functioning variables such as engagement and relationships). In order to reduce confusion and enable the systematic study of this multidimensional and complex construct to move forward with greater clarity, Jayawickreme and colleagues recommend researchers specify which of these three components of wellbeing future studies are addressing.

Limitations

We readily acknowledge that the findings of the current study are limited by subjective opinion – both our own and the studies' participants. As researchers we were responsible for creating the component categories, and as such we recognise our subjective opinions over coding participant responses (and collapsing the initial linguistic units into component categories) as a potential source of bias. By coding responses verbatim, and then having two researchers separately allocate linguistic units initially, and then jointly debating category allocation, we have endeavored to find acceptable agreement and produce categories that reflect workers' perspectives of wellbeing to the best of our ability. In acknowledgment of the indeterminacy of this process, we offer our raw data as appendices so readers can examine our decision-making for themselves (see Appendix D). Similarly, we recognise that participant responses are subjective and how one participant conceptualises a response such as 'good mental health' may not be the same for other participants. We therefore ask that readers view our findings in consideration of this fact and hope future research will investigate workers' perceptions of some of the component categories (such as resilience, good mental health, and a positive attitude) further.

Our study is also limited by the largely homogenous nature of our sample, comprised of white, highly educated New Zealand professional workers, and the small sample size of study 2 (n = 52) and study 3 (n = 21). While the current studies revealed differences between teachers and lawyers, and different age groups in Study 3, we did not analyse these further, as this was not the focus of our studies. We recognise that everyday concepts such as wellbeing are likely to be influenced by demographics, occupation, time and place, and will never be entirely independent of historical and cultural biases (Blissett, 2011). Furthermore, without controlling for participants' personality type it is also impossible to judge the impact that these play on our participants' perceptions and experience of wellbeing. Given that extraversion is known to be associated with happiness (Diener & Lucas, 1999) for instance, it is possible that participants' responses in Study 1 and Study 2 were biased by personality type. For example, whether extraverts are more likely to rank happiness as more central to the prototype than introverts remains untested. As a result, interventions designed to promote positive emotions (happiness) may be more effective among extraverts and assessments requiring strong endorsement of positive emotions in order to be categorised as flourishing (such as Huppert & So, 2013) are therefore potentially biased towards extraverts. It is entirely possible that different socio-demographic populations, occupations and cultures could perceive wellbeing quite differently, and we strongly recommend future studies should investigate this possibility by using larger, heterogeneous populations and controlling for personality type. However, we agree with Fehr that "the prototype approach is not necessarily invalidated just because the contents of a prototype may vary; prototype structure and its effects are still likely to obtain" (Fehr, 1988, p. 577). That is, the components may change with different populations, conducted at a different time and place, but the fact that wellbeing has a prototypical structure is likely to remain.

Despite these limitations, our findings present preliminary evidence that wellbeing is a prototypically organised construct, and that New Zealand workers have a broader perception of wellbeing than current academic models reflect (including components often omitted from academic models, such as balance/work-life balance and good physical health). We suggest the omission of good physical health in particular illustrates positive psychology's myopic perspective when conceptualising and

operationalising wellbeing, and encourage practitioners and researchers to include evaluation of these in light of such findings. A cross-discipline approach to wellbeing assessment and promotion is clearly required. We regard our findings as a benchmark of workers' awareness regarding wellbeing, which we believe will act as a useful comparison for future research, enabling changes in workers' perspectives to be monitored over time. Assessing workers' perceptions of wellbeing is an important and relatively unexplored area of positive psychology research and we hope future studies will test our findings using different professions, in different countries, as well as exploring the socio-demographic effects on workers' perceptions of wellbeing.

Summary

For a construct receiving such focused interest, it is important for human resource managers to understand both academic and workers' perspectives of wellbeing. The findings of the current studies indicate awareness among workers of some of the components of wellbeing common to academic models (including positive relationships, good mental health, resilience, purpose/meaning and happiness). However, these studies also indicate that workers' perceive the concept of wellbeing in a broader fashion than researchers. In particular we recommend that researchers and practitioners take note of the relative importance workers place on balance/work-life balance, good physical health, and feeling valued, in their conceptualisation of wellbeing, and recommend that these are appraised as part of any overall assessment of employee wellbeing. We hope our findings stimulate further conversations and exploration of the components of wellbeing among different populations.

CHAPTER 4

PSYCHOMETRIC PROPERTIES OF THE FLOURISHING SCALE IN A NEW ZEALAND SAMPLE

Preface

As a practitioner working in the field of health and productivity management, I am often asked to recommend a short, reliable, and sensitive outcome measure to evaluate employee wellbeing. The Flourishing Scale (FS), recently created by Diener and colleagues (2010) is one such measure, and initial validation studies have indicated it to be a promising tool for wellbeing assessment. However, as indicated in Chapter 2, with only two validation studies using convenience samples supporting its reliability and validity, further exploration of the FS's psychometric properties is required before it can be recommended as an evidence-based and theoretically sound metric. Accordingly, the next study in this doctoral thesis explores the psychometric properties of the FS, using the Sovereign Wellbeing Index Round 1 (SWI), a nationally representative dataset, to test the scale's factor structure, validity and reliability. This study was published by Social Indicators Research (Hone et al., 2013).

Abstract

The Flourishing Scale (FS; Diener et al., 2010) was developed to assess psychological flourishing, which can be conceived of as a social–psychological prosperity incorporating important aspects of human functioning. This study takes the FS, which has previously been validated on a convenience samples of students, and analyses the underlying structure, psychometric properties, and demographic norms using nationally-representative data from New Zealand's Sovereign Wellbeing Index (n = 10,009; SWI; Human Potential Centre, 2013). Evidence for the reliability and validity of the FS is presented (Cronbach alpha) and its performance compared to other related scales and behaviors. Exploratory and confirmatory factor analysis demonstrated the one factor structure of the 8-item FS. Contemporary population norms for the FS are reported, providing a much-needed benchmark for estimation of population health and permitting cross-study and international comparisons. The study provides further evidence that the FS is a valid and reliable brief summary measure of psychological functioning, suited for use with a wide range of age groups and applications.

Introduction

Although individuals have pursued wellbeing and "the good life" throughout history, the benefits of measuring wellbeing, and flourishing specifically, have not been advocated until recently. Largely due to the advent of positive psychology, a field dedicated to the measurement and promotion of wellbeing, it is now recognised that people's evaluations and feelings about their lives provide important information for policy decisions at an organisational, corporate and governmental level (Diener & Seligman, 2004). For wellbeing outcomes to guide policy, systematic assessment using reliable, valid, and responsive tools, and representative population samples are required (Diener et al., 2009). Although science has progressed rapidly over the last decade, the current measurement of wellbeing and flourishing is haphazard (Diener, 2009; Diener & Seligman, 2004).

Much of the confusion stems from the fact that current wellbeing research derives from two ancient theoretical approaches: the eudaimonic and the hedonic. The hedonic approach stems from the Greek philosopher, Aristippus, and focuses on the pursuit of pleasure or happiness, defining wellbeing in terms of pleasure attainment and pain avoidance (Ryan & Deci, 2001). The eudaimonic approach, advocated by Aristotle, argues wellbeing consists of more than just happiness, and lies instead in the actualization of human potentials, occurring when people are living in accordance with their true self (Ryan & Deci, 2001). In contemporary psychology, the hedonic approach involves research and assessment into subjective wellbeing (SWB), operationalised as positive and negative affect balance and life satisfaction (Diener, Suh, Lucas, & Smith, 1999). Studies have indicated combining scores from the Positive and Negative Affectivity Scale (Watson et al., 1988) with the Satisfaction With Life Scale (SWLS; Diener et al., 1985) to be a reliable and valid measure of SWB.

While SWB "reigned as the primary index of well-being during the past decade and a half" (Ryan & Deci, 2001, p.145), Ryff and Keyes' theoretical and operational depiction of psychological well-being (PWB; 1995) as a six dimensional eudaimonic construct, distinct from SWB, prompted researchers to measure wellbeing in a broader sense. In a landmark study, Keyes combined measures of PWB and SWB to report prevalence of different levels of wellbeing, introducing the concept of "flourishing" to describe the

highest levels of mental health (Keyes, 2002). This study reported the beneficial correlates of flourishing and risks associated with "languishing": compared with flourishing adults, languishing adults were almost six times as likely to have experienced depression in the past year. Subsequent studies similarly conceptualised flourishing as a combination of PWB and SWB, and reported on the individual and societal benefits of high levels of wellbeing, making the epidemiology and psychometrics of flourishing an important focus of enquiry. For instance, studies suggest flourishing individuals learn more effectively, are more productive at work, more likely to contribute to their communities, enjoy better social relationships and emotional health, experience less limitations on daily activities, and have better health and life expectancy (Huppert, 2009; Keyes, 2005). Beyond the individual benefits, flourishing is associated with a range of economic benefits including reduced absenteeism and enhanced productivity, lower health care costs, and a reduction in costs as a result of social disintegration (Huppert & So, 2009).

One of the most comprehensive assessments of flourishing to date comes from the European Social Survey (ESS; Huppert et al., 2009). The ESS is a social survey conducted every two years in approximately 25 European countries. Like a number of other social surveys, the core survey historically only measured affect and life satisfaction. However, the inclusion of a specific well-being module from the 2005/2006 (Round 3) onwards has allowed flourishing as a multi-dimensional construct to be measured across Europe. The ESS defines flourishing as the presence of positive emotions, engagement, and meaning/purpose, plus any three of six additional features (self-esteem, optimism, resilience, vitality, self-determination, and positive relationships; Huppert & So, 2009). Analysis investigating the relationship between life satisfaction and flourishing confirmed these were distinct constructs, with one third of ESS flourishing participants not obtaining a high score on life satisfaction, and half of those with high life satisfaction not meeting the criteria for flourishing.

Despite the concept of flourishing becoming more popular in academic and applied research over the last decade, the indeterminacy in both conceptualisation and theoretical definition means no internationally recognised gold-standard measurement tool for flourishing exists. To meet this demand, and in acknowledgement that well-

being is a multi-dimensional construct comprising more than just SWB, Diener and colleagues' created the Flourishing Scale (2010) as a brief summary measure of psychological functioning to complement SWB measures. Only three published studies of the eight-item Flourishing Scale exist to date, despite its frequent use in practice (Chen, Lee, Pethtel, Gutowitz, & Kirk, 2012; Diener et al., 2010; Silva & Caetano, 2011b). In the original study, Diener and colleagues (2010) showed the FS to have good psychometric properties on student populations (n = 689), with high internal ($\propto$ = 0.87), and temporal reliabilities (.71), and high convergence with other well-being scales including the SWLS (r = .62, n = 680, p < .001), Ryff's Scales of Psychological Wellbeing (r = .64, n = 74, p <.001), and Ryan and Deci's (2000) Basic Needs Satisfaction in General scale (r = .62, n = 527-530[2], p <.001). Students' scores ranged from 25 to 56, M = 44.97 (SD = 6.56). A principal factor analysis indicated the presence of one strong factor, with an eigenvalue of 4.24, accounting for 53% of the items' variance. Following Diener et al., Silva and Caetano (2011b) investigated the external reliability of the FS in a study exploring its psychometric properties on two Portuguese samples (I: full time employees, n = 717; II: undergraduate students n = 194). Mean item values ranged from 4.81 to 5.93, but this study found students indicated higher FS scores than workers. Full-time employees' FS scores ranged from 14 to 56, M = 42.92 (SD = 6.10), while students' scores mirrored those of the original study, ranging from 25 to 56, M = 44.15 (SD = 4.86). Principal axis and confirmatory factor analysis across the two samples confirmed the scale's one factor structure. Reliability analysis showed good internal consistency ($\propto$ = 0.83). High correlations between the FS, the SWLS, Subjective Happiness Scale (Lyubomirsky & Lepper, 1999), and Fordyce's single item measure of happiness (Fordyce, 1988), provided evidence of construct validity for the Portuguese version. Lastly, Chen and colleagues' also used the FS in a study assessing the wellbeing of older adults compared to younger adults (2012), but no descriptive statistics for the FS were reported. No further published studies using the FS are currently available[3]. No published New Zealand data on flourishing currently exists. What little research there is on wellbeing in New Zealand has been mainly focused around a single measure of life satisfaction and focused on cross-sectional designs (NZGSS, 2010; OECD, 2009). The introduction of the Sovereign Wellbeing Index (SWI; Human Potential Centre,

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[2] N's for the FS and the Basic Needs Satisfaction scale varied from 527 to 530
[3] As of July 10th 2013

2013), which includes the 8-item Flourishing Scale, therefore provides the first opportunity to measure psychological flourishing in New Zealand using a nationally representative sample of adults. The prospective design of the SWI also uniquely allows flourishing to be assessed over time (second round in October 2014 and the third in October 2016). This is important for New Zealand, but the nationally representative nature of this sample also provides an opportunity to present population-normed scores for the FS, allowing the interpretation and estimation of population flourishing, permitting international comparisons, and providing benchmarks for practitioners looking for a brief field-measure to evaluate psychological functioning.

While the above papers represent a good start, two studies using convenience samples are insufficient to establish the validity of a new scale. More psychometric support using nationally representative samples is required in order to increase confidence in the scale's structure, generalisability, and enable international comparisons. Our study improves upon the FS's existing evidence-base given the above studies' sample limitations: Diener et al. used a convenience sample of students, 68% of which were female; Silva and Caetano tested the FS on a Spanish sample, only 4% of which were aged 50 and over. The current study therefore adds to the existing evidence-base by: 1) Providing a starting point for empirical research into psychological functioning among New Zealanders; 2) Assessing psychometric properties using a nationally representative English-speaking adult sample allowing for international comparisons to be made; 3) Presenting comprehensive national norms for the FS, providing useful data for practitioners wishing to use a brief validated measure of psychological functioning among adult populations.

Methods

Participants

Participants for this study were obtained from the Sovereign Wellbeing Index, an observational longitudinal study tracking the wellbeing of a nationally representative sample of adult New Zealanders (n = 9,646). Removing missing FS data reduced the sample from n = 10,009 to n = 9,646. Participants' ages ranged from 18 to 111 and the mean age was 44.21 (SD = 16.40). Sample demographics are shown in Table 8.

Measures

Flourishing Scale (FS). Embedded in the 130 question SWI is the eight-item Flourishing Scale (FS; Diener et al., 2010), a brief summary measure designed to assess respondents' self-perceived success in areas identified as important for psychological flourishing, including relationships, meaning and purpose, self-esteem and optimism (see Appendix E for a reproduction of all measures). The FS was first introduced as the Psychological Flourishing Scale in a 12-item format (Diener & Biswas-Diener, 2008), but has since been refined to eight items. The scale was created to complement existing measures of wellbeing, in acknowledgement that the traditional method of measuring subjective wellbeing via the Satisfaction with Life Scale (Diener et al., 1985) and an affective measure such as the Positive and Negative Affect Schedule (Watson et al., 1988) gave an incomplete depiction of wellbeing. The eight-item scale captures eudaimonic dimensions of wellbeing that Ryff (1989) and Ryan and Deci (2001) suggest are important for positive functioning, such as competence, self-acceptance, meaning and relatedness, as well as optimism, giving, and engagement, which studies have shown to contribute to wellbeing (Brown et al., 2003; Putnam, 1995; Seligman, 2006). Each item is phrased in a positive direction and the answers are measured on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Scores range from 8 to 56. A high score on the scale indicates respondents have a positive self-image in important areas of functioning (Diener et al., 2010).

The Centre for Epidemiological Studies Depression Scale (CES-DS). The Centre for Epidemiological Studies Depression Scale (CES-DS; Radloff, 1977) is a short, 20-item measure assessing the frequency and severity of depressive symptomatology over the past week in a general population. The CES-DS measures "current level of depressive symptomatology, with emphasis on the affective component, depressed mood" (Radloff, 1977, p. 285). In this study, an 8-item version of the 20-item CES-DS was used that was developed and used in the ESS Round 3 (see Appendix E). Participants rated how frequently each of eight depressive symptoms had been experienced on a scale ranging from 0 to 3, where 0 represents "rarely or none of the time – less than 1 day", 1 represents "some or a little of the time – 1 to 2 days", 2 represents "occasionally or a moderate amount of the time – 3 to 4 days", to 3 "most or all of the time – 5 to 7 days". The eight items represent major components of depressive symptomatology including

depressive affect, sadness, sleep disturbance, loneliness, sadness and lethargy. Two of the eight items are positively phrased ("I enjoyed life" and "I was happy") and are reverse scored. Total scores range from 0 (indicating no depressive symptoms) to 24 (indicating more depressive symptomatology). Although there is no published research on this 8-item version other than from the ESS, the psychometric properties of the 20-item CES-DS have been thoroughly investigated in both clinical and non-clinical samples over the past 30 years. Various authors (for example, Roberts, 1980; Spielberger, Ritterband, Reheiser, & Brunner, 2003) cite the CES-DS as a widely used depression measure (see Ensel, 1986, for an overview of the CES-DS). The average reliability of the CES-DS 20-item version is reported as .85 (Radloff, 1977).

Happiness. Happiness was assessed with a single item, "Taking all things together, how happy would you say you are?" Participants rated their perceived happiness on a 0 (extremely unhappy) to 10 (extremely happy) scale. Greater scores indicate greater perceived happiness.

Life satisfaction. Life satisfaction was assessed with a single item, "All things considered, how satisfied are you with your life as a whole nowadays?" Participants rated their perceived life satisfaction on a 0 (extremely dissatisfied) to 10 (extremely satisfied) scale. Greater scores indicate greater perceived life satisfaction.

Five Ways to Wellbeing. The SWI also included items to assess participation in the *Five Ways to Wellbeing* (Connect, Give, Take notice, Learn, and Be active) identified by the New Economics Foundation (nef) as evidence-based behaviors to improve personal wellbeing (Aked, Marks, Cordon, & Thompson, 2009). Connect was assessed with a single item, "How often do you meet socially with friends, relatives or work colleagues?" and used a 7-point response scale from 'never' to 'every day'. For the purpose of our analysis, those responding 'several times a week' and 'every day' were classified as strongly endorsing Connect. Give was assessed using the question "To what extent do you provide help and support to people you are close to when they need it?" where the response scale ranged from 0 (not at all) to 7 (completely) and those scoring 5-7 were classified as strongly endorsing Give. Take notice was assessed using the question "On a typical day, how often do you take notice and appreciate your surroundings?" where the response scale ranged from 0 (never) to 10 (always), and those scoring 8-10 were classified as strongly endorsing Take notice. Learn was assessed using the item "To what extent do you learn new things in life?" where the

response scale ranged from 0 (not at all) to 6 (a great deal), and those scoring 5-6 were classified as strongly endorsing Learn. Be active was assessed via an aggregated exercise score based on exercise frequency and exercise intensity, whereby participants were classified into four groups (very low exercise, low exercise, moderate exercise, high exercise) and those in the moderate or high exercise categories were classified as strongly endorsing Be active.

Design and Procedure

Data collection occurred between 26 September 2012 to 25 October 2012. This nationally representative sample of adults over 18 years (matched to the 2006 New Zealand Census data; Statistics New Zealand, 2006) was recruited online via the New Zealand office of TNS Global, an international market research company contracted to undertake the recruitment and data collection procedures for Round 1 of the SWI. An email invitation was sent to 38,439 people over three rounds, which contained a link to the online survey and informed consent form (see www.mywellbeing.co.nz). Individuals were given seven days to respond to the invitation. Once informed consent was given, participants proceeded to complete the online survey, which took approximately 19 minutes (median). Adults over 18 years were eligible to participate in the survey and no further exclusion criteria applied. Response rate was 26% and respondents answered voluntarily.

Statistical Analysis

Descriptive analysis to present population norms and reliability analysis, using Cronbach alpha coefficients, was conducted using the entire sample. The SWI dataset was randomised using a random number generator web tool (www.random.org), then split in half to create two random samples: sample I (n = 4,823); and sample II (n = 4,823). Comparative demographic analysis confirmed sample equivalence. An exploratory factor analysis (EFA) was conducted on sample I using SPSS version 20, and a confirmatory factor analysis (CFA) on sample II using AMOS 18 (Arbuckle & Wothke, 1999). We also used the full sample to test convergent validity with other measures of happiness, life satisfaction, and discriminant validity via the 8-item CES-DS using the entire sample. Finally, we conducted independent samples t-tests on the full sample to compare FS means among those participants' strongly endorsing nef's *Five Ways to*

Wellbeing with those participants not strongly endorsing the five ways, in order to investigate the association between self-reports of these behaviors and flourishing.

Results

Descriptive Analysis

Mean values for the scale's individual items ranged from 5.19 to 5.88, suggesting all participants have positive perceptions of themselves in the main areas of positive functioning. According to Diener et al. (2010) the Flourishing Scale has good internal consistency, with a Cronbach alpha coefficient reported of .87. The Cronbach alpha coefficient for this study was .91. Table 8 presents the range and demographic norms for the FS and Table 9 reports percentile norms, demonstrating what individual scores signify.

Table 8. Flourishing Scale Range, Mean and Standard Deviation

	N	Minimum	Maximum	Mean	*SD*
Total	9645	8	56	43.82	8.36
Gender					
Male	4543	8	56	43.30	8.63
Female	5065	8	56	44.33	8.07
Age					
Under 20	215	20	56	42.71	7.96
20 – 29 years	1870	8	56	43.29	8.30
30 – 39 years	1487	8	56	43.37	8.23
40 – 49 years	1434	8	56	43.17	8.86
50 – 59 years	1346	8	56	44.28	8.42
60 – 69 years	1344	8	56	45.19	8.02
70 – 79 years	492	15	56	46.51	6.60
80 years and over	54	14	56	43.22	8.78
Ethnicity					
European	7142	8	56	44.03	8.25
Maori/Pacific	1232	8	56	43.66	8.66
Asian	1042	8	56	43.22	8.44
Relationship status					
Married/					
living with partner	5711	8	56	44.92	7.81

	N	Minimum	Maximum	Mean	SD
Single/					
never married	2323	8	56	41.79	8.87
Separated/					
divorced	1052	8	56	42.77	8.81
Widowed	275	10	56	43.90	8.77
Highest academic qualification					
Finished primary	313	12	56	40.17	9.49
Finished secondary	2517	8	56	43.37	8.50
University entrance	1167	8	56	43.84	8.27
Apprenticeship/					
diploma	2286	8	56	44.19	8.00
Bachelor degree					
or higher	1756	8	56	44.70	7.96
Post graduate					
or higher	1032	8	56	45.48	7.69
Employment					
In paid work	5435	8	56	44.64	7.69
Looking for work	674	8	56	39.68	9.49
In education/					
on holiday	753	8	56	44.02	7.85
Perm sick/					
disabled	361	8	56	36.43	10.73
Retired	1173	9	56	45.35	7.53
Children/					
housework	779	8	56	43.97	8.28
Other	151	8	56	42.92	10.27

Table 9. Flourishing Scale norms in terms of percentile rankings for the SWI

Score	Percentile
17	1
24	3
28	5
30	7
32	12
35	17
37	21
38	23
39	26
40	29
41	32
42	35
43	39
44	42
45	47
46	53
47	59
48	70
49	76
50	81
51	85
52	89
53	92
54	94
55	97
56	100

Note: Selected values are given (total scale range = 8-56). Percentiles are based on the entire sample (n = 9,646)

Exploratory Factor Analysis

Because past studies used student and non-English samples, the eight items of the FS were subjected to exploratory factor analysis (EFA), using principal axis factoring on Sample I (n = 4,823), with the intention of exploring the underlying factor structure without imposing any preconceived structure on the outcome (Child, 1970). Prior to performing EFA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed all coefficients were .3 and above. The Kaiser Meyer-Olkin value was .926, exceeding the recommended value of .6 (Kaiser, 1960) and meeting Kaiser's "marvelous" criteria (1974). A Kaiser's value close to 1 indicates that correlation patterns are sufficiently compact that factor analysis should produce distinct and

reliable factors. Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix, although this highly significant value may be due to the large sample size (n = 4,823) relative to the number of items in the matrix (n = 8). A principal axis analysis revealed the presence of one strong factor with an eigenvalue above 1 (4.52), accounting for 57% of the variance in the items. Inspection of the screeplot revealed a clear break after the first component to the second, which had an eigenvalue of .67. Using Catell's (1966) scree test, which argues for extracting only factors above the point of inflexion on the scree test's curve, it was decided to retain one factor. This was further supported by the results of Parallel Analysis which showed only one factor with an eigenvalue exceeding the corresponding criterion value for a randomly generated data matrix of the same size (8 variables * 2500 respondents * 100 replications); which was an eigenvalue of 1.08 for the first factor and 1.05 for the second factor. The factor loadings for sample I ranged from 0.72 to 0.81 (see table 10). Therefore, only one factor characterised the FS scale.

Table 10. Flourishing Scale Factor Loadings for Sample I

Flourishing Scale Item	Factor Loading
Q1. I lead a purposeful and meaningful life	.81
Q3. I am engaged and interested in my daily activities	.79
Q4. I actively contribute to the happiness and wellbeing of others	.74
Q7. I am optimistic about my future	.74
Q2. My social relationships are supportive and rewarding	.74
Q6. I am a good person and lead a good life	.74
Q5. I am competent and capable in the activities that are important to me	.73
Q8. People respect me	.72

Confirmatory factor analysis

Confirmatory factor analysis using maximum likelihood estimation was conducted on Sample II (n = 4,823) using AMOS Version 18 (Arbuckle & Wothke, 1999) to investigate model fit via a range of fit statistics. Mean values of the scale's items for Sample II ranged from 5.19 to 5.89, again suggesting all participants have positive perceptions of themselves in the main areas of positive functioning. An eight-item, one factor model, as identified by the exploratory factor analyses on Sample I was investigated allowing the factors to freely correlate. A number of alternative models were tested. The initial

model showed poor fit to the data (p = .000). Due to the sensitivity to sample size of the Chi-square goodness of fit test, we used the Comparative Fit Index (CFIs), Lisrel GFI Fit Index (GFI), and Root Mean Square Error of Approximations (RMSEAs) to determine model fit. CFI and GFI values of .90 or above, and RMSEA values above .06 and below .08 are indicative of good empirical fit (Schumacker & Lomax, 2004). The baseline model's GFI (.933) and CFI (.945) fit statistics indicated satisfactory fit, but the RMSEA of .114 failed to reach recommended values between .05 and .08 indicating an invalid model (Browne & Cudeck, 1992). Given the high RMSEA value we modified the model by correlating the errors in the follow step order: between e5-e6, e4-e5, e4-e6, e6-e8, e6-e7, (see Figure 8).
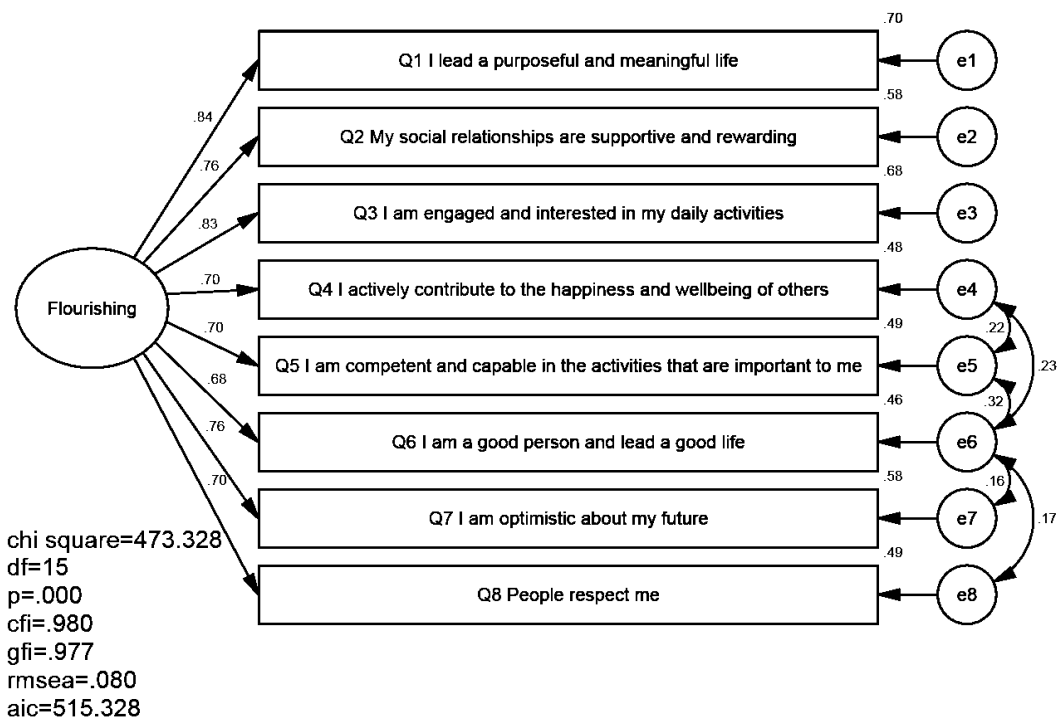
Figure 8. Flourishing Scale: One factor confirmatory factor model

This produced a better fitting model, with GFI (.977), CFI (.980), and RMSEA (.080) all indicating satisfactory fit. This analysis confirms the unidemensional factor structure of the FS. Fit statistics for all models are reported in Table 11.

Table 11. Goodness of fit statistics for the tests of factorial validity of the Flourishing Scale (Sample 2)

FS	$\chi 2$	df	CFI	GFI	RMSEA (90% CI)
Model 1	1262.884	20	.945	.933	.114
Model 2	975.818	19	.958	.950	.102
Model 3	875.048	18	.962	.955	.099
Model 4	722.440	17	.969	.962	.093
Model 5	589.166	16	.975	.971	.086
Model 6	473.328	15	.980	.977	.080

Model 1 - Baseline model; Model 2 - Items 5 and 6's errors covaried; Model 3 - Item 4 and 5's errors covaried; Model 4 - Item 4 and 6's errors covaried; Model 5 - Item 6 and 8's errors covaried; Model 6 - Item 6 and 7's errors covaried

Convergent and Discriminant Validity Analysis

To investigate convergent and discriminant validity we correlated the Flourishing Scale, single-item happiness and life satisfaction questions, and the 8-item Centre for Epidemiological Studies Depression Scale contained in the SWI across the entire sample (see Table 12). There was a strong, positive correlation between the FS and happiness, r = .67, $p < .01$ (2-tailed), and between the FS and life satisfaction, $r = .64$, $p < .01$ (2-tailed). A strong negative correlation existed between the FS and the 8-item CES-DS, $r = -.60$, $p < .01$ (2-tailed) indicating discriminant validity. Calculating the coefficient of determination indicates that happiness explains 45% of the variance in respondents' FS scores; life satisfaction explains 41% of the variance in FS scores; and depressed mood explains 36% of the variance in flourishing scores. These results are consistent with the two published reports on the FS (Diener et al., 2010; Silva & Caetano, 2011b) and provide evidence for the construct validity of the FS for use among adult New Zealand populations.

Table 12. Correlations between the Flourishing Scale, CES-D, happiness and life satisfaction

_____

Measures	FS	CES-D 8	Happiness	Life Sat
FS	-			
CES-D 8	-.60**	-		
Happiness	.67**	-.66**	-	
Life Sat	.64**	-.62**	.86**	-

Notes. FS = Flourishing Scale, CES-DS 8 = Centre for Epidemiological Studies Depression Scale 8-items
** Correlation is significant at the 0.01 level (2-tailed)

Five Ways to Wellbeing

Independent samples *t*-tests were conducted to compare FS scores among those participants strongly endorsing each of the *Five Ways to Wellbeing* behaviors (Connect, Give, Take notice, Learn, and Be active) using the entire sample. There was a significant difference in FS scores for participants strongly endorsing Connect (M = 46.79, SD = 6.68) and those not strongly endorsing Connect [M = 42.67, SD = 8.65; t(9483) = -24.98, p = .01]. The magnitude of the differences in the means was moderate (eta squared = .06). There was a significant difference in FS scores for participants strongly endorsing Give (M = 45.65, SD = 7.46) and those not strongly endorsing Give [M = 40.17, SD = 8.54; t(9485) = -30.01, p = .01]. The magnitude of the differences in the means was moderate (eta squared = .09). There was a significant difference in FS scores for participants strongly endorsing Take notice (M = 47.31, SD = 6.71) and those not strongly endorsing Take notice [M = 41.90, SD = 8.33; t(9499) = -34.82, p = .01]. The magnitude of the differences in the means was moderate to large (eta squared = .11). There was a significant difference in FS scores for participants strongly endorsing Learn (M = 46.55, SD = 7.10) and those not strongly endorsing Learn [M = 41.74, SD = 8.65; t(9590) = -29.90, p = .01]. The magnitude of the differences in the means was moderate (eta squared = .09). There was a significant difference in FS scores for participants strongly endorsing Be active (M = 47.14, SD = 7.13) and those not strongly endorsing Be active [M = 43.68, SD = 8.34; t(9350) = -12.12, p = .01]. The magnitude of the differences in the means was small (eta squared = .02).

Discussion

These results are consistent with Diener and colleagues' original study (2010). Exploratory and confirmatory factor analysis conducted across two samples revealed a one-factor structure for the FS. Our study adds to the evidence of this new scale's internal consistency reliability (α = .91) and the strong positive correlations between the FS, happiness and life satisfaction measures support convergent validity. A strong negative correlation between the FS and the 8-item CES-DS measure of depressive symptoms demonstrates discriminant validity. The current study is the first to report comprehensive demographic norms for the FS using a nationally representative sample of English speaking adults, and in doing so revealed greater range and variance in the scale as indicated by Table 8. A series of one-way between-group analysis of variance indicated significant differences between means among various demographic groups. For example, married/living with partner participants scored significantly higher (*M* = 44.92, *SD* = 7.81) than single/never married participants (*M* = 41.79, *SD* = 8.87). Among different types of current employee status, retirees scored the highest (*M* = 45.35, *SD* = 7.53) while permanently sick or disabled participants reported the lowest FS scores (*M* = 36.43, *SD* = 10.73). Significant differences existed according to academic qualifications, with participants only going as far as finishing primary school reporting significantly lower FS scores (*M* = 40.17, *SD* = 9.49) than all other academic qualifications. Reporting population norms across different demographic groups therefore provides essential evidence for practitioners seeking to use a brief measure of psychological functioning in the field, enabling them to compare individual scores against published data.

The SWI's inclusion of items representing the New Economic Foundation's *Five Ways to Wellbeing* also allowed us to examine the relationship between known behavioural drivers of wellbeing and participants' FS scores. Independent samples *t*-tests indicated that participants strongly endorsing these five actions (connecting socially with others, giving help and support, taking notice, learning new things, and being physically active) reported significantly higher flourishing scores than those not strongly endorsing these actions. These findings add further cross-sectional evidence that engaging in these five behaviours is associated with higher levels of wellbeing.

In contrast to Diener and colleagues' original study (2010), the current study was limited by the lack of test-retest reliability, and it is recommended that investigation of the scale's stability over differing time periods be a priority when designing future studies. Finally, all measures included in this study rely on self-report. Wellbeing is an inherently subjective construct but future studies may benefit from the inclusion of objective measurements.

While the external reliability of the FS was initially constrained by Diener and colleagues' convenience sample of college students, a particular strength of this study is that it demonstrates the scale's generalisability to a representative adult population thereby increasing confidence in the scale's utility. The lower mean score among 18-20 year olds in the SWI (M = 42.71, SD = 7.69) compared to Diener and colleagues' original student sample (M = 44.97, SD = 6.56) serves to illustrate the importance of testing new scales on nationally representative samples. Overall, this study corroborates the psychometric properties established in the scale's extant published studies, building upon the evidence supporting the use of the FS as a brief summary measure of self-reported psychological functioning.

FLOURISHING IN NEW ZEALAND WORKERS: ASSOCIATIONS WITH LIFESTYLE BEHAVIOURS, PHYSICAL HEALTH, PYSCHOSOCIAL, AND WORK-RELATED INDICATORS

Preface

Having investigated issues surrounding the conceptual and operational definition of wellbeing and flourishing, a key question remaining is whether there is any significant differences in outcomes for people who are flourishing compared to those not flourishing. International evidence shows that compared to flourishing adults, those not flourishing have significant psychosocial impairment, poorer physical health and more limitations on daily living (Keyes, 2002, 2005). But no New Zealand epidemiological studies on employee wellbeing taking a positive psychology approach, focusing on flourishing and employee health *assets* currently exist. Previous epidemiological studies in New Zealand have focused on employee health risk factors, pathology and physical health. Such research is vital for providing a clear picture of the current state of employee wellbeing in a given population, and how wellbeing is socially distributed in that population. In this next study, I therefore assessed prevalence and associations of flourishing among a large, representative sample of New Zealand workers. This study has been published by the Journal of Occupational and Environmental Medicine (Hone, Jarden, Duncan, et al., 2015).

Abstract

Objective: To investigate the prevalence and associations of flourishing among a large sample of New Zealand workers. Methods: A categorical diagnosis of flourishing was applied to data from the Sovereign Wellbeing Index Round 1, a nationally representative sample of adults in paid employment (n = 5,549) containing a variety of lifestyle, physical, psychosocial and work-related indicators. Results: One in four New Zealand workers were categorised as flourishing. Being older and married, reporting greater income, financial security, physical health, autonomy, strengths awareness and use, work-life balance, job satisfaction, participation in the *Five Ways to Wellbeing*, volunteering, and feeling appreciated by others, were all positively associated with worker flourishing independent of socio-demographics. Conclusions: Flourishing is a useful additional indicator for evaluating the prevalence, and identifying the drivers of, employee wellbeing. Employers may benefit from promoting these indicators among staff.

Introduction

Organizational behaviour has traditionally focused on the medical disease model, but a growing body of evidence suggests that workplaces have much to offer in the promotion of population wellbeing, and much to gain from protecting and promoting employee wellbeing (Jeffrey et al., 2014; Luthans, 2002). According to Russell, "workplaces are matched only by the education system as effective settings for promoting health and preventing chronic disease" (2009) and work has been ranked the third most important factor (out of seven) affecting happiness (Layard, 2011). In terms of employer benefits, initial explorations focused on organizational benefits associated with happiness (often operationalized as affect balance and life satisfaction). For example, Lyubomirsky and colleagues' review of cross-sectional, longitudinal and experimental data indicated that happy employees are more likely to exhibit superior work performance, be positively evaluated by their colleagues, have higher incomes, more fulfilling relationships and robust health than their less happy peers (Lyubomirsky, King, & Diener, 2005). A similar review by Boehm and Lyubomirsky (2008) provided evidence of the causal nature of the relationship: positive emotions are instrumental in bringing about improvements in a variety of positive workplace outcomes. For example, studies have identified that positive emotions are negatively and moderately correlated with employees' intentions to leave current employment (Hart & Cooper, 2001), and that emotional well-being (operationalized as positive and negative affect balance) predicts turnover (Wright & Bonett, 2007) and job performance (Wright & Cropanzano, 2000).

Aside from happiness, job satisfaction and engagement have been the dominant outcome variables investigated by organisational behaviour researchers seeking to understand and promote employee productivity. But using these to operationalize employee well-being now stands at odds with two strands of research indicating that 1) "engaging employees is just one part of the (productivity) story" (Jeffrey et al., 2014, p.6); and 2) that well-being is a multi-dimensional construct encompassing psychological, social, and emotional well-being (Hone et al., 2014). It is not our intention to dismiss the importance of employee engagement or job satisfaction as worthy of investigation, but based on the literature (for a comprehensive review see

Jeffrey et al., 2014) we believe that promoting employee well-being requires exploring drivers beyond engagement and job satisfaction.

While a growing body of evidence (drawn from a variety of different organizations and settings) indicates the positive association between higher well-being and higher productivity (see for example, Donald et al., 2005; Ford, Cerasoli, Higgins, & Decesare, 2011; Robertson & Cooper, 2011), little research has focused specifically on employee flourishing. Among positive psychology researchers, well-being is operationalized slightly differently, but there is general consensus on the following points: 1) flourishing is one of a range of ways of conceptualising well-being, by focusing on the top end of the spectrum; 2) a person can be said to be flourishing if they perceive that their life is going well; 3) flourishing is a combination of feeling good (emotional well-being) and functioning effectively (psychological and social well-being); 4) measurement of flourishing is currently based on self-report and is therefore a subjective measure of well-being (for a review of the different theoretical, conceptual and operational definitions of flourishing see Hone et al., 2014).

A growing body of evidence indicates the desirable correlates of flourishing (Diener et al., 2010) and the individual and societal risks associated with its absence (Keyes, 2002, 2005, 2010; Keyes & Simoes, 2012) making the epidemiology of flourishing an important research focus. For example, Keyes' (2005) study using a representative sample of US adults showed flourishing to be associated with fewer missed or reduced working days, less perceived helplessness, fewer health limitations, and greater perceived resilience and intimacy. In another study, flourishing students reported less procrastination and higher self-control and higher grades (Howell, 2009). However, the international literature concerning employee flourishing is scant. Keyes and Grzywacz (2005) indicated that flourishing employees demonstrated higher levels of work-related productivity, put greater thought and effort into their work, reported less missed work days and less reduced days, fewer work injuries, and lower levels of healthcare costs. Kern and colleagues suggested flourishing predicted life satisfaction, physical health, job satisfaction and organizational commitment among Australian school staff (Kern et al., 2014). Diedericks and Rothmann's study showed flourishing was strongly related to job satisfaction, which in turn had a moderate effect on their organisational commitment

and a strong effect on turnover intention, among a sample of South African IT workers, thereby suggesting that well-being promotion benefits not just the individual but also the organisation (Diedericks & Rothmann, 2014). In New Zealand there currently exists no epidemiological evidence concerning flourishing among workers. The Mental Health Foundation has adopted the *Five Ways to Wellbeing* in a campaign to promote population flourishing and circulated these behavioural messages among businesses (Mental Health Foundation, 2012), but there is as yet no empirical evidence of association between flourishing among workers and engaging in the *Five Ways to Wellbeing.*

Using the Sovereign Wellbeing Index Round 1 (Human Potential Centre, 2013), a large nationally representative adult sample, the current study therefore aimed to: 1) examine the impact of employment status on wellbeing; 2) estimate the prevalence of flourishing among New Zealand workers; and 3) investigate associations between flourishing and socio-demographic, lifestyle behaviours, physical health, psychosocial, and work-related indicators, including the *Five Ways to Wellbeing*.

Methods

Data Source

Data were obtained from the Sovereign Wellbeing Index Round 1 (SWI; Jarden et al., 2013), an online survey containing a large range of well-being, health, lifestyle, work-related, and socio-demographic variables (*n* = 324), see www.mywellbeing.co.nz. The New Zealand office of TNS Global, an international market research company, was contracted to undertake recruitment and data collection from one of the largest research panels in New Zealand (Smile City). A total of 38, 439 invitations were sent to a random selection of eligible panel of approximately 400,000 members over three rounds (September to October 2012), with a response rate of 32% and a completion rate of 26% (*N* = 9,962). Sample characteristics indicating alignment with the 2006 NZ Census (see http://www.stats.govt.nz/Census/about-2006-census.aspx) suggested the sample to be nationally representative. All panel members aged over 18 were eligible and no further exclusion criteria were applied. Largely based on Round 6 of the European Social Survey (ESS) Personal and Social Wellbeing module (European Social

Survey, 2012), the SWI dataset enables us to apply the categorical diagnosis of flourishing conceptualized by Huppert and So and applied to the European Social Survey (2013). The bulk of the analysis in the current study focuses on a reduced sample including just those participants in paid employment (n = 5,549) and aged from 18 to 83 years, (M = 41.96, SD = 13.59). Females comprised 49% of the sample. The majority (74%) were European/other, 13% were Māori/Pacific Islander, and 13% were Asian. Sixty-six per cent were married or living with a partner, 23% were single or never married, 10% were permanently separated or divorced, and 1% were widowed. Just under a quarter had been educated to the end of secondary school, 26% had an apprenticeship, diploma, or trade certificate, and 23% had gone to university. The sample aligned with population parameters from the NZ census (Jarden et al., 2013). Demographic characteristics comparing the full SWI sample and the reduced workers sample are shown in Table 13.

Table 13. Demographic characteristics of the whole SWI sample and of only workers

	Male		Female		Total	
	Whole Sample n (%)	Workers n (%)	Whole Sample n (%)	Workers n (%)	Whole Sample n (%)	Worker n (%)
Age						
< 30 years	840 (21.0)	471 (19.7)	1296 (29.4)	654 (28.2)	2136 (25.4)	1125 (23.9)
30 – 39 years	681 (17.0)	537 (22.4)	843 (19.1)	519 (22.4)	1524 (18.1)	1056 (22.4)
40 – 49 years	683 (17.1)	524 (21.9)	784 (17.8)	494 (21.3)	1467 (17.4)	1018 (21.6)
50 – 59 years	715 (17.9)	523 (21.8)	648 (14.7)	400 (17.3)	1363 (16.2)	923 (19.6)
> 60 years	1078 (27.0)	339 (14.2)	843 (19.0)	251 (10.8)	1921 (22.8)	590 (12.5)
Ethnicity						
European	3415 (75.1)	1998 (72.8)	3889 (76.0)	2037 (75.8)	7304 (75/6)	4035 (74.3)
Maori/Pacific Island	538 (11.8)	307 (11.2)	751 (14.7)	375 (13.9)	1289 (13.3)	682 (12.6)
Asian	596 (13.1)	438 (16.0)	475 (9.3)	277 (10.3)	1071 (11.1)	715 (13.2)
Marital status						
Single/never married	1218 (26.8)	614 (22.2)	1185 (23.5)	615 (23.1)	2403 (25.1)	1229 (22.6)
Married/living with partner	2817 (61.9)	1933 (69.9)	3013 (59.8)	1676 (62.9)	5830 (60.8)	3609 (66.4)
Divorced/separated	432 (9.5)	198 (7.2)	641 (12.7)	325 (12.2)	1073 (11.2)	523 (9.6)
Widowed	83 (1.8)	22 (0.8)	197 (3.9)	49 (1.8)	280 (2.9)	71 (1.3)
Combined household income						
< $40,000	1118 (31.4)	285 (12.7)	1311 (35.7)	411 (20.5)	2429 (33.6)	696 (16.4)
$40,001-$70,000	922 (25.9)	663 (29.5)	1079 (29.4)	618 (30.9)	2001 (27.7)	1281 (30.1)
$70,001-$100,000	748 (21.0)	637 (28.3)	734 (20.0)	542 (27.1)	1482 (20.5)	1179 (27.7)
> $101,000	771 (21.7)	662 (29.5)	548 (14.9)	431 (21.5)	1319 (18.2)	1093 (25.7)

	Male		Female		Total	
	Whole Sample n (%)	Workers n (%)	Whole Sample n (%)	Workers n (%)	Whole Sample n (%)	Workers n (%)
Education						
Finished secondary school	1112 (25.2)	690 (25.3)	1456 (30.1)	749 (28.7)	2568 (27.8)	1439 (27.0)
University entrance/ bursary/scholarship	582 (13.2)	305 (11.2)	614 (12.7)	285 (10.9)	1196 (12.9)	590 (11.1)
Apprenticeship, diploma, trade certificate	1219 (27.6)	736 (27.0)	1119 (23.1)	622 (23.9)	2338 (25.3)	1358 (25.5)
Bachelor degree or higher	818 (18.5)	607 (22.3)	959 (19.8)	607 (23.3)	1777 (19.2)	1214 (22.8)
Postgraduate diploma/ degree or higher	537 (12.2)	384 (14.1)	517 (10.7)	344 (13.2)	1054 (11.4)	728 (13.7)

Measures

In Table 14 we list the 28 behavioural, physical health, psychosocial, and work-related measures assessed by the SWI (Round 1) and included in our analyses. The survey contains validated psychometric scales, including the ESS, a robust questionnaire used across 26 European countries (Huppert & So, 2013), and questions drawn from a variety of sources including the NZ Health Survey (Ministry of Health, 2006).

Table 14. Sovereign Wellbeing Index (Round 1) Lifestyle, Health and Work-related Indicators

Lifestyle behaviours	Physical health	Psychosocial	Work-related
Connect	Body mass index	Strengths (awareness)	Hours worked
Give	Subjective general health	Strengths (use)	Occupation
Take notice	Functional health[a]	Autonomy	Work-life balance
Keep learning	Arthritis	Feeling appreciated	Job satisfaction
Be active	Chronic fatigue	Depression	Financial security
Smoking	OOS		
Alcohol (frequency)	Back/spinal		
Volunteering	Migraine		

Notes: OOS = Occupational Overuse Syndrome; [a] = Daily activities hampered by health.

Flourishing. Flourishing was diagnosed according to the model conceptualised and tested for establishing prevalence of flourishing among 23 European countries, using Round 3 of the ESS data (Huppert & So, 2013). Huppert and So's theoretical and conceptual definition of flourishing was designed to mirror the internationally agreed upon methodology used in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013), as well as the International Classification of Diseases (World Health Organization, 1993), requiring the presence of opposite symptoms to Major Depressive Episode (DSM-IV), Depressive Episode (ICD-10), and Generalised Anxiety Disorder (terminology common to both systems). Using an expert and lay panel, these researchers identified the opposites of each mental illness symptom producing a list of ten positive features (competence, emotional stability, engagement, meaning, optimism, positive emotion, positive relationships, resilience, self-esteem, and vitality). Huppert and So then tested their conceptual and operational definition of flourishing using ESS data from a representative sample of 43,000

Europeans (Jowell & The Central Co-ordinating Team, 2003), analysing responses from the survey's ten items most closely corresponding to the identified positive features, plus one-item assessing life satisfaction (2013). Exploratory factor analysis revealed the presence of three factors, which they referred to as 'positive characteristics' (comprising emotional stability, vitality, optimism, resilience, and self-esteem), 'positive functioning' (comprising engagement, competence, meaning, and positive relationships), and 'positive appraisal' (comprising life satisfaction and positive emotion). Based on factor analysis, inter-item correlations and data distribution, Huppert and So proposed a categorical diagnosis for flourishing that required a strong endorsement of positive emotion, plus a strong endorsement of four out of five 'positive characteristic' features and three out of four 'positive functioning' features (for greater detail on how they categorised a feature as absent or present see Huppert & So, 2013). This method intentionally mirrors the DSM's methodology in not requiring the simultaneous presence of all symptoms, but a specified number. Accordingly flourishing "is the combination of feeling good and functioning effectively" (2013, p. 838). For a full list of indicator items and their individual thresholds see Appendix F.

Lifestyle behaviours. The SWI includes items assessing participation in the *Five Ways to Wellbeing* (Connect, Give, Take Notice, Keep Learning, and Be Active) identified by the New Economics Foundation as evidence-based behaviours to improve population wellbeing (Aked et al., 2009). Connect was assessed with a single item, "How often do you meet socially with friends, relatives or work colleagues?" using a 1-7 Likert scale (1 = never to 7 = every day). Give was assessed using the question "To what extent do you provide help and support to people you are close to when they need it?" using a 0-6 Likert scale (0 = not at all to 6 = completely). Take Notice was assessed using the question "On a typical day, how often do you take notice and appreciate your surroundings?" using a 0-10 Likert scale (0 = never to 10 = always). Keep Learning was assessed using the item "To what extent do you learn new things in life?" using a 0-6 Likert scale (0 = not at all to 6 = a great deal). Be Active was measured using the Lifestyle Physical Activity and Sedentary Scale (LPASS), an original scale developed for the SWI assessing daily physical activity, transport physical activity, and exercise physical activity. Questions on smoking and alcohol intake were drawn from the New Zealand Health Survey (Ministry of Health, 2006). Participation in voluntary work was

operationalized by the item "In the past 12 months, how often did you get involved in work for voluntary or charitable organisations?" using a 1-6 Likert scale (1 = at least once a week to 6 = never).

Physical health. Body mass index (BMI) was calculated using self-reported height and weight ($weight_{kg}$ / ($height_m^2$). Scores were classified underweight/normal (16-24.99), overweight (25-29.99) and obese ($\geq$ 30). Subjective general health was operationalized by the item, "How is your health in general?" (1 = very good to 5 = very bad) and functional health by the item, "Are you hampered in your daily activities in any way by any longstanding illness, disability, infirmity, or mental health problem?" (1 = yes a lot to 3 = no). Diagnosis of specific conditions (arthritis, chronic fatigue syndrome, Occupational Overuse Syndrome, back or spinal problems, migraine headaches) was assessed by the item "In the past six months, have you experienced symptoms from or been diagnosed by a health professional with any of the following conditions?"

Psychosocial. Strengths was operationalized via two questions from the Strengths Knowledge and Strength Use Scales (Govindji & Linley, 2007), "I know my strengths well" using a 1-5 Likert scale (1 = strongly disagree to 5 = strongly agree) and "I always try to use my strengths" using a 1-5 Likert scale (1 = strongly disagree to 5 = strongly agree). Autonomy was operationalized by responses to the item, "I feel I am free to decide for myself how to live my life" using a 1-5 Likert scale (1 = strongly disagree to 5 = strongly agree). Feeling appreciated was operationalized by the item "To what extent to you feel appreciated by the people you are close to?" using a 0-10 Likert scale (0 = not at all to 0 completely) and depression was one of the symptoms assessed in the item "In the past six months, have you experienced symptoms from or been diagnosed by a health professional with any of the following conditions?"

Work-related. The SWI also featured five variables related to work. In addition to work hours and occupation, job satisfaction was operationalised by the item "All things considered, how satisfied are you with your present job?" using a 0-10 Likert scale (0 = extremely dissatisfied to 10 extremely satisfied). Work-life balance was operationalised by the item, "All things considered, how satisfied are you with the balance between the time you spend on your paid work and the time you spend on other aspects of your

life?" using a 0-10 Likert scale (0 = extremely dissatisfied to 10 = extremely satisfied). Financial security was operationalized via the item, "Which of these descriptions comes closest to how you feel about your household's income nowadays?" using a 1-4 Likert scale (1 = living comfortably on present income to 4 = finding it very difficult on present income).

Data analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 22 (Miller, Acton, Fullerton, & Malty, 2009) and cases of missing data were excluded pairwise. First we investigated whether work was good for wellbeing by creating a new dichotomous variable according to Huppert and So's categorical diagnosis described above (see Appendix F), distinguishing between flourishing and non-flourishing participants using the entire SWI dataset (n = 9,962). Using cross-tabulation analysis we calculated the prevalence of flourishing among working, not-working, permanently sick/disabled, and retired participants. For each subgroup, 95% confidence intervals[4] were calculated to estimate the prevalence of flourishing in the population.

Next, a new sample was created comprising just those participants in paid employment (n = 5,549) and the above analyses conducted on this reduced sample. Using binary logistic regression we then investigated the association between the dichotomous flourishing variable and the various categorical lifestyle, physical health, psychosocial, and work-related indicators. Unadjusted odds ratios[5] and 95% confidence intervals for each of the 28 independent variables were calculated, followed by 'partial' adjustment for socio-demographic variables (gender, age, ethnicity, marital, combined household income, and education[6]). A p value less than 0.05 was used to indicate statistical significance. Finally, we conducted a 'fully' adjusted logistic regression to investigate which of the Five Ways to Wellbeing was most strongly associated with flourishing.

Results

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[4] A confidence interval is a range within which the true population value is likely (95% of the time) to fall. When the sample size is large, as it is here, the confidence interval is typically narrow and the estimate more precise.

[5] Odds ratios are used to compare different groups of workers. An odds ratio represents the odds of being categorised as flourishing according to different participant responses. E.g., the odds of flourishing for smokers compared to non-smokers. An odds ratio above 1 means the odds of flourishing are greater in the group of interest (non-smokers) than in the reference group (smokers); an odds ratio of below 1 means the odds of flourishing are less in the group of interest than in the reference group. The adjusted odds ratios are adjusted for other demographic factors that may be influencing the comparison, such as age, gender, income and ethnic group.

[6] Analyses confirming the lack of high intercorrelations between demographic variables suggested there are unlikely to be any meaningful effects of multicollinearity.

Is work good for wellbeing?

Applying Huppert and So's (2013) categorical diagnosis of flourishing to the full SWI dataset (N = 9,962) confirmed that paid employment is associated with higher levels of wellbeing up until retirement: 25% of those in paid employment were flourishing, compared to 10% of those not working, 9% of those permanently sick/disabled and 35% of retirees.

Prevalence and socio-demographic characteristics of flourishing workers

Prevalence rates, population proportions, and unadjusted, and adjusted (for gender, age, ethnicity, marital status, combined household income, and education) odds ratios for flourishing workers are shown in Table 15. Adjusting for differences in gender, age, ethnicity, marital status, combined household income, and academic qualifications, indicated that gender and ethnicity made no significant difference to the odds of flourishing, but that age, marital status, income, and academic qualifications were significantly associated with flourishing. Flourishing workers were on average over five years older than non-flourishing workers (M = 46.79, SD = 14.37 versus M = 41.04, SD = 13.33) and the odds of flourishing increased with age: the odds of flourishing were 1.43 times greater among workers aged 50-59 and 2.78 times greater among those aged over 60 years than those below 30 years. Approaching half (42%) of New Zealand workers aged 60 and over (n = 580) were flourishing (95% CI: 36.4-47.0). The odds of flourishing were 1.70 times greater among married workers/those living with a partner than single/never married workers. Respondents with a combined household income between NZ$70,001-$100,000 had 1.31 times the odds of flourishing than those earning less than NZ$40,000, while those with a combined household income over NZ$100,001 had 2.10 times the odds. Of the 1,075 respondents in this top bracket of combined household income, just over a third (34%) were flourishing (95% CI: 30.9-37.9). Workers educated to post-graduate level had 1.41 times greater odds of flourishing than those educated to high school level. Of the 708 respondents educated to post-graduate level, 30% were flourishing (95% CI: 26.3-34.5).

Table 15. Correlates of flourishing in adult New Zealand workers

	Percentage participants (n)		% Population proportion	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
	Not-flourishing	Flourishing	Lower - Upper CI (95%)		
Socio-demographic indicators					
Sex					
Male	74.4 (2018)	25.6 (694)	23.7 - 27.5	1.00	1.00
Female	74.8 (1990)	25.2 (670)	23.3 – 27.1	0.98 (0.87-1.11)	1.14 (0.97-1.33)
Age					
< 30	79.9 (882)	20.3 (224)	17.6 – 23.0	1.00	1.00
30-39	78.3 (799)	21.7 (222)	18.8 – 24.6	1.09 (0.89-1.35)	0.93 (0.73-1.18)
40-49	76.3 (757)	23.7 (235)	20.7 - 26.7	1.22* (0.99-1.50)	1.00 (0.78-1.28)
50-59	70.5 (639)	29.5 (267)	26.0 - 33.0*	1.65* (1.34-2.02)	1.43* (1.11-1.84)
≥ 60	58.3 (338)	41.7 (242)	36.4 - 47.0*	2.82* (2.26-3.52)	2.78* (2.10-3.67)
Ethnicity					
Maori/PI	74.1 (486)	25.9 (170)	22.0 – 29.8	1.00	1.00
Asian	77.5 (524)	22.5 (152)	18.9 – 26.1	0.83 (0.65-1.07)	0.86 (0.62-1.21)
European	74.1 (2932)	25.9 (1026)	24.3 - 27.5	1.00 (0.83-1.21)	0.91 (0.72-1.15)
Marital					
Not married	84.2 (1005)	15.8 (188)	13.5 - 18.1	1.00	1.00
Married/living with partner	71.1 (2494)	28.9 (1013)	27.1 - 30.7*	2.17* (1.83-2.58)	1.70* (1.35-2.15)
Separated	76.5 (391)	23.5 (120)	19.3 - 27.7*	1.64* (1.27-2.12)	1.32 (0.95-1.84)
Widowed	73.2 (52)	26.8 (19)	14.8 - 38.8	1.95* (1.13-3.38)	1.07 (0.55-2.08)
Income					
≤$40k	81.0 (554)	19.0 (130)	15.7 – 22.3	1.00	1.00
$40-70k	79.2 (994)	20.8 (261)	18.3 – 23.3	1.12 (0.89-1.42)	1.09 (0.84-1.41)
$70-$100k	74.2 (856)	25.8 (297)	22.9 – 28.7*	1.48* (1.17-1.87)	1.31* (1.00-1.70)
≥ $100,001	65.6 (705)	34.4 (370)	30.9 – 37.9*	2.24* (1.78-2.81)	2.10* (1.61-2.74)

	Percentage participants (n)		% Population proportion	Unadjusted Odds	Adjusted Odds
	Not-flourishing	Flourishing	Lower - Upper CI (95%)	Ratio (95% CI)	Ratio (95% CI)
Academic qualifications					
Secondary	75.2 (1058)	24.8 (348)	22.2 – 27.4	1.00	1.00
UE	75.8 (435)	24.2 (139)	20.2 – 28.2	0.97 (0.78-1.22)	1.02 (0.77-1.35)
App/trade	76.1 (1007)	23.9 (317)	21.3 – 26.5	0.96 (0.80-1.14)	1.07 (0.86-1.32)
Bachelor	74.0 (875)	26.0 (307)	23.1 – 28.9	1.07 (0.89-1.27)	1.25 (0.99-1.57)
Post grad	69.6 (493)	30.4 (215)	26.3 – 34.5	1.33* (1.09-1.62)	1.41* (1.09-1.82)
Lifestyle behaviours					
Connect					
Sometimes/seldom	78.7 (3150)	21.3 (851)	19.9-22.7	1.00	1.00
Often	62.4 (833)	37.6 (503)	34.3 – 40.9*	2.24* (1.96-2.56)	2.33* (1.97-2.76)
Give					
Sometimes/seldom	89.6 (1544)	10.4 (179)	8.9 – 11.9	1.00	1.00
Often	67.6 (2468)	32.4 (1182)	30.6 – 34.2*	4.13* (3.49-4.90)	3.77* (3.07-4.65)
Take notice					
Sometimes/seldom	84.8 (2948)	15.2 (527)	13.9 - 16.5	1.00	1.00
Often	55.9 (1061)	44.1 (836)	41.1 – 47.1*	4.41* (3.87-5.02)	4.22* (3.59-4.97)
Keep Learning					
Sometimes/seldom	85.7 (2609)	14.3 (434)	13.0 – 15.6	1.00	1.00
Often	60.2 (1407)	39.8 (930)	37.2 – 42.4*	3.97* (3.49-4.53)	3.70* (3.14-4.35)
Be Active					
Sometimes/seldom	75.7 (3634)	24.3 (1168)	22.9 – 25.7	1.00	1.00
Often	65.2 (367)	34.8 (196)	29.9 – 39.7*	1.66* (1.38-2.00)	1.46* (1.15-1.84)

	Percentage participants (n)		% Population proportion	Unadjusted Odds	Adjusted Odds
	Not-flourishing	Flourishing	Lower - Upper CI (95%)	Ratio (95% CI)	Ratio (95% CI)
Smoking					
Smoker	78.1 (701)	21.9 (196)	18.8 – 25.0	1.00	1.00
Non-smoker	73.8 (3281)	26.2 (1162)	24.4 – 27.7	1.27* (1.07-1.50)	1.07 (0.87-1.33)
Alcohol consumption					
Don't drink	74.4 (808)	25.6 (278)	22.6 – 28.2	1.00	1.00
≤ monthly	77.5 (1239)	22.5 (360)	20.2 – 24.8	0.84 (0.71-1.01)	0.84 (0.67-1.05)
≤ 4x/month	73.8 (821)	26.2 (292)	23.2 – 29.2	1.03 (0.85-1.25)	1.02 (0.81-1.30)
≤ 3x/week	73.2 (632)	26.8 (231)	23.3 – 30.3	1.06 (0.87-1.30)	0.81 (0.62-1.05)
≥ 4x/week	71.3 (454)	28.7 (183)	24.5 – 32.9	1.17 (0.94-1.46)	0.92 (0.70-1.22)
Volunteering					
Seldom	79.7 (2515)	20.3 (639)	18.7 – 21.9	1.00	1.00
Sometimes	70.1 (661)	29.3 (282)	26.4 – 33.4*	1.68* (1.43-1.98)	1.58* (1.30-1.93)
Often	63.9 (711)	36.1 (401)	32.6 – 39.6*	2.22* (1.91-2.58)	1.89* (1.57-2.27)
Physical health indicators					
BMI					
Obese	77.3 (1039)	22.7 (305)	20.2 – 25.2	1.00	1.00
Overweight	70.9 (1093)	29.1 (449)	26.4 – 31.8*	1.40* (1.18-1.66)	1.50* (1.23-1.84)
Not overweight	75.5 (1202)	24.5 (389)	22.1 – 26.9	1.10 (0.93-1.31)	1.22 (0.98-1.51)
General health					
Bad/very bad	96.1 (197)	3.9 (8)	1.2 – 6.6	1.00	1.00
Fair	89.3 (1060)	10.7 (127)	8.8 – 12.6*	2.95* (1.42-6.13)	2.17 (0.97-4.82)
Good/v good	69.1 (2747)	30.9 (1226)	29.2 – 32.6*	10.99* (5.40-22.36)	8.43* (3.90-18.20)
Daily activities hampered by health					
A lot	87.0 (134)	13.0 (20)	7.3 – 18.7	1.00	1.00

	Percentage participants (n)		% Population proportion	Unadjusted Odds	Adjusted Odds
	Not-flourishing	Flourishing	Lower - Upper CI (95%)	Ratio (95% CI)	Ratio (95% CI)
To some extent	82.3 (1015)	17.7 (219)	15.4 – 20.0	1.45 (0.88-2.36)	0.83 (0.47-1.45)
Not at all	71.5 (2786)	28.5 (1111)	26.8 – 30.2*	2.67* (1.66-4.30)	1.87* (1.09-3.22)
Arthritis					
Yes	76.0 (342)	24.0 (108)	19.5 – 28.5	1.00	1.00
No	74.5 (3674)	25.5 (1256)	24.1 – 26.9	1.08 (0.86-1.36)	1.45* (1.09-1.92)
CFS					
Yes	91.1 (72)	8.9 (7)	2.3 – 15.5	1.00	1.00
No	74.4 (3944)	25.6 (1357)	24.2 – 27.0*	3.54* (1.63-7.71)	2.94* (1.25-6.94)
OOS					
Yes	84.0 (89)	16.0 (17)	8.4 – 23.6	1.00	1.00
No	74.5 (3927)	25.5 (1347)	24.1 – 26.9*	1.80* (1.07-3.03)	2.01* (1.01-3.99)
Back/spinal					
Yes	81.0 (529)	19.0 (124)	15.7 – 22.3	1.00	1.00
No	73.8 (3487)	26.2 (1240)	24.7 – 27.7*	1.52* (1.24-1.86)	1.62* (1.26-2.07)
Migraine					
Yes	82.9 (335)	17.1 (79)	13.3 – 20.9	1.00	1.00
No	73.9 (3633)	26.1 (1285)	24.7 – 27.5*	1.72* (1.35-2.20)	1.67* (1.24-2.26)
Psychosocial indicators					
Strengths (awareness)					
Low	97.0 (351)	3.0 11)	1.2 – 4.8	1.00	1.00
Moderate	91.2 (999)	8.8 (96)	7.0 – 10.6*	3.07* (1.62-5.79)	2.19* (1.07-4.49)
High	68.0 (2661)	32.0 (1255)	30.2 – 33.8*	15.05* (8.23-27.53)	9.58* (4.87-18.84)

| | Percentage participants (n) | | % Population proportion | Unadjusted Odds | Adjusted Odds |
	Not-flourishing	Flourishing	Lower – Upper CI (95%)	Ratio (95% CI)	Ratio (95% CI)
Strengths (use)					
Low	98.0 (296)	2.0 (6)	0.4 – 3.6	1.00	1.00
Moderate	93.4 (854)	6.6 (60)	4.9 – 8.3*	3.47* (1.48-8.11)	3.22* (1.14-9.10)
High	68.8 (2862)	31.2 (1297)	29.5 – 32.9*	22.36* (9.94-50.30)	18.13* (6.69-49.16)
Autonomy					
Low	95.6 (645)	4.4 (30)	2.8 – 6.0	1.00	1.00
Moderate	90.9 (750)	9.1 (75)	7.0 – 11.2*	2.15* (1.39-3.33)	2.16* (1.30-3.59)
High	67.6 (2621)	32.4 (1257)	30.6 – 34.2*	10.31* (7.11-14.96)	9.97* (6.53-15.23)
Feeling appreciated					
Low	98.1 (610)	1.9 (12)	0.8 – 3.0	1.00	1.00
Moderate	85.0 (2382)	15.0 (420)	13.6 – 16.4*	8.96* (5.01-16.01)	5.83* (3.23-10.53)
High	52.1 (1013)	47.9 (931)	44.8 – 51.0*	46.72* (26.20-83.29)	29.32* (16.28-52.79)
Depression					
Yes	95.2 (434)	4.8 (22)	2.8 – 6.8	1.00	1.00
No	72.7 (3582)	27.3 (1342)	25.8 – 28.8*	7.39* (4.79-11.40)	7.21* (4.32-12.05)
Work-related indicators					
Hours worked					
< 30/week	75.1 (846)	24.9 (280)	22.0 – 27.8	1.00	1.00
30 - 50/week	75.2 (2700)	24.8 (889)	23.2 – 26.4	1.00 (0.85-1.16)	0.86 (0.70-1.06)
> 50/week	72.2 (242)	27.8 (93)	22.2 – 33.4	1.16 (0.88-1.53)	0.92 (0.65-1.30)
Occupation					
Labourer	80.7 (276)	19.3 (66)	14.6 – 24.0	1.00	1.00
Machine op	78.5 (150)	21.5 (41)	14.9 – 28.1	1.14 (0.74-1.77)	1.00 (0.59-1.71)
Sales	81.2 (362)	18.8 (84)	14.8 – 22.8	0.97 (0.68-1.39)	0.79 (0.51-1.24)
Clerical/admin	75.9 (600)	24.1 (191)	20.7 – 27.5	1.33 (0.97-1.82)	1.02 (0.68-1.52)

	Percentage participants (n)		% Population proportion	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
	Not-flourishing	Flourishing	Lower - Upper CI (95%)		
Community/					
personal service	75.0 (156)	25.0 (52)	18.2 – 31.8	1.39 (0.92-2.11)	1.00 (0.60-1.65)
Technical/trade	77.6 (349)	22.4 (101)	18.0 – 26.8	1.21 (0.85-1.71)	0.93 (0.60-1.43)
Professional	71.8 (1233)	28.2 (485)	25.7 – 30.7*	1.65* (1.23-2.20)	1.24 (0.85-1.81)
Manager	68.8 (428)	31.2 (194)	26.8 – 35.6*	1.90* (1.38-2.60)	1.42 (0.96-2.12)
Work-life balance					
Unsatisfied	92.0 (1113)	8.0 (97)	6.4 – 9.6	1.00	1.00
Moderately	79.7 (1884)	20.3 (479)	18.5 – 22.1*	2.92* (2.32-3.67)	2.95* (2.23-3.91)
Highly satisfied	54.3 (835)	45.7 (703)	42.3 – 49.1*	9.66* (7.67-12.16)	10.02* (7.56-13.28)
Job satisfaction					
Not high	85.9 (2771)	14.1 (456)	12.8 – 15.4	1.00	1.00
High	56.4 (1063)	43.6 (823)	40.6 – 46.6*	4.71* (4.11-5.38)	4.63* (3.92-5.47)
Financial security					
Not coping	89.5 (1215)	10.5 (142)	8.8 – 12.2	1.00	1.00
Coping	69.3 (2733)	30.7 (1202)	29.0 – 32.4*	3.7* (3.13-4.54)	3.74* (2.95-4.76)

Adjusted for demographic factors (sex, age, ethnicity, marital status, combined household income, and academic qualifications). *Significantly different from reference group ($p < 0.05$). BMI = Body Mass Index, CFS = Cystic Fibrosis Syndrome

Lifestyle behaviours

Adjusting for differences in gender, age, ethnicity, marital status, combined household income, and academic qualifications, the odds of flourishing increased with more frequent participation of the *Five Ways to Well-being*: workers responding that they connected often had 2.33 times greater odds of flourishing than those connecting seldom/sometimes; respondents giving often had 3.77 times greater odds of flourishing than those responding seldom/sometimes; those taking notice often had 4.22 times greater odds of flourishing than those responding that they seldom/sometimes took notice; those learning often had 3.07 times greater odds of flourishing than those responding seldom/sometimes; and often active workers had 1.46 times greater odds of flourishing than those active seldom/sometimes. Of particular note are the high proportions of individuals categorised as flourishing among each of the sub-groups responding that they participate "often" in the Five Ways to Wellbeing: 38% (95% CI: 34.3-40.9) of those connecting "often"; 32% (95% CI: 30.6-34.2) of those giving "often"; 44% (95% CI: 41.1-47.1) of those taking notice "often"; 40% (95% CI: 37.2-42.4) of those learning "often"; and 35% (95% CI: 29.9-39.7) of those being active "often". Further regression analysis simultaneously adjusting for all six socio-demographic variables and each of the Five Ways to Well-being revealed that four of the five remained significantly associated with flourishing, with the greatest odds coming from Take Notice, closely followed by Keep Learning, and only Be Active was not. Volunteering was also significantly related to flourishing independent of socio-demographic variables, with workers getting involved in volunteering or charity work at least once a month having 1.89 greater odds of flourishing than those volunteering least regularly. For odds ratios see Figure 9.
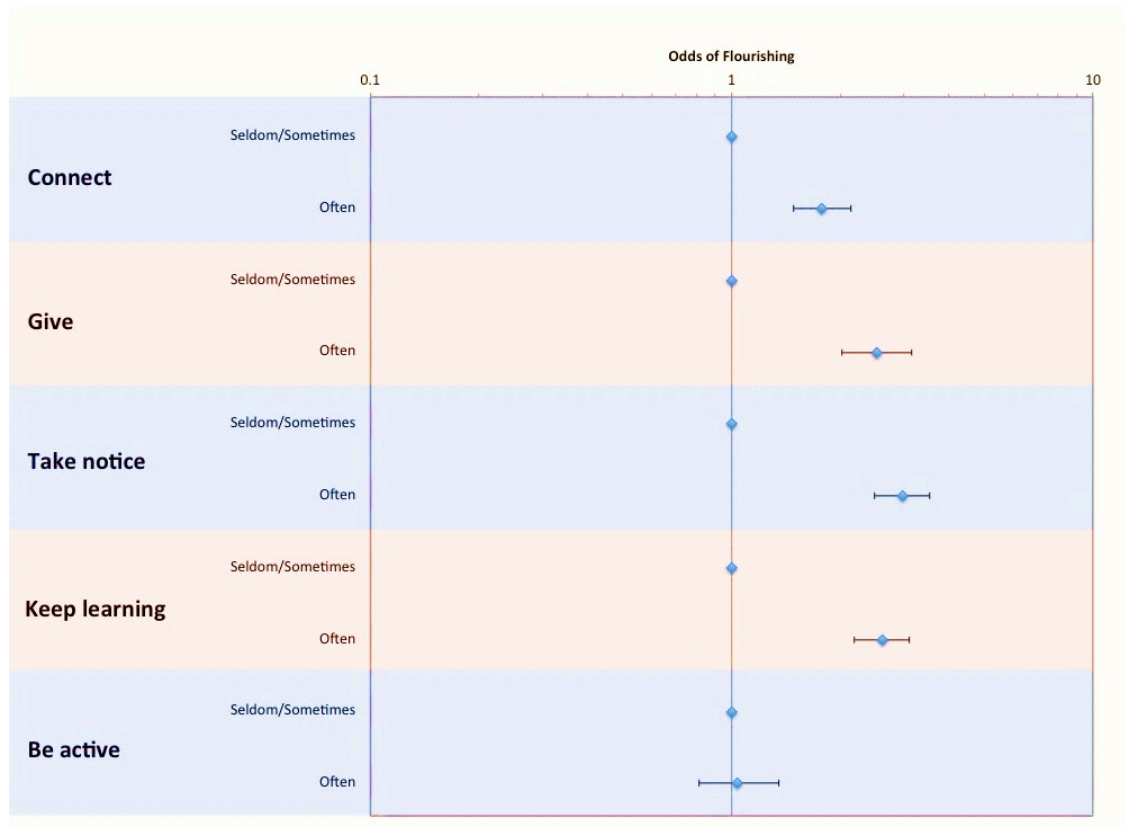
Figure 9. Odds of flourishing according to the *Five Ways to Wellbeing*

Physical health

Adjusting for differences in gender, age, ethnicity, marital status, combined household income, and academic qualifications, analyses indicated significant associations between flourishing and BMI, general health, functioning health, arthritis, chronic fatigue syndrome, Occupational Overuse Syndrome, back or spinal pain, and migraines. The odds of flourishing increased with improved general health and functioning: those with "good/very good" health had 8.43 greater odds of flourishing than those with "bad/very bad health"; those reporting that they were not hampered by health in their daily activities had 1.87 greater the odds of flourishing than those who responded their daily activities were hampered by health "a lot". The impact of poor physical health on respondents' psychological health is indicated in these results: only 4% (95% CI: 1.2-6.6) of those responding that their general health was "bad/very bad" were flourishing (*n* = 205), compared with 31% (95% CI: 29.2-32.6) of those responding that there general health was "good/very good" (*n* = 3973). Similarly, only 13% (95% CI: 7.3-18.7) of those reporting that their health hampered their daily activities "a lot" (*n* = 154) were

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flourishing, compared to 29% (95% CI: 26.8-30.2) of those reporting that they were not hampered by health in their daily activities (n = 3897). Participants without symptoms or a diagnosis of arthritis, chronic fatigue syndrome, occupational overuse syndrome, back/spinal problems, or migraines had 1.45, 2.94, 2.01, 1.62, and 1.67 greater odds of flourishing respectively than those experiencing symptoms or diagnosed with each of these conditions.

Psychosocial

Adjusting for differences in gender, age, ethnicity, marital status, combined household income, and academic qualifications, analyses indicated significant associations between flourishing and strengths awareness and strengths use, autonomy, feeling appreciated, and depression. Workers reporting moderate and high awareness of strengths had 2.19 and 9.58 greater odds of flourishing than those with low strengths awareness. Those reporting moderate and high strengths use had 3.22 and 18.13 greater odds of flourishing than those reporting they used their strengths least. Workers reporting moderate or high autonomy had 2.16 and 9.97 greater odds of flourishing than those reporting the least autonomy. Workers that felt moderately or highly appreciated by people they are close to had 5.83 and 29.32 greater odds of flourishing than those feeling least appreciated. Of those respondents reporting feeling highly appreciated almost half (48%; 95% CI: 44.8-51.0) were categorised as flourishing. Finally, those without depression/bipolar symptoms or diagnosis had 7.21 greater odds of flourishing than those with depression/bipolar symptoms or diagnosis.

Work-related

Adjusting for differences in gender, age, ethnicity, marital status, combined household income, and academic qualifications, analyses negated associations between flourishing and occupation. The odds of flourishing increased with reports of work-life balance: those "moderately" and "highly satisfied" with their work-life balance had 2.95 and 10.02 greater odds of flourishing than those "unsatisfied" with work-life balance. Workers expressing high job satisfaction had 4.63 greater odds of flourishing than other workers. Those reporting financial security had 3.74 greater the odds of flourishing than those reporting they were not coping on present income. Just over a quarter of the

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sample (26%) reported they were not coping on present income ($n = 1353$) and just 11% of these were flourishing (95% CI: 8.8-12.2).

Discussion

The current study calculated, for the first time, the prevalence of flourishing among a large sample of adult New Zealanders in paid employment. While the traditional focus on the epidemiology of employee stress, anxiety, depression, and burnout has yielded important evidence, it does not provide a complete picture of employee wellbeing. Keyes' research indicates that mental illness and mental health, while highly correlated, belong to separate continua (Keyes, 2002) prompting him and others to suggest that treatment and prevention of the former will not necessarily result in greater prevalence of well-being (Huppert, 2009; Keyes, 2002). Kern et al.'s recent pilot study showing that flourishing predicted positive workplace outcomes independent of negative emotion (Kern et al., 2014), supports our belief that calculating the prevalence and characteristics of employee flourishing using a nationally representative sample was a worthy research goal.

Having established that working is good for wellbeing (with one in four New Zealanders in paid employment diagnosed as flourishing compared to 10% of those not working, 9% of those permanently sick/disabled), we investigated the lifestyle, physical health, psychosocial, and work-related indicators associated with flourishing among workers. In this study, being older and married, reporting greater income, financial security, physical health, autonomy, strengths awareness and use, work-life balance, and job satisfaction, greater participation in the *Five Ways to Wellbeing* and volunteering, and feeling more appreciated by others were all positively associated with worker flourishing.

Below we detail the most noteworthy of our findings for each of the independent variable categories (lifestyle, physical, psychosocial and work-related indicators) in relation to existing evidence, and suggest possible implications for employers, and policy makers.

Among the lifestyle indicators, the close association between flourishing and nef's *Five Ways to Wellbeing* adds to the existing evidence indicating the importance of these actions for the prevention of common mental health disorders and the promotion of happiness (for a comprehensive review of the evidence supporting each of the Five Ways to Wellbeing see Aked et al., 2009). This study is the first of which we are aware to provide empirical evidence that all five ways are significantly associated with worker flourishing, independent of socio-demographic differences. This is an important finding, particularly in light of the Mental Health Foundation NZ's recent national *Five Ways to Wellbeing* campaign, depicted in Figure 10 (Mental Health Foundation, 2012), which was disseminated across a variety of organizations.
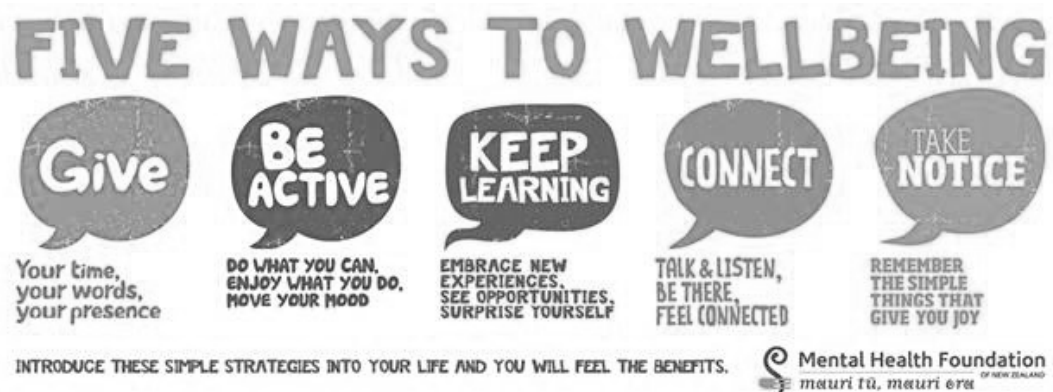
Figure 10. The Mental Health Foundation NZ's public health campaign promoting the *Five Ways to Wellbeing*

In view of the finding that Take Notice and Keep Learning emerged as significantly associated with the greatest odds of flourishing in the 'fully' adjusted regression analysis (i.e., independent of differences in socio-demographics and participation in the other *Five Ways to Wellbeing*), a suggested area for future research may be to test the effectiveness of mindfulness, gratitude (related to Take Notice) and curiosity (related to Keep Learning) interventions in promoting employee flourishing (Fredrickson et al., 2008; Kashdan, 2009; Odou & Vella-Brodrick, 2011). Similarly, we wish to emphasize the importance of providing employees with opportunities to learn new skills at work. Aside from the Five Ways to Wellbeing, our study indicated that the odds of flourishing increased with the frequency of volunteering, which aligns with the abundant previous research indicating that "when we help others we help ourselves" (Post, 2011, p. 814).

Our findings, along with positive employee feedback around opportunities for volunteering through the workplace, might encourage more companies to adopt this type of philanthropic policy in future[7].

All the physical health indicators were significantly associated with greater odds of flourishing, which accords with existing evidence suggesting a very strong relationship between subjective well-being and self-assessed health (Oguz, Merad, & Snape, 2013; Stoll, Michaelson, & Seaford, 2012) and indicates that employers should care about employee health. A growing body of evidence clearly indicates that employers should not just help employees avoid ill-health and accidents through smoking cessation and health and safety programs, but have much to benefit from promoting healthy eating, increased physical activity and reduced time spent sitting. Indeed a recent diary study showed young adult New Zealanders reported greater flourishing, curiosity and creativity on days when they ate more fruit and vegetables, compared with adults eating less fruit and vegetables (Conner, Brookie, Richardson, & Polak, 2015). Similarly, another study using the SWI dataset indicates the odds of flourishing were greater among highly active and less sedentary New Zealand adults, and lower among those consuming sugary drinks 5-6 times a week and frequently experiencing restless sleep (Prendergast, Schofield, & Mackay, In Press).

All five psychosocial indicators were significantly associated with greater odds of flourishing. Peterson and Seligman (2004) define character strengths as a ubiquitously recognized subset of personality traits that are morally valued. The strong positive association between strengths awareness and use in our study backs up previous research showing that individuals who use their strengths report greater levels of well-being (Wood, Linley, Maltby, Kashdan, & Hurling, 2011) and increased progress towards their goals (Linley, Nielsen, Gillett, & Biswas-Diener, 2010). Particularly noteworthy is the relatively greater odds associated with strengths use, compared to strengths awareness, supporting Seligman et al.'s earlier trial reporting strengths use increased happiness and decreased depressive symptoms at six months post-test, while participants in the strengths awareness condition only showed an effect at immediate

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[7] United Healthcare/Volunteer Match Do Good Live Well Study (an on line survey of 4,582 American adults) reported that 25% volunteer through workplaces, and 76% of those feel better about their employer as a result (Post, 2011).

post-test (Seligman, Steen, Park, & Peterson, 2005). Based on these findings we suggest that employers tailor job specifications to match the strengths and skills of their employees, recognise and praise employee's strengths, and endeavour to create career progression pathways based on identified strengths. With this in mind, we applaud research testing the efficacy of programmes designed to promote employee strengths in workplace settings (Littman-Ovadia & Davidovitch, 2010; Page & Vella-Brodrick, 2009, 2013).

Looking at the other psychosocial indicators, previous studies have linked high autonomy with happiness at work (Iverson, Olekalns, & Erwin, 1998) and greater job satisfaction (Connolly & Viswesvaran, 2000; Loher, Noe, Moeller, & Fitzgerald, 1985), but our study is the first of which we are aware to explore the relationship between autonomy and worker flourishing. We found workers reporting high autonomy had 9.97 greater odds of flourishing than those reporting low autonomy. This finding accords with Self-Determination Theory which posits that autonomy is one of three basic psychological needs and that well-being comes from satisfying these basic needs (Ryan & Deci, 2000). With this in mind we recommend managers endeavour to foster trusting relationships between themselves and their staff, giving staff greater control over decision-making and the way they organise their work, as well as enabling them to suggest their own ideas and use their strengths. Robertson and Cooper's research supports the importance of fostering autonomy in the workplace, rating 'control' as one of their six essentials for workplace well-being (2011). Finally among psychosocial indicators, the finding that workers who felt highly appreciated by people they are close to had 29.32 greater odds of flourishing than those feeling least appreciated (and the fact that almost half of those feeling highly appreciated were flourishing) highlights the importance of regular and positive employee feedback. With this in mind we suggest employers may consider communication training a worthy investment, implementing strategies aimed at making people feel value such as *Active Constructive Responding* (see Gable, Gonzaga, & Strachman, 2006).

Looking at the work-related indicators in our study, it is interesting to note two conflicting findings. Firstly, the odds of flourishing increased with reports of work-life balance, so that those "highly satisfied" with their work-life balance had 10.02 greater

odds of flourishing than those "unsatisfied" with work-life balance; but secondly, our study found no significant association between work hours and flourishing. It is hard to know what to make of this finding, except it sits against a backdrop of previous conflicting findings on these two variables (for a review of the evidence see Jeffrey et al., 2014). "We can see from this research that there is no 'standard' number of working hours per week that will enable employees to achieve a good work-life balance, though a good starting point appears to be around what we view as conventional full-time hours without overtime," concludes Jeffrey (2014, p.21). The fact that the majority worked between 30 and 50 hours (71%), we therefore take as encouraging. Similarly noteworthy is the fact that adjusting for socio-demographic differences negated any association between occupation and flourishing. In other words, once demographic differences are removed there are no greater odds of flourishing among any of the eight different job categories covered in the SWI.

The final finding worthy of note concerns financial security, where those coping on present income had 3.74 greater the odds of flourishing than those not coping on present income. Just over a quarter of the sample (26%) reported they were not coping on present income (n = 1353), of which 11% of were flourishing. These are important statistics for policy makers to consider.

In summary, we identified four demographic sub-groups with greater odds of flourishing: namely, older workers, married workers, those educated to post-graduate level, and those with higher combined household incomes. While the cross-sectional study design prevents us from making causal predictions, our results demonstrated significant associations between flourishing and *The Five Ways to Wellbeing*, volunteering, physical health, strengths awareness, strengths use, autonomy, feeling appreciated, work-life balance and job satisfaction. Importantly, these are all modifiable protective factors, which, on the strength of epidemiological evidence like our own, we hope may inform targeted employee wellbeing intervention programs in future. A number of studies already exist showing positive effects on employee flourishing from such workplace programs (Feicht et al., 2013; Fredrickson et al., 2008; Ouweneel, Le Blanc, & Schaufeli, 2013; Page & Vella-Brodrick, 2013). Longitudinal research is now

required to determine the sustained intervention effect and information pertinent to the wide-scale dissemination of such programs.

While several researchers have touched upon the importance of investigating the characteristics and correlates of employee flourishing (for example see Dutton, Roberts, & Bednar, 2011; Kern et al., 2014; Keyes, Hysom, & Lupo, 2000; Schaufeli & Salanova, 2010) only three previous studies have specifically investigated the relationship between flourishing and workplace outcomes (Diedericks & Rothmann, 2014; Kern et al., 2014; Keyes & Grzywacz, 2005). Understanding the determinants of flourishing in New Zealand workers is essential not just for their own personal health but also for the optimal functioning and consequent productive capacity of the New Zealand workforce. It is therefore our hope that the current study demonstrates to the fields of Organizational Behavior and Positive Organizational Behavior the value of considering flourishing as a broader outcome indicator beyond their current focus on engagement, job satisfaction and positive/negative affect balance. Definitions of employee well-being must go beyond the simple absence of disorders and include features such as competence, mastery, autonomy, independence, aspiration, and self-esteem (Kelloway & Day, 2005p. 225).

Limitations

Our study has several limitations. First, considering the presence of a large number of independent variables we may expect to find some significant associations by chance alone. While we did consider focusing on one or two variables, such as the Five Ways to Well-being or strengths, the opportunity to explore a broader range of variables using a nationally representative sample, encouraged us of the merits of the study.

Second, the cross-sectional study design prevents us from making causal conclusions: while our findings indicate the behavioural, physical, psychosocial and work-related indicators that are related to greater odds of being categorised as flourishing, we cannot be sure that these indicators cause flourishing or vice versa. The longitudinal design of the SWI (two more survey rounds are due in November 2014, November 2016) affords us the opportunity to make longitudinal comparisons over time in the future.

Third, we acknowledge the limitations of the work-related variables included in our study. While we understand the importance of using context-specific measures of well-being (e.g. positive affect at work or engagement at work) "to capture the subtleties, complexities and variation of employees' cognitive and affective experiences at work" (Page & Vella-Brodrick, 2009, p.446), the SWI includes no such data.

Fourth, several theorists suggest well-being is best characterized as a profile of indicators across the multiple domains of feelings and functioning (Forgeard et al., 2011; Kern et al., 2014) and that composite measures of flourishing obscure the multidimensionality of theories and measures, making it impossible to know which well-being elements are most beneficial for health and work outcomes. While we acknowledge the current study's limitation in this respect, we argue that epidemiological research using cross sectional studies such as ours are important for providing prevalence rates via categorical diagnoses.

Fifth, our use of two composite strengths scores prevents us from differentiating between individual strengths. More research is needed to establish the relationship between specific strengths and flourishing, and specific strengths and desirable work-related outcomes.

Finally, all data were gathered from self-report measures, and therefore increasing the possibility that a portion of the observed associations may be attributed to common-method variance.

Summary

Despite a growing recognition of the key role played by psychosocial influences on employee well-being, this insight has had limited impact on occupational health practice to date, with mainstream employers still focused on the consequences of ill health and sickness-absence (Karanika-Murray & Weyman, 2013). Hence, wellbeing initiatives, and knowledge, remain limited to lifestyle promotion activities such as smoking cessation, healthy eating, and physical activity programmes. This, in part can be explained by the significant lack of epidemiological evidence concerning the psychosocial influences on wellbeing, a weakness in the literature we aimed to address. Our study builds upon previous studies' findings that flourishing is an important form of

human capital yielding incremental benefits above the mere absence of disease (Howell, 2009; Huppert, 2009; Keyes, 2005; Keyes & Grzywacz, 2005). Given research shows employees can learn effective strategies for sustainably improving personal well-being (Feicht et al., 2013; Fredrickson et al., 2008; Luthans, Avey, & Patera, 2008; Page & Vella-Brodrick, 2013), we hope the above evidence supports the importance of well-being promotion at national policy and corporate level.

CHAPTER 6

AN EVALUATION OF POSITIVE PSYCHOLOGY INTERVENTION EFFECTIVENESS TRIALS USING THE RE-AIM FRAMEWORK: A PRACTICE-FRIENDLY REVIEW

Preface

At this point in the research, my doctoral thesis switches to focus on intervention research. A key purpose of understanding and reliably measuring wellbeing is, after all, to inform stakeholders if wellbeing promotion is required, and, if it is, to indicate areas for intervention. While positive psychology has been empirically testing interventions to promote wellbeing since Fordyce (1983), and there is anecdotal evidence of wellbeing programmes and resilience training being conducted globally, I wanted to know which of the field's interventions have been tested in effectiveness and implementation trials in different naturalistic settings. I also wanted to know how reliable, valid and practically useful the accumulating evidence was. Out of concern that Positive Psychology Interventions (PPIs) were being disseminated in a variety of settings with little published research documenting effectiveness, I started examining the empirical evidence. It soon became apparent that, aside from the two meta-analyses demonstrating PPIs efficacy, no review of effectiveness or implementation research had been conducted. The following study therefore evaluates extant PPI effectiveness research. It was published by the Journal of Positive Psychology (Hone, Jarden, & Schofield, 2015)[8].

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[8] Because the Journal of Positive Psychology refers to well-being (rather than wellbeing), the following chapter uses this spelling of the word.

Abstract

Meta-analyses indicate the efficacy of positive psychology interventions in promoting well-being. But, despite accumulating empirical and anecdotal evidence of these interventions' implementation in real-world settings, no review of effectiveness research exists. Accordingly, we identified 40 positive psychology intervention effectiveness trials targeting adults, and scored their reporting using the practice-friendly RE-AIM tool which assesses five dimensions of intervention utility: Reach, Efficacy, Adoption, Implementation, and Maintenance. Reporting levels varied substantially: reporting on Reach scored 64%; Efficacy scored 73%; Adoption scored 84%; Implementation scored 58%; and Maintenance scored 16%. Within these five dimensions, reporting on participation rates, methods to select delivery agents, differences between participants and non-participants, programme maintenance and costs, was particularly sparse. The studies involved 10,664 participants, approximately half required specialist delivery, and 12 were researcher delivered. To maximize the potential of PPIs for population health promotion, expanded reporting on effectiveness trials is required. Recommendations to assist this process are offered.

Introduction

Having established the desirable outcomes associated with happiness (for a review of the evidence see Lyubomirsky, King, et al., 2005), a growing research focus has been on the creation and efficacy testing of interventions designed to promote happiness and well-being. Beginning with Fordyce's pioneering programme to increase personal happiness (Fordyce, 1977, 1983), so called 'positive psychology interventions' (PPIs) now range from those promoting gratitude, kindness/compassion, optimism, resilience, strengths, mindfulness, savouring, goal-setting and coaching techniques, to packages of the above. Considerable debate exists over the precise conceptual definition of a PPI, with some authors using this acronym to refer to 'positive psychology interventions' (Bolier et al., 2013; Schueller, 2010; Sin & Lyubomirsky, 2009) and others broadening the concept to 'positive psychological interventions' which do not necessarily require theoretical underpinning from positive psychology (Schueller, Kashdan, & Parks, 2014). The current review uses the former interpretation of the acronym. To date, two meta-analytical reviews of selected randomized controlled trials have documented the efficacy of PPIs (Bolier et al., 2013; Sin & Lyubomirsky, 2009). Sin and Lyubomirsky's (2009) review of 49 intervention trials involving 4,235 participants revealed significant promotion of well-being (mean $r = .29$) and reduction in depressive symptoms (mean $r = .31$). Bolier and colleagues' (2013) meta-analysis covered 39 studies involving 6,139 participants (including 19 studies from Sin and Lyubomirsky's 49) and reported statistically significant ($p < .01$) improvement for subjective well-being (mean $d = .34$) and psychological well-being (mean $d = .20$), and a reduction in depressive symptoms (mean $d = .23$)[9].

However important, synthesizing efficacy trials of PPIs reveals little evidence that these interventions translate into sustained programmes or behaviour change when applied beyond the tightly controlled conditions of the laboratory or psychology classroom setting. Efficacy trials typically recruit homogenous, motivated participants and, as Parks and colleagues suggest, "researchers have yet to offer persuasive evidence that happiness activities, as they are actually used in real-world settings, are beneficial"

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[9] Bolier et al.'s meta-analysis required that PPIs "should have been explicitly developed in line with the theoretical tradition of positive psychology (usually reported in the introduction section of an article)" among the inclusion criteria, thereby reducing the number of studies analysed in their review.

(Parks et al., 2012, p.1223). While empirical and anecdotal evidence indicate PPI effectiveness trials are being carried out in real-world settings, to the best of our knowledge a review of this next phase of intervention research has yet to be conducted. There is a pressing need for such a review, involving a systematic evaluation of methodological and reporting quality.

This paper therefore seeks to address this knowledge gap, and has three objectives: to review published PPI effectiveness trials assessing their scope and nature; to quantitatively evaluate (using an established health promotion reporting tool) the extent to which published PPI effectiveness trials report on issues beyond efficacy, in particular, those related to intervention generalizability; and to make, if necessary, recommendations for future reporting of PPI effectiveness trials. Pursuing these three objectives provides clarity for researchers, practitioners, and decision makers as to where, when, and how PPIs have been tested in real-world contexts, assesses their suitability and readiness for mass-market dissemination, and promotes the accumulation of sufficient high quality evidence informing that process.

While outlining the aims of our paper it is perhaps useful to begin with a reminder of the traditional, sequential phases of health promotion programme development. The concept of efficacy and effectiveness, pioneered by British epidemiologist, Archie Cochrane (1972), suggests that new treatments or interventions be tested in a logical sequence of phases. First, the 'efficacy' of a new intervention is tested under highly controlled conditions (standardized treatment and context) in a research trial. In his much-cited paper examining the different phases of development for health promotion programmes, Flay defines an efficacy trial as "designed to evaluate what an intervention achieves under optimum conditions" (Flay, 1986, p.452). Efficacy tests are basic research, preceding the real-world testing of an intervention or programme; in other words they test 'does it work'. Once an intervention has been shown to cause desirable changes under optimum conditions researchers can proceed to the next stage of evaluation, 'effectiveness trials', which test "whether a treatment does more good than harm when delivered in a real-world program" (Flay, 1986, p.455). In other words, effectiveness trials test for whom, under what conditions, and within what delivery contexts interventions are effective. The most useful effectiveness trials go beyond an

efficacy study's focus on effect sizes of key outcomes and require assessment of programme availability, implementation, and acceptance, in addition to short and long term programme effects (for detailed differentiation between different phases of intervention research see Flay, 2005).

Recognition of the importance of reliable, appropriately designed, conducted, and reported research has produced several reporting guidelines, among them Flay and colleagues' own Standards of Evidence created for the Society for Prevention Research (Flay et al., 2005), RE-AIM (Glasgow et al., 1999), the American Psychological Association's JARS (APA Publications and Communications Board, 2008), and the Effective Public Health Practice Project's Quality Assessment Tool for Quantitative Studies (National Collaborating Centre for Methods and Tools, 2008). With so many guidelines already in existence, readers may question our motivation for selecting the RE-AIM framework for evaluating PPI effectiveness research, but it is our considered opinion that RE-AIM (evaluating an intervention's Reach, Efficacy, Adoption, Implementation, and Maintenance) can make an important contribution to PPI research. RE-AIM acknowledges the balance of both internal and external validity required for meaningful effectiveness research. For example, RE-AIM evaluates the representativeness of study samples (including an assessment of the characteristic of both participants and non-participants), the percentage and representativeness of settings agreeing to trial these interventions, programme costs, and both the long-term duration of effects at the individual level, and the long-term institutionalization of interventions at the organizational level. The RE-AIM framework has been used to provide a more meaningful measurement of intervention impact for reviews of school health promotion studies (Haynes, 1999, p.652), women's health programmes (Estabrooks, Dzewaltowski, Glasgow, & Klesges, 2003), physical activity interventions (Farris, Will, Khavjou, & Finkelstein, 2007), community health interventions (White, McAuley, Estabrooks, & Courneya, 2009), worksite health promotion studies (Caperchione & Coulson, 2010), diabetes self-management interventions (Bull, Gillette, Glasgow, & Estabrooks, 2003) and childhood obesity programmes (Eakin, Bull, Glasgow, & Mason, 2002). The current authors' experience in public health is further testimony of RE-AIM's popularity among researchers and practitioners in that field, where its practical acronym makes its prescription easy to recall without requiring reference to

the lengthy checklists characteristic of the other reporting guidelines. The RE-AIM website (see: www.re-aim.org) also offers extensive practice-friendly tools for researchers and delivery agents encouraging them to design, implement and test interventions with eventual real-world dissemination in mind. In short, RE-AIM "can help plan and select samples, interventions, settings, and agents in ways that make it more likely that results will be replicated in later studies" (Glasgow, Lichenstein, & Marcus, 2003, p.1264), provides additional useful evidence beyond that covered by existing guidelines, and has a proven track record for meaningful evaluation of effectiveness studies in public health.

Methods

Selection of studies for review

Deciding which studies to include in any review is both critical and challenging, but additionally so for our topic when the definition surrounding PPIs is still in debate[10]. There is no common definition of a PPI, nor a single, empirically-based theoretical framework unifying PPIs (Parks & Biswas-Diener, 2013a; Schueller et al., 2014). In this context, we remind readers to consider our study's findings and conclusions with our selection criteria and search strategy firmly in mind. In order to identify effectiveness trials of PPIs, several strategies were used. First we reviewed the 49 PPI intervention studies included in Sin and Lyubomirsky's meta-analysis (2009) and the 43 studies covered by the Bolier et al. meta-analysis (2013). Next one researcher (LH) conducted keyword searches of psychological and social science databases. The PsycINFO, Scopus, and EBSCOhost (CINAHL, MEDLINE, Psychology and Behavioral Sciences Collection) online databases were searched using combinations of the following keywords: effect*, effic*, outcome*, or evaluat*, in combination with PPI, "positive psychology intervention", PI, "positive intervention", PAI, "positive activity intervention*", positive N3 psychology, well-being, wellbeing, and hope, optimis*, gratitude, grateful, "sacred moments", kindness, mindfulness, meditat*, savouring, savoring, positive writing, PsyCap, best possible self, BPS, goal-set*, coaching N3 intervention*, strength N3 intervention* and resilien*. Because this review aims to evaluate PPI effectiveness research we restricted our search to studies published in peer-reviewed journals from

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[10] Publication of Bolier and colleagues' meta-analysis prompted email discussion regarding the definition of a PPI on the Friends of Positive Psychology listserv (August 22nd 2013). For a copy of these emails contact the first author. Also, see Parks and Biswas-Diener's (2013, p. 3) and Schueller and Parks' (2013b) views on the difficulties of defining these interventions.

1998 to February 2014[11]. For practical reasons we also limited the search to studies published in the English language. We also checked the references from the meta-analyses and the studies retrieved for other potential effectiveness trials.

Studies were then manually considered and included in the intervention review if they met the following criteria:

1. The study must empirically test an intervention, therapy, or activity primarily aimed at increasing positive feelings, positive behaviors, or positive cognitions, as opposed to ameliorating pathology or fixing negative thoughts or maladaptive behavior patterns (Sin & Lyubomirsky, 2009)[12].

2. The study must have a control condition that does not receive the tested PPI, such as no-treatment control, wait-list control, neutral control, placebo, or it can be some alternative intervention or treatment as usual (Flay et al., 2005).

3. Pre-intervention and post-intervention assessment using psychometrically sound measures of positive variables must be reported[13] (such as positive emotions, subjective well-being, psychological, optimism, and/or resilience).

4. The study must be a real-world effectiveness trial, rather than an efficacy trial (as described above).

5. Studies with samples predominantly (over 50%) comprising psychology students, and studies offering class credits for participation, were excluded on the grounds that the aim of this review is to evaluate PPIs' effectiveness in real-world contexts[14].

6. The intervention must be tested on adults 18 years and over[15].

7. Physical activity interventions were excluded.

8. Interventions exclusively focused on improving physical well-being were excluded as they were beyond the scope of this literature review.

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[11] This date, marking the formalisation of the growing academic study of the science of well-being under the umbrella term 'positive psychology', was chiefly selected on practical grounds. Choosing 1998, the date of Seligman's inaugural address to the APA where he promoted the idea of a "positive psychology" (Seligman & Csikszentmihalyi, 2000), provides our study with a distinct start date from which we can evaluate effectiveness trials. It is our opinion that, opting to precede this date makes selecting a time-boundary more challenging, while adding little of value to our assessment.

[12] This definition of PPIs excludes studies testing Mindfulness-based Stress Reduction and Acceptance and Commitment Therapy from this review in that they focus on reducing symptomology and were therefore excluded (for detailed discussion on the differences between ACT and PPIs see Parks & Biswas-Diener, 2013b).

[13] Studies using pathology and deficit-focused measures such as The Medical Outcomes Study 36-Item Short Form (Wade, 1992) were therefore excluded (for example see Lii, Tsay, & Wang, 2007; Napolitano, Babyak, Palmer, Tapson, & et al., 2002).

[14] While we accept and acknowledge the importance of well-being promotion among student populations, our paper focuses on effectiveness trials in real-world conditions of availability and acceptance, which the psychology classroom environment is not. Campus-based PPI effectiveness trials recruiting community samples were not excluded.

[15] Interventions focused on children and school students are covered elsewhere and beyond the scope of this review (for more details of the interventions used see Seligman, Ernst, Gillham, Reivich, & Linkins, 2009).

Our literature search and study selection process highlighted the variety of research methods adopted to test the real-world effectiveness of PPIs. While two steps of effectiveness trial are common in public health research (treatment effectiveness trials and implementation effectiveness trials as described by Flay, 1986), the two types are rarely distinguished between in positive psychology intervention research. Some researchers explicitly acknowledged their study's methodology as a combination of efficacy and effectiveness trials (Parks & Szanto, 2013), while other trials' methodology and reporting indicate they combine treatment effectiveness and implementation effectiveness (for example see Huffman et al., 2011). Misleading titles or inaccurately labeled studies, and mixed method research, made the process of study selection additionally challenging.

Data extraction

While certain characteristics of the selected PPI trials were noted during the data extraction process in order to inform our appraisal of the scope and nature of PPI effectiveness research, the focus of our study was to evaluate PPI effectiveness trials' reporting on the five dimensions of RE-AIM. For this reason we address the primary objective first, and report on intervention characteristics subsequently.

RE-AIM criteria

In order to evaluate the extent to which each of the studies reported on RE-AIM, we assessed multiple components for each of the five RE-AIM elements (found at http://www.re-aim.org/resources_and_tools/index.html). Figure 11 illustrates how each component was operationalized in this review.

REACH concerns the representativeness of samples and was measured by evaluating reporting on the following five indicators:	• Methods used to identify and recruit the target population • Identification of inclusion criteria • Identification of exclusion criteria • Sample size and participation rate (number participating/number eligible) • Characteristics of both participants and non-participants
EFFICACY is measured by evaluating reporting on the following four indicators:	• Measures and results for at least post-test • The use of intention-to-treat analysis • Negative outcomes • The degree of participant attrition from the trial
ADOPTION is measured by evaluating reporting on the following seven criteria:	• Description of intervention location • Description of staff delivering the intervention • Methods used to identify target delivery agent/s • Level of expertise of the delivery agent • Inclusion/exclusion criteria for settings • Adoption rate (number of participating settings/ number eligible) • The characteristics of adopting/non-adopting settings
IMPLEMENTATION is measured by evaluating reporting on the following three criteria:	• The intervention type and intensity level of activity • The extent to which the protocol was delivered as intended • Measurements of cost
MAINTENANCE is measured by evaluating reporting on the following three criteria:	• Individual behaviour assessment at least six months following completion of intervention • The current status of the programme • Measures of the cost of maintaining the intervention

Figure 11. Five dimensions of intervention utility according to RE-AIM

Reach

Reach concerns the representativeness of samples, assessing the degree to which studies are reaching their target population. It was measured using five indicators: 1) Methods used to identify and recruit the target population; 2) Identification of inclusion criteria; 3) Identification of exclusion criteria; 4) Whether the sample size and participation rate (number participating as a proportion of the total number eligible) were reported or could be calculated from information provided; and 5) Whether the characteristics of both participants and non-participants were reported. Where it was not feasible for studies to report participation rates, or differences between non-participants and participants, such as trials using advertisements on the Internet or multi-media campaigns for recruitment, we coded these criteria as 'not applicable'.

Efficacy

Determining the efficacy of an intervention remains critically important for implementation research: there's little point evaluating effectiveness if the intervention has no effect. Efficacy was assessed according to whether studies reported four indicators: 1) Measures and results for at least post-test; 2) The use of Intention-to-Treat analysis comprising all participants successfully randomly assigned to the experimental condition; 3) Negative outcomes[16]; and 4) The degree of participant (post-test) attrition from the trial.

Adoption

Adoption assesses the intervention's adoption by target delivery staff, settings, or institutions. RE-AIM measures Adoption using seven criteria: 1) Description of intervention location (i.e., the specific location where the intervention occurred thereby adding to implementation evidence, rather than the country, which is reported elsewhere in the results section); 2) Description of staff delivering the intervention; 3) Methods used to identify target delivery agent; 4) Level of expertise of the delivery agent; 5) Inclusion/exclusion criteria for settings; 6) Adoption rate (the number of participating sites as a proportion of all sites offered the intervention); and 7) The

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[16] Glasgow and colleagues do not explicitly state which negative outcomes should be assessed, but that interventions "can also have unanticipated negative effects" and that it is "critical not only to determine benefits but also to be certain that harm does not outweigh benefits" (1999, p.1323).

characteristics of adopting sites compared to non-adopting sites. Where it was not feasible or appropriate for studies to report details of staff delivering the intervention (such as PPIs delivered via the Internet, books, or manuals) we coded these criteria as 'not applicable'. Similarly, as the last three criteria in the Adoption dimension only apply to trials covering multiple sites, we coded these criteria as 'not applicable' for single-site intervention trials.

Implementation

Implementation covers the consistency of delivery, costs and adaptations. It was measured according to reporting on three criteria: 1) The intervention type and intensity level of activity; 2) The extent to which the protocol was delivered as intended; and 3) Measurements of intervention cost.

Maintenance

Maintenance assesses the extent to which the intervention or programme becomes habitual at the individual level, or institutionalized at the setting-level. Maintenance reporting was measured according to three criteria: 1) Individual well-being assessment at least six months following completion of intervention; 2) The current status of the programme (for example, whether it is still running, or has been discontinued); and 3) Measures of the cost of maintaining the intervention.

Coding Protocol and Scoring

For consistency we adopted the coding procedures used in previous RE-AIM reviews (for example see White et al., 2009). All 40 selected studies were coded according to their reporting on each of the RE-AIM dimensions in a two-step process. First, two of the co-authors (LH, AJ) independently coded each of the trials using an excel spreadsheet developed in accordance with established operational definitions of RE-AIM (see: www.re-aim.org) and reported above. Both coders scored each criterion, awarding zero points for a study not reporting that specific criterion, or one point for a study reporting that criterion. For example, if sample inclusion criteria were reported this scored one point, if no details of intervention costs were given, that study scored zero points on that specific criterion. Where the criterion was reported, specific information was noted where relevant (such as sample demographics, participation

rate, and attrition rate). Initial inter-rater reliability was very high (Cohen's kappa = .98)[17], with aspects of disagreement further discussed between the two raters until agreement was reached.

Following coding, the next step was to calculate four levels of composite scores: an average RE-AIM percentage score for each individual study (indicating each study's overall reporting across the five elements); an average percentage score for each of the individual criterion (indicating the quality of reporting on each criterion); an average percentage score for each of the five dimensions (indicating whether Reach, Efficacy, Adoption, Implementation, or Maintenance was reported best among PPI effectiveness trials); and finally, a total RE-AIM score was calculated by averaging the five RE-AIM dimension scores (giving a single statistic depicting the overall quality of PPI effectiveness reporting, and providing useful comparative statistics for future RE-AIM studies) – see Appendix H.

In the original paper outlining the RE-AIM evaluation framework, Glasgow and colleagues' noted that the relationship among the five dimensions was unknown. In the absence of evidence suggesting any one dimension should be weighted more heavily than the others, or any theoretical rational to do so, we have given all five equal weighting. We acknowledge the exploratory nature of this aspect of our study and look forward to future research informing the precise relationship between the five different RE-AIM dimensions. It is also worthy of note that differences between public health and positive psychology research caused us to devise our own strategy for interpreting and coding certain RE-AIM criteria. For instance, while public health frequently targets clinical populations the size of which can be quantified by patients receiving a clinical referral, we recognise that it is not always possible for positive psychology researchers to quantify participant pools, nor verify characteristic differences between participants and non-participants. This is particularly true for trials where the Internet or poster advertising campaigns were used for recruitment, in which case these criteria were coded as 'not applicable' for such studies (see Appendix H). Where this information is available, however, we wish to emphasise its important contribution to effectiveness research.

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[17] Kappa values of '0.75 or so' can signify excellent agreement (as reported by Haynes, 1999). We suspect that the particularly high value reported here came as a result of mutually agreed upon coding criteria at the outset.

Additional data on characteristics of PPI effectiveness trials

In order to evaluate the extent to which PPIs have undergone effectiveness testing in real-world contexts, the following additional information from each study was recorded: intervention location (country), target population, sample size, intervention type, intervention duration, delivery format, well-being outcome measures used, and level of expertise required of delivery agents.

Results

The initial electronic search produced a total of 311 potential studies across the PSYCInfo (123), Ebsco Health (69), and Scopus (119). Reviews of the titles and abstracts by the first author (LH) reduced this further to 143 studies for further consideration, and two authors (LH and AJ) debated inclusion/exclusion of studies, resulting in a final selection of 40 trials that met our criteria. Several studies were excluded for lack of control conditions (for example Carson, Muir, Clark, Wakely, & Chander, 2010; Deckersbach et al., 2012; Demerouti, Van Euwijik, Snelder, & Wild, 2011; Huffman et al., 2014; Meyer, Johnson, Parks, Iwanski, & Penn, 2012; Parks & Szanto, 2013), others due to lack of positive outcome measure (Schueller & Parks, 2012), some due to the preponderance of psychology student among their samples (Khramstova & Glascock, 2010; Layous, Katherine Nelson, & Lyubomirsky, 2013; MacLeod, Coates, & Hetherton, 2008; Martínez-Martí, Avia, & Hernández-Lloreda, 2010), those that targeted children (for example Froh, Kashdan, Ozimkowski, & Miller, 2009), and others through lack of validated psychometric measures (Critchley & Gibbs, 2012).

RE-AIM reporting

Overall results indicated that Adoption criteria (84%), Efficacy criteria (73%), and Reach criteria (64%) were frequently reported across the 40 selected studies. Implementation criteria were reported in over half of the studies (58%), but details relevant to intervention or programme Maintenance were rarely reported (16%)[18]. The highest reporting scores among these studies came from studies advertised on Facebook as "Project HOPE: Harnessing One's Personal Excellence" (Mongrain, Chin, & Shapira, 2011; Shapira & Mongrain, 2010), which both reported 75% of RE-AIM criteria. Two

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[18] Note these are composite scores reflecting the reporting across all 40 studies.

further studies scored over 70% on RE-AIM, (Mitchell, Stanimirovic, Klein, & Vella-Brodrick, 2009; Parks & Szanto, 2013) fifteen other studies scored over 60%, and six less than 50%. The average RE-AIM score across all 40 of the selected studies was 59%. The lowest scoring study reported 40% of RE-AIM criteria (Luthans et al., 2008). The following analysis looks in more depth at each of the five RE-AIM elements in turn. Table 16 provides summary percentage scores for each dimension and related components.

Table 16. Selected studies reporting on RE-AIM dimensions/components

Dimension	Overall %	Component %
Reach	64	
Method to identify and recruit target population		98
Inclusion criteria		93
Exclusion criteria		45
Participation rate (or sufficient data to calculate)		44
Characteristics of non-participants		7
Efficacy	73	
Outcome measures for at least one follow-up		100
Intent-to-treat analysis		20
Negative outcomes		78
Attrition rates		93
Adoption	84	
Description of intervention location		90
Description of staff who delivered the intervention		88
Method to identify delivery agent		36
Level of expertise of delivery agent		88
Inclusion/exclusion setting criteria		n/a
Adoption rate across sites		n/a
Characteristics of adopting/non-adopting sites		n/a
Implementation	58	
Intervention type and intensity		100
Extent intervention was delivered as intended		70
Measures of cost of implementation		2.5
Maintenance	16	
Individual behaviour was assessed 6 months post-test		43
Is the programme still in place?		2
Measures of maintenance cost		2.5
Total RE-AIM	59	

n/a = reporting not applicable to this study

Reach

All but one of the studies reported on methods used to identify and recruit participants (98%). Inclusion criteria were reported by most studies (93%), while exclusion criteria were reported much less often (45%). While all studies reported sample size, less than half (44%) reported participation rates, or sufficient information to calculate them. Across those studies providing participation rates the average rate was 43%. Only two studies reported the representativeness of the recruited participants compared to non-participants. Taken together, the selected studies have a mean reach score of 64% (e.g., if all studies had reported on all 5 reach criteria, the mean score would have been 100%).

Efficacy

On the whole, efficacy was well reported with a mean score of 73%. All studies reported at least one follow-up assessment of key outcome measures of positive variables reflecting our study inclusion criteria, while 78% included measures capable of detecting negative effects. Attrition rates were reported by 93% of the 43 studies (with an average attrition rate across all studies of 27%). Efficacy reporting was let down by the lack of Intent-to-Treat analyses (conducted in only 20% of studies), indicating a lack of statistical rigour.

Adoption

Adoption was the most consistently reported of the five RE-AIM dimensions across the 40 studies, accruing a mean score of 84%. This figure reflects frequent reporting on just three Adoption criteria: location (reported in 90% of studies), descriptions of delivery agent/s (reported in 88%), and details of delivery agent/s' expertise (88%). Approximately a third of studies (36%) reported any details of how the delivery agent/s were recruited. What this top line Adoption figure of 84% obscures however is that, due to a lack of multi-site PPI effectiveness trials among the selected studies, three out of the seven criteria making up the Adoption dimension were coded 'not applicable' throughout our review.

Implementation

Type and intensity of interventions was reported in every study (100%), and the majority of studies featured methods to assess fidelity of implementation (70%). Only one of these studies reported any details of intervention costs (2.5%). This omission substantially lowered the mean level of reporting on Implementation (58%). That is, if all studies had reported on implementation costs, the mean Implementation score would have been 89%.

Maintenance

Reporting was least frequent on the Maintenance dimension, with a mean score of only 16%. Less than half the studies (43%) assessed individual behaviour at least six months post-intervention. Only one study reported details of current intervention or programme status (2.5%), and while maintenance costs were occasionally referred to, none reported specific costs.

Characteristics of PPI effectiveness trials

The 40 studies covered by this review totaled 10,664 participants (range n = 17 - 3,070), with a predominance of female (68%), older (mean age = 43 years, SD = 10 years), Caucasian (78%) participants educated to university level (62%). The selected studies indicated that researchers have conducted effectiveness trials of the various different types of PPI. Eight studies tested three different types of therapies considered as PPIs (Quality of Life Therapy, Well-being Therapy, and Positive Psychotherapy), seven tested different types of gratitude intervention, six tested intervention packages, five studies tested optimism, four coaching, and three studies each tested resilience interventions, goal-setting, and strengths interventions, while two tested kindness/compassion interventions, different types of bibliotherapy, and mindfulness. While hope and savouring interventions were not tested singularly, both interventions were included in trials testing packages of PPIs. Intervention duration ranged from 2 hours to 20 weeks (mean = 7 weeks), and out of the 35 studies reporting the trial location 11 studies were conducted in Australia, nine in the United States of America, four in Canada, three in Holland, two in Italy, two in Switzerland, two in Germany, one in Iran, and one in England. Eighteen out of the 40 studies required specialist delivery agents and 12 were researcher delivered. Fifteen involved web delivery, ten were delivered in a group

format, three involved written instructions, eight involved one-on-one therapy or training, four were conducted over the telephone, and four were delivered using books or manualized. Table 17 shows characteristics of PPI effectiveness trials.

Table 17. Characteristics of PPI effectiveness trials

Study	PPI type	n	Delivery format	Population	Duration (weeks)	Location	Delivery agent
Abbott et al. 2009	Resilience	53	On-line	Employees	10	Web	On-line
Abedi et al. 2010	QOLT[1]	40	Group	Mothers[2]	4	Clinic	Specialist
Boehm et al. 2011	Optimism/ gratitude	348	On-line	Community	6	Web	On-line
Dubé et al. 2007	Goal setting	294	Group	Retirees	11	Community	Specialist
Emmons et al. 2003 Study 3	Gratitude	65	Written	NMD[3] patients	3	Clinic	Specialist
Fava et al. 1998	WBT[4]	23	One-on-one	Affective disorder	16	Clinic	Specialist
Fava et al. 2005	WBT	20	One-on-one	Anxiety disorder	16	Clinic	Specialist
Feicht et al. 2013	Package	147	On-line	Employees	7	Work/home	On-line
Fredrickson et al. 2008	Mindfulness	139	Group	Employees	7	Work/home	Specialist
Frieswijk et al. 2006	Bibliotherapy	193	Correspondence	Older adults	10	Home	Manual
Gander et al. 2012	Package	622	On-line	Community	1	Web	On-line
Giannopoulos et al. 2011	Gratitude	218	On-line	Community	1	Web	On-line
Grant et al. 2009	Coaching	50	One-on-one	Employees	10	Work	Specialist
Grant et al. 2010	Coaching	44	Group	Teachers	20	High school	Specialist
Green et al. 2006	Coaching	56	Group	Community	10	Workshop	Specialist
Huffman et al. 2011	Package	30	Phone/manual	CVD patients	8	Hospital/home	Specialist
Kremers et al. 2006	Package	142	Group	Single older women	6	Community/home	-
Lapierre et al. 2007	Goal setting	27	Group	Retirees with suicidal ideation	11	Community	Specialist
Luthans et al. 2008	Resilience	364	On-line	Employees	<1	On-line	On-line
Millear et al. 2008	Resilience	28	One-on-one and manual	Employees	11	Workplace	Specialist
Mitchell et al. 2009	Strengths	160	On-line	Community	3	On-line	On-line
Mongrain et al. 2011	Compassion	719	On-line	Community	1	On-line	On-line

1 QOLT = Quality of Life Therapy
2 Mothers of children with OCDs
3 NMD = Neuromuscular disease
4 WBT = Wellbeing Therapy

Study	PPI type	n	Delivery format	Population	Duration (weeks)	Location	Delivery agent
Mongrain et al. 2012	Strengths/gratitude	1447	On-line	Community	1	On-line	On-line
Odou et al. 2011	Gratitude/optimism	210	On-line	Community	1	On-line	On-line
Ouweneel et al. 2013	Package	158	On-line	Employees	8	On-line	On-line
Page et al. 2013	Package	50	Group	Employees	6	Workplace	Specialist
Pietrowsky et al. 2012	Gratitude/optimism	17	Phone/written	Depressive patients	3	Home	Specialist
Powell et al. 2013	Therapy	3070	On-line	Community	5	On-line	On-line
Proyer et al. 2013	Strengths (MoodGYM)	178	Group	Community	5	Campus/home	Specialist
Rodrigue et al. 2005	QOLT	35	Phone	Lung transplant patients	10	Home	Specialist
Rodrigue et al. 2006	QOLT	28	Phone	Caregivers	10	Home	Specialist
Rodrigue et al. 2011	QOLT	62	One-on-one	Kidney transplant patients	8	Transplant centre	Specialist
Seligman et al. 2006 Study 2	PPT[5]	46	One-on-one	Clinical depression	12	Clinic	Specialist
Sergeant et al. 2011	Gratitude	772	On-line	Community	1	Web	On-line
Shapira et al. 2010	Optimism/compassion	188	On-line	Community	1	Web	On-line
Sheldon et al. 2010	Goals	181	Lab/on-line	Community	24	Campus/Web	Specialist
Spence et al. 2007	Coaching	63	Peer/professional	Community	10	Campus/Web	Mixed
Wing et al. 2006	Optimism	175	Written instruction	Community	2	Home	Mixed
Zautra et al. 2008	Mindfulness	144	Group	Adults with RA[6]	8	Lab/home	Specialist

[5] Positive Psychotherapy
[6] Rheumatoid Arthritis

Discussion

This review is a preliminary analysis of selected PPI effectiveness studies, using the RE-AIM framework to highlight the gaps in current reporting practice and weaknesses in study design. On a positive note, these studies provide evidence of the potential for PPIs to promote well-being across diverse populations and settings. For example, studies have tested goal-management interventions on early retirees (Dubé, Lapierre, Bouffard, & Alain, 2007), coaching interventions for school teachers (Grant, Curtayne, & Burton, 2009), and bibliotherapy for older adults (Frieswijk, Steverink, Buunk, & Slaets, 2006). Seligman et al. indicated the feasibility of a positive psychotherapy programme to reduce depressive symptoms and increase well-being among adults with clinical levels of depression (Seligman, Rashid, & Parks, 2006), three studies extended the external validity of Quality of Life Therapy reporting its effectiveness for a variety of transplant populations (Rodrigue, Baz, Widows, & Ehlers, 2005; Rodrigue, Mandelbrot, & Pavlakis, 2011; Rodrigue, Widows, & Baz, 2006), and PPIs have been successfully tested for use with suicidal populations as part of a move towards focusing on protective factors in suicide-prevention research (Lapierre, Dubé, Bouffard, & Alain, 2007). In terms of settings, several studies confirmed the potential of the Internet as a promising platform for large-scale PPI dissemination (Gander, Proyer, Ruch, & Wyss, 2012; Mongrain & Anselmo-Matthews, 2012; Mongrain et al., 2011; Powell et al., 2013; Sergeant & Mongrain, 2011). Grant et al.'s intervention for high school teachers indicates coaching has potential to contribute to well-being beyond its traditional corporate setting (2010) and the telemedicine format of Huffman et al.'s study was specifically chosen to boost programme reach among cardiac patients living far from hospital, and without access to transport or the Internet (2011). Furthermore, the considerable management support Fredrickson et al.'s mindfulness trial received indicates the growing acceptability of a diversifying array of interventions to boost well-being in workplace contexts (2008). Beyond making the intervention available to all employees, the employers' willingness to allow the study's orientation meetings, six meditation workshops, and assessment sessions to be conducted during work hours is a promising indicator of the growing acceptance of PPIs.

Beyond taking the opportunity that conducting a large literature search provided for a preliminary snapshot of PPI effectiveness research, the primary goal of our study was to evaluate the frequency and quality of reporting in areas identified as influential for health

promotion effectiveness research. We did so by reviewing 40 selected PPI effectiveness trials using criteria from the RE-AIM framework. We chose RE-AIM as our evaluation framework in recognition that an intervention will be only be effective if it is made available to its target population (Reach, Adoption, and Implementation), is an efficacious intervention as identified by Intention-to-Treat analysis (Efficacy), is able to be delivered in real-world conditions, i.e., does not require researcher input (Adoption), is adequately described to enable programme fidelity (Implementation), is deemed acceptable by both target populations and settings (Reach, Efficacy, Adoption, and Implementation), and sustainable over the long term at both the individual and organizational level (Maintenance). In this sense, the RE-AIM framework provides a broad assessment of intervention utility, providing additional evidence to alternative reporting tools. Below, we outline the strengths and weaknesses of these trials' reporting and methodology, before discussing the implications for PPI research more generally. Finally, we suggest how PPI researchers could progress intervention research design, evaluation and reporting paving the way for future dissemination trials.

The most frequently reported RE-AIM criteria across these studies concerned the methods used to identify and recruit the target population, inclusion criteria, well-being outcomes at post-test (study inclusion criteria), attrition rates, description of intervention location, and description of intervention type and intensity (See Table 16). Collectively, the reviewed studies scored 90% or over on each of these six criteria. As many of these studies assessed positive and negative affect, and effects on depressive symptomology, a large proportion had the capacity to detect negative effects (78%). This information is vital for PPI effectiveness research, given studies indicating the potential deleterious effects of gratitude interventions among individuals with mild to moderate depressive symptoms (Sergeant & Mongrain, 2011; Sin, Della Porta, & Lyubomirksy, 2011). The extent to which the PPI was delivered as intended was frequently recorded (70% of studies), although greater uniformity of methodology would improve the value of this reporting. Mean figures indicate reporting concerning the description and expertise of delivery agents was frequent, but again the level of detail was minimal (for an example of comprehensive reporting see Seligman et al., 2006). Specifically, reviewing the selected PPI effectiveness trials using the RE-AIM tool highlighted several other weaknesses that we will address in turn now.

The first weakness concerns intervention Reach, specifically around the acceptability of PPIs and the representativeness of the selected trials. Not only did less than half these studies report participation rates, but also among those that did report them, the average participation rate was surprisingly low (43%), calling into question PPIs' acceptability. PPI's acceptability is often cited as rationale for their use and potential for population health promotion, but these data indicate otherwise. For example, Millear and colleagues (2008) achieved a 19% response rate for their workplace resilience programme trialled in an Australian resource sector company, Fredrickson et al. (2008) reported an 11% participation rate among the 1,800 full-time employees at an American business software and information technology services company, and 14% of employees signed up for Feicht et al.'s happiness programme run at a German workplace (2013). Until we have consistent reporting of participation rates it is hard to draw concrete conclusions regarding acceptability. Similarly, the representativeness of study samples (i.e., the similarity or differences between those participating and those who are eligible but do not) is vital evidence for effectiveness research. If, for example, differences between participants and non-participants do exist, a PPI could have a differential impact based upon these variables that will not be detected due to lack of representativeness of the sample. Our review highlights three factors affecting representativeness: the largely homogenous study samples, the difficulty of recruiting from the general population (see Khramstova & Glascock, 2010; MacLeod et al., 2008), and a distinct lack of evidence regarding the characteristics of non-participants. For example, only two studies provided any reporting on non-participants (Kremers, Steverink, Albersnagel, & Slaets, 2006; Rodrigue et al., 2005) and these focused on reasons for non-participation rather than characteristic differences. While motivation for non-participation is important, we need to know 'who' PPIs are failing to attract, as well as 'why'. Establishing the true effectiveness and acceptability of these interventions will only be possible when researchers include sufficient information to calculate participation rates, and value evidence regarding those choosing not to participate (both their characteristics and their motivations).

The second weakness of these intervention studies concerns outcomes, which were assessed using dozens of different measures, the most popular being the Satisfaction with Life Scale (Diener et al., 1985), Ryff's Psychological Well-being Scales (1989) and the Positive and Negative Affect Schedule (Watson et al., 1988). Not only was there a lack of justification for the choice of selected measures in some studies, but also the use of such a wide variety of

measures makes inter-study comparisons difficult. Although a related topic, we suggest that greater agreement on which validated psychometric tools are appropriate for measuring the key outcome constructs will also assist in progressing the PPI field.

The third weakness in the reporting methods of the selected intervention studies concerns the lack of Intent-to-Treat analysis, making accurate evaluation of intervention utility impossible, potentially biasing results, and compromising generalizability of study findings. Intent-to-Treat, which calls for data from all randomized participants to be included in the final analysis regardless of dropout, is regarded as the optimal method of data analysis and recommended for use in new interventions by the National Institutes of Health (Lachin, 2000). ITT was employed in just 20% of these studies. Several studies conducted drop out analyses as an alternative, some of which indicated no difference between completers and non-completers (for example see Gander et al., 2012; Sergeant & Mongrain, 2011), however biased sampling is not the only problem with not using ITT: completer analysis overlooks the reduction in intervention utility from participant dropout. Shapira and Mongrain's independent sample t-tests reveal systematic factors involved in the drop-out rate (completers at the six-month follow-up were significantly older, less needy, and less depressed at baseline than non-completers) highlighting the need to interpret study findings using completers analysis with caution (2010).

A fourth weakness found in our review concerns the lack of information regarding intervention costs, known to be a major factor in determining whether an intervention, or programme, be adopted, implemented consistently, and maintained (Glasgow et al., 1999). Accordingly, it is disappointing to note that only one study provided details of intervention costs (Parks & Szanto, 2013), despite acknowledgment of the importance of creating cost-effective PPIs in several studies (Luthans et al., 2008; Mongrain et al., 2011; Ouweneel et al., 2013; Powell et al., 2013; Rodrigue et al., 2005). Huffman and colleagues used social workers as delivery agents in recognition that they were available at a lower cost than other medical staff, and the beneficial impact this would have on their programme's generalizability and viability (Huffman et al., 2011), but failed to report specific intervention costs. The number of trials using the Internet for recruitment and/or implementation reflects researchers' understanding of the cost-saving potential of web-based interventions in favour of expensive researcher-led one-on-one delivery (for example see Mitchell et al., 2009; Powell et al.,

2013), but none of these studies explicitly detailed the costs of developing and maintaining PPI programmes using this format. Without such information readily available, policy makers and potential funders are less likely to invest in PPI dissemination trials, therefore limiting their broader uptake.

Finally, one of the most striking findings of our review was the lack of reporting on intervention maintenance. Investigating how to ensure the sustainability of intervention effect is a major research challenge facing positive psychology (and behaviour change psychology as a whole), and yet maintenance was the lowest scoring RE-AIM dimension in this review, with a mean reporting level of 16% across the 40 studies. Despite frequent acknowledgement in positive psychology research of the importance of investigating intervention sustainability (see for example, Seligman et al., 2005), evidence suggesting that longer interventions are more effective (Sin & Lyubomirsky, 2009) and that hedonic adaptation occurs several months into practicing a happiness activity (Parks et al., 2012), less than half these studies followed participants for six months or over. Fredrickson and colleagues' workplace mindfulness study (2008) showing that time spent meditating and positive emotions both decreased when the mindfulness training stopped, highlights the critical nature of programme maintenance. Likewise the 68% attrition rate recorded at nine month follow-up in Millear and colleagues' workplace resilience trial indicates the difficulty in sustaining participant interest (2008). Only one study (Lapierre et al., 2007) reported current programme status (e. g., whether the intervention or programme was still running).

We were also surprised by the complete lack of multi-site trials. Despite the fact that we are aware of multi-site PPI trials targeting adults in organizations and communities around the world such as Weiss, Westerhof, and Bohlmeijer's Happiness Route programme spanning ten Dutch communities (for more details see Weiss, Westerhof, & Bohlmeijer, 2013), and the Comprehensive Soldier Fitness programme being rolled out across 1.2 million soldiers in the US Army (Lester, Harms, Herian, Krasikova, & Beal, 2011), results for these studies have yet to be published in peer-reviewed journals. All 40 of the PPI studies reviewed here are single-site trials. While this may not seem unusual in effectiveness research, the complete lack of empirical evidence regarding setting-level aspects of intervention delivery such as the number of sites/offices/clinics or training centres opting to participate in a multi-site intervention compared to those that declined, nor any description of the differences

between participating and non-participating sites, reveals the nascent status of the PPI research base.

In light of the above, our recommendations for future research are as follows. First, consistent reporting of participation rates, and expanded reporting on the representativeness of study samples is required to establish the acceptability of PPIs with greater accuracy. We recognise it is not always possible to report this information, for example multi-media or Internet recruitment can make reporting of participation rate and non-participants characteristics impossible. But, when a study is offered to every member of a school's teaching staff, for example, it does not require much additional editorial space to report participation rates or research characteristics of non-participants. If positive psychology is to move forward and pursue its stated goal of promoting positive mental health at the population level (Huppert, 2009; Keyes, 2007b), the evidence-base regarding intervention reach must be more comprehensively developed and reported. At the individual level we suggest this include mental health status, sociodemographics, and geography, in addition to assessment of motivations for non-participation.

Second, although descriptions of intervention location, those delivering the intervention, their level of expertise, the type/intensity of the intervention, and the extent to which it was delivered as intended were usually reported in these studies, the quality, and therefore usefulness, of reporting varied across studies. Readers should not have to speculate about or infer information central to the understanding and evaluation of studies and their findings (Harrington & Noar, 2012, p. 332), yet under current practice, readers all too often have to assume the role of detective and hunt for this information, making subjective calls to decipher the finer details of programme delivery. For example, it is not until the third to last paragraph that Giannopoulos and Vella-Brodrick reveal that their three good things community intervention trial was conducted on line (Giannopoulos & Vella-Brodrick, 2011). To enable future replication, all interventions must be sufficiently described so that practitioners in the field, not just other researchers, can implement the intervention (Flay et al., 2005). This applies equally to Internet-delivered interventions, where more thorough explanation of how the intervention content was delivered, the type of materials and content used, is also recommended (see, for example, how Powell and colleagues' complemented their reporting on details of intervention web-delivery with screenshots, Powell et al., 2013).

On a related note, mass-market dissemination requires cost-effective delivery techniques. Despite best-practice acknowledgment that effectiveness trials should not be implemented by researchers (Flay et al., 2005), the fact that 12 of the 40 trials reviewed here were researcher-delivered indicates the limited potential of PPIs for public health promotion in their current format. Interventions with the greatest public health impact are 'low-cost, efficient, and feasible to implement in a non-research population' (Farris et al., 2007, p. 642). As a field we have to research cost-effective delivery methods that are not reliant on researcher assistance or other materials not readily available in real-world contexts. Internet-delivery certainly offers advantages in this regard, allowing global dissemination without trained professionals thereby reducing expenses and increasing availability. The recent publication of a report evaluating the US Army's Comprehensive Soldier Fitness programme suggests the trainer-to-trainer implementation model may provide a promising method of mass-market programme delivery (Lester et al., 2011), and we suggest that academic institutions may have a future role in training PPI delivery agents. Faced with the major challenge of recruiting and retaining participants to such programmes, we also wish to highlight the important contribution management and delivery agents can make. We therefore applaud Ouweneel and colleagues' suggestion to take the time and effort to explain potential work-relevant gains to employees in order to enhance motivation for participation, and encouraging supervisors to act as "ambassadors of the positive intervention" (Ouweneel et al., 2013, p. 191). Developing organizational support is a key element to successful intervention Adoption.

Third, in terms of methodology, it is our hope that researchers will grasp the benefits of using Intent-to-Treat analysis in future trials, so that we may accrue a more accurate, and meaningful, picture of intervention effect. Statistical statements about bias and probability only apply when all cases assigned to intervention and control conditions are analyzed, regardless of the level of treatment they received.

As with any large-scale evaluation of this type, reviewing the PPI effectiveness research using the RE-AIM framework presented us with a variety of challenges. These included determining the search strategy and inclusion/exclusion criteria to identify studies for review. In the absence of any agreed upon definition of what constitutes a PPI, and a degree of 'wooliness' in positive psychology's interpretation of what constitutes an 'effectiveness trial', this was

not an easy process. Our search term's focus on hope, optimism, gratitude, "sacred moments", kindness, mindfulness, meditation, savouring, positive writing, best possible self, goal-setting, coaching, strengths and resilience dictated the type of PPIs we were interested in. Certain exclusion criteria also narrowed the scope of our review. For instance, we opted to exclude studies that included a majority of psychology students, or offered course credits, on the grounds that such samples are biased. Ultimately, while the merit of our study selection criteria can be debated, we maintain that even if we had included such studies, we would still reach the same conclusion: the current reporting standards of PPI effectiveness research are insufficient, and without uniform reporting of participation rates PPIs their real-world acceptability has yet to be empirically established, and future replication will be difficult. Given the primary aim of the current study was, after all, not to debate the precise definition of a PPI but to evaluate extant effectiveness research of a recognised sub-set of mainstream PPIs, we urge readers to focus on these key findings. A useful direction for future research may be to conduct a RE-AIM review of 'positive psychological interventions', taking a broader approach than the current study.

One limitation inherent in the RE-AIM tool concerns the potential for readers to confuse frequency of reporting with quality of reporting and methodology. As discussed above, high RE-AIM scores indicate that certain details were reported, but some criteria provide little insight as to the quality of reporting. For example, two of the criteria making up the Adoption dimension received high scores for their reporting, with an average score of 88% across the studies awarded for reporting of delivery agents' descriptions, and an additional 88% average score for reporting on the expertise of these delivery agents. However, minimal details concerning these key components of effectiveness research were provided by these studies, thereby providing little useful evidence guiding future PPI implementation. Similarly, an overall high score on RE-AIM can give an inflated impression of intervention utility unless attrition rates are taken into account. For example, Mitchell and colleagues' (2009) total RE-AIM score of 73% masks the fact that this study also had one of the highest attrition rates in our review (69% at post-test, compared to an average of across all 40 studies of 27%).

We understand that any progression in effectiveness research reporting poses challenges for researchers, editors, funders, grant reviewers, government, and professional organizations, requiring them to first acknowledge the existing limitations of current reporting

methodologies, and then to establish and support specific guidelines on how to include relevant information in future trials (Klesges, Williams, Davis, Buscemi, & Kitzmann, 2012). While we are aware that many APA journals officially require adherence to the JARS, our review highlights the current shortcomings of PPI effectiveness research in this regard, prompting us to encourage greater process evaluation and propose RE-AIM as an alternative tool for improving reporting standards, or an expansion of the JARS to include criteria unique to RE-AIM. We also acknowledge the space restrictions required by journal editors, but suggest that it does not require much space to provide sufficient data to calculate participation rates, costs, or details of intervention delivery agents' expertise and recruitment. Relevant information could be provided in a supplementary document or website. In this regard, we amend a checklist highlighting suggested standards for PPI effectiveness and dissemination research in Appendix G. Based upon the RE-AIM framework, we have added additional items to facilitate intervention replication and delivery by non-researchers. Access to this information is of great benefit to all parties interested in effectiveness research (researchers, delivery agents, evaluators, funders and policy makers) and introducing these elements at the effectiveness stage of intervention research, paves the way for evidence-based dissemination in the future.

Summary

While our review indicates the effectiveness of PPIs to promote well-being among a variety of populations, and in a growing number of real-world contexts, there is still much that we need to know about PPIs before we can be confident of their readiness for mass-market dissemination. If positive psychology wants to make a meaningful and sustained impact on population health, as leading researchers have explicitly stated (Huppert, 2009; Keyes, 2007b), expanded reporting and higher quality methodology of PPI effectiveness research are a prerequisite to mass-market dissemination. However efficacious an intervention is shown to be in tightly-controlled efficacy trials, if it appeals to only a small proportion of its target population, is adopted only by single sites, is prone to high attrition rates, is not implemented properly, or is reliant on researcher-delivery, and is too costly to be maintained, its contribution will be negligible. We need to know more about when and where PPIs work: not just whom they are working for, but also whom these programmes are failing to attract at the individual and organizational level. Reporting of intervention costs is also vital for enabling policy makers and grant funders of the cost-effectiveness of such

interventions. Ultimately, it is our hope that introducing RE-AIM to PPI effectiveness research (and encouraging researchers to focus on its five dimensions when designing, implementing, evaluating, and reporting their trials) will help produce a body of evidence enabling the successful translation of PPIs in real-world settings as it has done in other areas of public health promotion.

CHAPTER 7

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PATHWAYS TO WELLBEING AMONG NEW ZEALAND WORKERS

Preface

A substantial body of evidence has accumulated indicating that wellbeing can be enhanced through the practice of volitional activities. Chapters 4 and 5 added more evidence, reporting significant associations between practicing the *Five Ways to Wellbeing* and flourishing. In Chapter 4, all five pathways to wellbeing (Connect, Give, Take notice, Keep learning, and Be active) were significantly associated with higher mean scores on the Flourishing Scale among a representative sample of adult New Zealanders. Chapter 5 found that adjusting for differences in gender, age, ethnicity, marital status, combined household income, and academic qualifications, the odds of employee flourishing (according to Huppert and So's model of flourishing) significantly increased with more frequent participation in any of the *Five Ways to Wellbeing*. Chapter 6 then reviewed the published effectiveness research for several different types of empirically validated positive psychology interventions (PPIs), which have been shown elsewhere to have a positive effect on various wellbeing outcome measures. While the above evidence is important, very little research investigating the activities New Zealand workers use to promote their wellbeing exists. This next study aims to fill that perceived research gap.

Because this research was conducted on the same sample of New Zealand workers participating in Chapter 2's prototype analysis, this study's discussion draws conclusions linking the two studies. The following study is currently under review with the New Zealand Journal of Human Resources Management for inclusion in its special edition focusing on positive psychology in the workplace.

Abstract

Objective: Examine the types of activities New Zealand workers currently report employing to promote their wellbeing, and investigate alignment between these activities and evidence-based pathways such as the *Five Ways to Wellbeing* and Positive Psychology Interventions.

Methods: Using a sample of 130 Christchurch workers, this study employs a content analysis methodology to qualitatively explore the range of activities New Zealand employees report using to promote their wellbeing.

Results: A total of 994 responses were generated comprising 175 different linguistic units (M = 6.0 lawyers, M = 9.4 teachers, M = 7.7 whole sample). The most popular pathways to wellbeing reported by New Zealand workers were physical activity/exercise (78%), nurturing relationships (72%), and interests/hobbies/cultural activities (41%).

Conclusions: Workers demonstrated substantially greater awareness of traditional pathways to wellbeing promoted by public awareness campaigns such as physical activity/exercise than many of the newly devised interventions validated by positive psychology, such as goal setting, kindness, gratitude and giving to others. These strategies, shown to be effective, may therefore provide promising targets for future employee wellbeing promotion.

Introduction

While there is growing evidence that it is possible to promote individual wellbeing (Lyubomirsky, Sheldon, et al., 2005) and engaging in certain intentional activities has been shown to increase wellbeing and reduce depressive symptoms (Sin & Lyubomirsky, 2009), no peer-reviewed published qualitative research investigating the ways New Zealand workers promote their individual wellbeing exists. Investigating workers' self-reported wellbeing promotion practices is important for four reasons: 1) It provides insights for researchers, employers and other practitioners regarding the kinds of things workers currently report doing to promote their personal wellbeing; 2) These insights can be monitored for change over time; 3) It provides the opportunity to explore workers' awareness of evidence-based pathways to wellbeing; and 4) As Sugarman (2007) argues, human sciences must be understood within the history and human world in which they occur.

Content analysis methodology is widely regarded in health science as a flexible, pragmatic, and meaningful method for analysing text data and expanding upon knowledge of people's experience of health and illness (Cavanagh, 1996; Hsieh & Shannon, 2005). Findings from a content analysis may inform the design and implementation of future public wellbeing promotion campaigns and areas for targeted wellbeing intervention in the workplace setting. Results may show workers adopt different strategies to enhance their wellbeing than those empirically validated and applied by positive psychologists, thereby suggesting ideas for new intervention strategies, the efficacy of which could be tested in future studies. In summary, more research regarding the ways in which workers report they are looking after their wellbeing is required. This study hopes to fill that evidence gap and inform future workplace-based wellbeing promotion.

Method

Participants

A convenience sample (*n* = 130) of 66 lawyers from across all regions of New Zealand and 64 teaching staff at a Christchurch high school was recruited for this study. Participants ranged in age from approximately 25 to 65 years old. Although no further demographic details were collected (to avoid ethics issues) both samples were predominantly NZ European.

Procedure

Participants were invited to participate in the research study via an email invitation and information sheet sent to all staff 6-8 days before the study took place (in accordance with AUT Ethics Procedure: 15/74). Specifically, they were asked, "What sort of things do you do to help your wellbeing?" and given a 13-line free-response form. Participants ticking a consent box indicated voluntary agreement for participation.

Analysis

A directed approach is the recommended method of content analysis when existing theory and prior operationalisations of a construct have been conducted (Hsieh & Shannon, 2005). This methodology is usually used to extend, or validate, an existing theoretical framework, but is employed in the current study in order to investigate alignment between known evidence-based pathways to wellbeing and workers' experiences of wellbeing promotion. Coding procedure was adapted from Hsieh and Shannon's methods (2005) and did not use a computer application. Following an initial read through to highlight all text relating to pathways to wellbeing, monolexemic linguistic units immediately recogniseable as pathways were coded as pathway categories (for example, exercise and reading). Categories are themes directly referred to in the responses or are derived by the researcher through analysis of the responses (Hsieh & Shannon, 2005). Where a phrase was used a conservative approach was taken in this initial phase of coding, so that any phrase not fitting obviously into one of the monoleximic linguistic categories was retained as its own distinct category. For example, while "going for a run" was categorised as "exercise", "not letting myself get wound up", "differentiate between work time, hobby time and relaxation" and "not letting myself stew" were all coded verbatim, each becoming their own new pathway category. Phrases such as "treat myself and my husband to regular trips away" were coded into two linguistic categories ("time with partner" and "trips away") because it reflected two readily emerging categories.

This first stage of coding produced 175 linguistic units and was conducted by the doctoral candidate alone. The next stage of content analysis (collapsing the 175 linguistic units into pathway categories arranged around emerging themes) was conducted in collaboration with a researcher experienced at content coding (Aaron Jarden). We combined linguistic units deemed to be in the same category if they were a) different grammatical forms of the same word, and b) judged to be similar in meaning or representing the same theme. Hence,

linguistic units such as "taking active holidays", "visit beautiful places in NZ" and "restful holidays" were grouped into a "holidays and weekends away" pathway category. Similarly, linguistic units coded as "phoning my family", "socialising with work colleagues", "spending time with my friends" and "helping partner" were all collapsed into a "nurturing relationships" pathway category. All linguistic units describing hobbies and activities such as "baking", "listening to music", "dancing", "participate/attend cultural activities", "singing", "craft" and "reading" were grouped together as a "hobbies/interests/cultural activities" pathway category. To retain a fuller picture on the types of pathways workers reported we opted to retain distinctive categories for "digital entertainment" and "walking" even though these two could have been collapsed into the "hobbies/interests" and "physical activity/regular exercise" categories respectively. Because of the similarity in their mechanisms, we also created a pathway category called "stress reduction techniques" comprising linguistic units such as "have a broad perspective on life – try not to see the small issues as the major ones", "not getting stressed over issues", "don't sweat small stuff", "techniques to reduce stress" and "try to minimise negative thoughts or dwell on incidents that are aggravators in my life".

Finally, 124 linguistic units endorsed less than four times (2% of the sample) were excluded from the descriptive analysis (included among these was "community participation/social contribution" and "being kind"). Following the procedure described above for combining closely themed linguistic units, and excluding those endorsed by less than 2% of our sample, the 175 linguistic items were collapsed into to 32 pathway categories. We took the presence of a large number of linguistic units only endorsed once ($n = 84$) as an indicator of saturation.

Because this study design was not going to produce data suited to using statistical tests of difference, rank order comparisons of frequency were reported. It is also important to emphasise the fact that this study investigated workers' self-reported pathways to wellbeing, instead of measuring their actual behaviours and activities.

Results

The total number of responses generated using the process described above was 994 comprising 175 different linguistic units. Participants generated an average of 7.7 linguistic units ($M = 6.0$ for lawyers and $M = 9.4$ for teachers). Table 18 displays the final list of 32

pathways, their response frequencies, and the percentage of participants reporting they used this pathway to promote personal wellbeing.

Table 18. Self-reported pathways to wellbeing among New Zealand workers

Pathway (self-report)	% participants	Frequency
Physical activity/exercise	77.69	147
Nurturing relationships	71.54	187
Interests/hobbies/ cultural activities	40.77	84
Taking time for rest/relaxation	34.62	50
Eating healthily	34.62	46
Preserving work-life separation	26.92	41
Getting good sleep	26.92	34
Holidays and weekends away	23.85	32
Strategies to reduce stress	17.69	33
Digital entertainment	16.15	24
A quiet drink/good wine	15.38	20
Being organised/planning	13.85	20
Walking	13.08	18
Practicing mindfulness/ being present	11.54	10
Time in nature/outdoors	10.77	17
Socialising	10.77	14
Pets/animals	10.00	13
Talking through issues	10.00	13
Using humour/having a laugh	8.46	11
Time management	7.69	10
Surround myself with positive/ avoid negative people	7.69	4
Giving to others	6.92	12
Do things that make me happy/ that I enjoy	6.92	9
Time alone	6.15	8
Feeling grateful	6.15	8
Seek help/advice	6.15	7
Practicing religion/spirituality	6.15	7
Shopping	5.38	7
Continued learning	5.38	6
DIY/doing jobs around the house	4.62	7
Doing meaningful things/ work	3.85	5
Goal setting/planning	3.85	5

Results show the high percentage of New Zealand workers reporting using physical activity/exercise (78%) and nurturing relationships (72%) to promote their wellbeing. While these two pathways were endorsed by approximately three quarters of our sample, the next most popular pathways were endorsed by far less participants: interests/hobbies (41%), healthy eating (35%), taking time out for rest and relaxation (35%), preserving work-life balance (27%) and ensuring they got a good night sleep (27%). The greatest number of pathways endorsed by any of the participants was 14 (endorsed by just one participant), while 8% of workers endorsed more than 9 pathways, 21% endorsed between 7 and 9 pathways, 38% endorsed either 5 or 6, 35% endorsed less than 5, and 3% endorsed none of the 32 pathways. Figure 12 shows the percentage of participants endorsing each pathway in chart form. Raw data is provided in Appendix I.
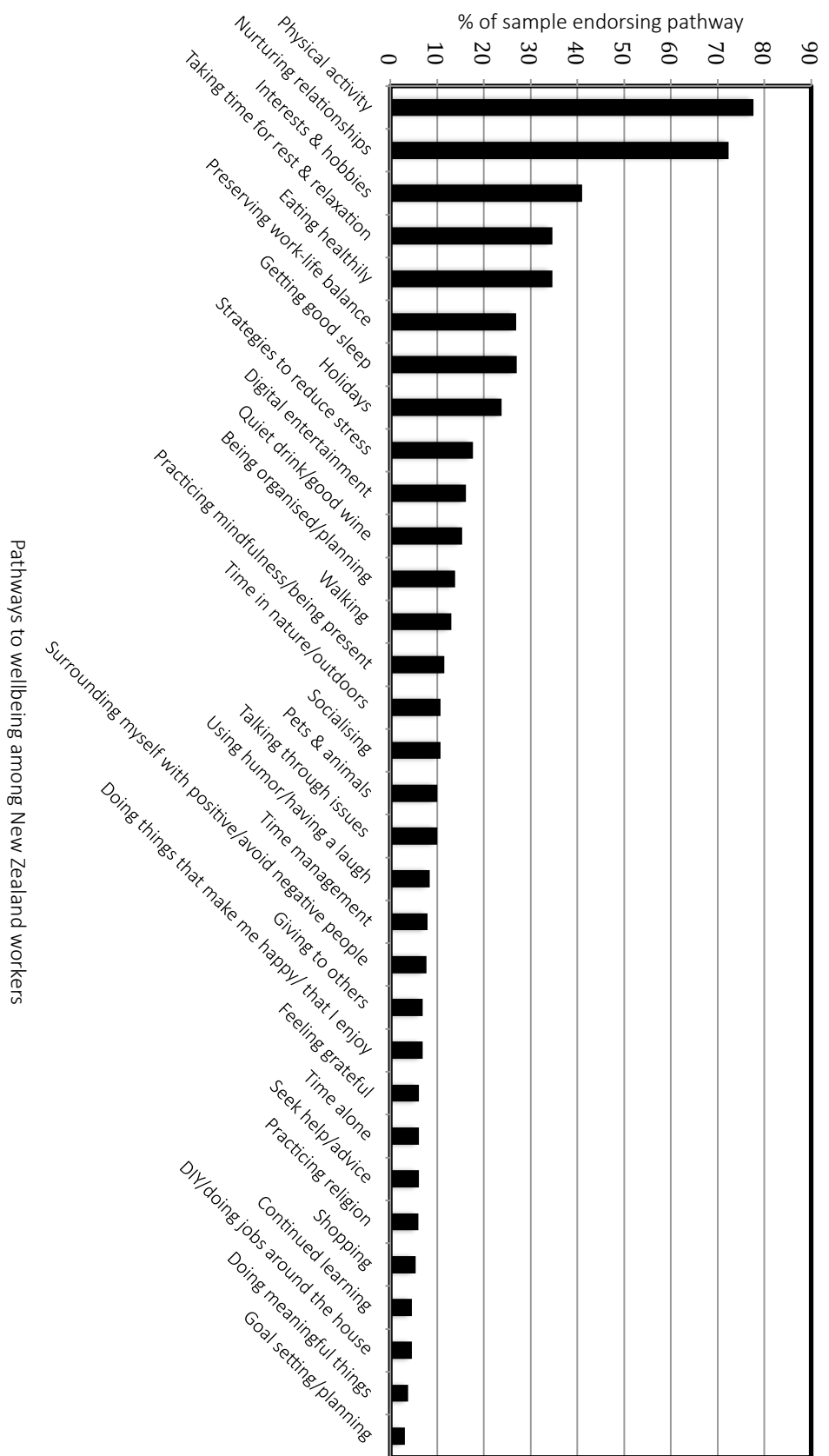
Figure 12. Self-reported pathways to wellbeing (% workers endorsing each pathway)

Discussion

The 130 workers produced 994 responses and 175 linguistic units of pathways to wellbeing. The mean number of linguistic units reported by lawyers was substantially less than those of teachers ($M = 6.0$ for lawyers compared to $M = 9.4$ for teachers) indicating that teachers report using a greater number of pathways to promote personal wellbeing than lawyers. It is difficult to know what to make of this finding, without further research, but it is potentially indicative of lesser awareness among lawyers (relative to teachers) of the many potential pathways to wellbeing. Of course this may not be the case, and the reduced mean may merely be a reflection of personal choice, or different response styles. But, further studies investigating different professions' choice of pathways to personal wellbeing may be a useful direction for future research.

The fact that all 130 participants mentioned no single pathway indicates the substantial variance in workers' chosen paths to wellbeing. The most common pathway to wellbeing, endorsed by 78% of participants in this study, was "physical activity/regular exercise", which most likely reflects the effectiveness of long-term public health campaigns promoting the health benefits of physical activity in New Zealand, such as Sport and Recreation New Zealand's "Push Play" campaign (for a review of this campaign's effectiveness see Bauman et al., 2003) and the Ministry of Health's 2010 National Depression Initiative involving advertisements showing John Kirwan using swimming as a strategy to promote wellbeing (see http://www.depression.org.nz). A somewhat more surprising finding was the 9% of workers ($n = 12$) listing yoga among their choice of physical activity.

The majority of the pathways to wellbeing identified by our sample of workers are supported by empirical evidence. For example, Mochon et al. found that regularly exercising and attending religious services had a cumulative positive impact on life satisfaction and positive affect (2008); social relationships have been shown to be important predictors of wellbeing (Myers, 2000); the health benefits of sleep have been shown across several studies (Dement & Vaughan, 1999); Maller and collleagues (2006) have reported the significant association between contact with nature and wellbeing; social contagion theory supports the benefits of surrounding ourselves with positive people and avoiding negative people (Fowler & Christakis, 2008); and doing things that make people happy has been shown to broaden and build personal psychological, personal, physical, and intellectual resources (Fredrickson,

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2001). Furthermore, extant empirical evidence shows the potential for some of these pathways to be effectively promoted in a workplace setting. For example, Fredrickson and colleagues have shown mindfulness meditation increases mindfulness, purpose in life, social support, and reduces symptoms of physical illness and depression (Fredrickson et al., 2008).

The Mental Health Foundation's *Five Ways to Wellbeing* are represented here in varying degrees: Connect (nurturing relationships was endorsed by 72%, socialising by 11%, talking through issues by 10%, and pets and animals by 10%); Be Active (physical activity/exercise was endorsed by 78%, and walking by a further 13%); Take Notice (practicing mindfulness was endorsed by 12%); Keep Learning (continued learning was endorsed by 5%), and Give (giving to others was endorsed by 7%). The small amount of participants reporting using continued learning as a pathway to wellbeing (5%) is echoed by my own experience as a practitioner, where employee assessment using the Sovereign Wellbeing Survey has revealed similar findings (visit http://www.mywellbeing.co.nz/mw/ to see the survey). These statistics indicate the potential wellbeing benefits to be gained from future promotion of mindfulness, continued learning and giving to others among New Zealand employees. For a comprehensive review of the empirical literature supporting the effectiveness of the *Five Ways to Wellbeing* see Aked et al. (2009) and for promotional material designed for dissemination in workplaces see http://www.mentalhealth.org.nz/home/ways-to-wellbeing/five-ways-to-wellbeing-downloads/.

The presence of so many evidence-based pathways to wellbeing reported among New Zealand workers is an encouraging indication of their awareness of such strategies, but the small percentage of endorsement for many of these pathways is also striking. For example, while two of the *Five Ways to Wellbeing* (Be Active and Connect) were well represented here, the other three received substantially less endorsement (Take Part, Give and Keep Learning). It is also noteworthy that what may be viewed as more traditional pathways to wellbeing (physical activity/exercise, relationships, interests/hobbies, good sleep, and healthy eating) were among the most popular responses, whereas some of the pathways recently empirically validated by positive psychologists were listed much less frequently. For example, while Mongrain and colleagues (2011) have found that practicing compassion (being kind) towards others, even over just a one-week period, promoted happiness and self-esteem over six months, practicing kindness was only endorsed by three participants in our study and

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therefore did not make the final list of pathways reported here. Likewise, Sheldon and colleagues have shown pursuing goals over a six-month period produced sustainable gains in happiness (Sheldon et al., 2010) and Sergeant and Mongrain report that adults assigned to a one week gratitude exercise produced greater increases in happiness over a six month period than those assigned to the control condition (Sergeant & Mongrain, 2011). But these pathways, while empirically validated, were only endorsed by 4% and 6% of the sample respectively. We therefore believe that these evidenced-based pathways to wellbeing, relatively less practiced by the current sample of NZ workers, may also represent useful targets for future employee wellbeing promotion.

Limitations

The main strength of a directed approach to content analysis is its ability to expand upon existing research, but the potential for researcher bias must also be acknowledged as a limitation here. However, the current research design, devised in acknowledgement of this potential threat to internal validity, sought to prevent this in the following ways: responses not immediately identified as theory-based and evidence-based pathways were coded verbatim; two researchers worked together to collapse the initial 175 linguistic units into 32 pathway categories, debating category allocation, grouping and names for each linguistic unit; and, lastly, similarities and differences between empirically validated pathways and workers' pathways are reported in descriptive terms rather than seeking evidence in support (or nonsupport) of any particular theory. Working in close association with another experienced researcher on the coding, and following Maxwell's (2008) model of qualitative research, ensured the procedure was systematic, logical and scientific, therefore reducing bias and giving greater confidence in the reliability of the study's findings.

The current study is also limited by lack of subjective or objective data regarding the frequency, intensity and effectiveness of engaging in these pathways for these individuals. We acknowledge the limitations around only investigating self-reported activities, and recommend that future studies measure when workers engage in these activities, how long for, and their effect on wellbeing. In terms of external validity, these findings cannot be generalised to other populations and nationalities and we freely acknowledge that further research to examine different occupations' pathways to wellbeing in different cities, and different countries, is required.

Summary

Despite the accumulation of a substantial body of evidence indicating that wellbeing can be enhanced through the practice of volitional activities, no peer-reviewed, published qualitative research investigating the ways New Zealand workers promote their individual wellbeing exists. A directed approach content analysis showed that over three quarters of New Zealand workers report using some sort of exercise or physical activity to promote their individual wellbeing, ranking it as the most popular pathway, closely followed by nurturing relationships. Evidence-based pathways to wellbeing such as the *Five Ways to Wellbeing* were also mentioned by workers in this study, although less frequently than traditional pathways such as exercise, healthy eating, relationships and interests and hobbies.

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DISCUSSION

"Tawhiti rawa atu to tatou haerenga te kore haere tonu, maha rawa atu o tatou mahi te kore mahi tonu," Ta Hemi Henare

"We have come too far not to go further, we have done too much not to do more"

There is growing interest and application worldwide in the science of wellbeing, and increasing academic focus on its measurement, providing strong arguments for wellbeing to become part of the governmental and organisational policy agenda. The World Health Organization (WHO), and other leading health agencies around the world, nominally recognise health as more than the absence of disease, and policy documents frequently make reference to wellbeing promotion. The WHO's Mental Health Action Plan 2013 - 2020, for example, repeatedly describes mental wellbeing in asset-based terms (enabling people to realise their potential, cope with the normal stresses of life, work productively, and contribute to their communities) and lists wellbeing promotion among its key goals (World Health Organization, 2013). Just as the New Zealand mental health plan states that it seeks to provide all New Zealanders with "the tools to weather adversity, actively support each other's wellbeing, and attain their potential within their family and whānau and communities" (Ministry of Health, 2012, vi). At the moment, however, the extent of their support for population wellbeing and resilience fails to extend beyond rhetoric. A substantial gap remains in the translation of evidence to mainstream policy and practice, with both stuck in a deficit paradigm. Connections between wellbeing science, public health and occupational health are strictly nominal. This is true internationally (Bevan, 2010; Keyes, 2007a) and here in New Zealand where we have "almost separate universes for policy and science" (Norriss, 2015, p. 3). As a result, the accruing evidence-base has yet to make a discernible impact on population health.

Using quantitative and qualitative empirical research, this doctoral thesis has identified specific limitations concerning the conceptualisation and measurement of wellbeing that lie at the heart of this evidence to practice breakdown. By building upon the reliability and validity evidence of extant psychometric scales, and demonstrating their epidemiological

utility for public health and occupational health, this body of work contributes towards addressing those limitations. Similarly, in highlighting the importance of measuring workers' wellbeing as a multi-dimensional construct and the type of practical evidence this can generate for occupational health practitioners, it adds to the body of knowledge in occupational health. Finally, by bringing to the attention of positive psychology researchers and practitioners the inadequacy of current assessment methods used in intervention research, it paves the way for more comprehensive reporting that will assist future dissemination and accurate replication. In this sense, the body of knowledge comprising these doctoral studies addresses the overarching aims of this thesis (exploring the key questions of what is wellbeing?, who has wellbeing?, how is wellbeing measured?, and how is wellbeing promoted?) with the specific intention of better informing researchers, policy-makers and organisational decision-makers, thereby facilitating broader translation of evidence to practice, and the subsequent promotion of population wellbeing.

Academic contributions and implications

This body of work provides a unique and substantial contribution to the existing knowledge base supporting national and organisational wellbeing promotion in New Zealand, and on an international level, in several ways. Table 19 shows the specific contributions to come out of each study and their implications for future research and practice. It is followed by analysis of the specific contributions and their implications across the three broad research areas making up this thesis: the conceptualisation and operationalisation of wellbeing and flourishing; the epidemiology of wellbeing and flourishing; and intervention effectiveness research.

Table 19. Specification contributions from each study and their implications for future research and practice

Name of study	Specific contributions	Corresponding implications for research and practice
Chapter 2 **Measuring flourishing:** **The impact of conceptual and operational definitions on the prevalence of high levels of wellbeing (flourishing)**	1. Compares similarities and differences between current operational models of flourishing (including reliability and validity evidence) 2. Investigates measurement equivalence 3. Identifies the significant influence of thresholds on epidemiology	1. Informs selection of measurement tool/s 2. Prevalence rates using different operationalisations cannot be used for international comparison 3. Raises awareness of the importance of checking on thresholds used in epidemiology before between study comparisons can be made
Chapter 3 **Conceptualisations of wellbeing: Insights from a prototype analysis on New Zealand workers**	1. First prototype analysis of wellbeing 2. Shows that wellbeing is a prototypically organised construct 3. First peer-reviewed published study exploring workers' conceptualisations of wellbeing via free-response methods 4. Highlights similarities and differences between academic and lay (workers) conceptualisations of wellbeing	1. Academic models of wellbeing requiring endorsement of particular components for a categorical diagnosis of flourishing are at odds with workers' prototypical conceptualisation of wellbeing 2. Employee wellbeing assessment and wellbeing strategies should reflect that physical wellbeing, balance/work-life balance, and feeling valued are considered important aspects of wellbeing among New Zealand workers
Chapter 4 **Psychometric properties of the Flourishing Scale in a New Zealand sample**	1. Confirms the one factor structure and reliability and validity of the FS using a nationally representative population sample 2. Reports population norms using a nationally representative population sample of English speaking adults (revealing greater range and variance than previous validation studies) 3. Builds on nascent epidemiological evidence of flourishing among adult	1. Indicates the utility of the FS for measuring population flourishing and for use among a wide range of age groups and applications 2. Provides national and international benchmarks for cross-study comparisons 3. The *Five Ways to Wellbeing* signaled as a potentially effective method of promoting wellbeing at the population level

Chapter 5 **Flourishing in New Zealand workers: Associations with lifestyle behaviours, physical health, psychosocial, and work-related indicators**	New Zealanders 4. First peer-reviewed published evidence of the significant association between the *Five ways to Wellbeing* behaviours and flourishing in a large New Zealand sample	
	1. Provides the first epidemiological evidence of flourishing workers in NZ, including prevalence rates (25% of NZ workers are flourishing) 2. Confirms that work is good for wellbeing (25% of workers are flourishing versus 10% of those not working) 3. Identifies socio-demographic determinants of flourishing among NZ workers (age, marital status, education, income, financial security) 4. 26% reported they were not coping on present income 5. Identifies psychosocial determinants of flourishing among NZ workers (autonomy, strengths awareness and use, feeling appreciated) 6. Identifies work-related determinants of flourishing among NZ workers (work-life balance and job satisfaction) 7. Expands evidence-base indicating associations between *Five Ways to*	1. Encourages occupational health to understand the benefits of measuring flourishing, and underscores the multidimensional nature of wellbeing 2. Identifies potential intervention targets for employee wellbeing promotion (particularly Take Notice and Keep Learning from the *Five Ways to Wellbeing*) 3. Identifies future policy targets for policy-makers (for example, the low prevalence of flourishing among workers not coping on present income)

	Wellbeing and flourishing among NZ workers, independent of socio-demographic differences 8. Introduces the concept of flourishing to occupational health as a useful additional indicator for evaluating prevalence of employee wellbeing and identifying drivers 9. No significant association found between work hours and flourishing or job function and flourishing	
Chapter 6 **An evaluation of positive psychology intervention effectiveness trials using the RE-AIM framework: A practice-friendly review**	1. Indicates the potential for PPIs to promote wellbeing across diverse populations and naturalistic contexts 2. Reveals external validity limitations of published intervention effectiveness research, specifically concerning the unrepresentativeness of samples, low reporting of participation rates, lack of Intent-to-Treat analysis, and insufficient reporting on delivery agents preventing reliable replication in future studies 3. Identifies a substantial lack of information concerning intervention maintenance and costs 4. Highlights the reliance on specialist agents for dissemination	1. Expanded reporting on intervention research is urgently required, specifically concerning issues relevant to external validity 2. Suggests the RE-AIM website to assist researchers in the design and reporting of intervention trials that will enable the accumulation of evidence relevant to dissemination of PPIs in the real world and future study replication 3. Recommends PPIs reach is expanded by on-line intervention dissemination and that academic institutions and qualified practitioners assist in developing professional development programmes aimed to train-the-trainers; that way workplace intervention can take place independent of researcher input and is more likely to be sustainable 4. Recommends future intervention studies justify

Chapter	Key findings	Recommendations
	5. Introduces the RE-AIM framework popular for evaluating public health impact of physical health promotion interventions to wellbeing research	their choice of dependent measures and only use psychometric tools shown to be valid and reliable for target population
Chapter 7 **Pathways to wellbeing among New Zealand workers: A content analysis**	1. Teachers report employing a larger number of pathways to wellbeing than lawyers 2. Indicates substantial variation in awareness of the *Five Ways to Wellbeing*, particularly low endorsement of Keep Learning 3. Only 5 out of 11 PPIs identified in Chapter 6 were identified as common pathways to wellbeing by New Zealand workers 4. Benchmarks current awareness levels of evidence-based pathways against which future research will be able to make comparisons	1. More research is required to test the external validity of these findings to populations beyond Christchurch workers 2. More research required using objective measures 3. Recommends promotion of the evidence supporting the positive association between continued learning and wellbeing, and giving and wellbeing to raise employee awareness 4. Awareness of strategies tested as positive psychology interventions among New Zealand workers is limited, while awareness of some of the *Five Ways to Wellbeing* was greater, thereby identifying potential targets for future promotional campaigns and workplace interventions.

Conceptualising and operationalising wellbeing and flourishing

The literature review identifying four popular theoretical, conceptual, and operational academic models of flourishing makes a substantial contribution to the field by drawing together, for the first time, each of the researchers' conceptual and operational definitions, their methodologies for categorical diagnosis, and extant evidence of scale reliability and validity. In detailing their similarities and differences it is anticipated that this review will help policy-makers, organisational decision-makers, and researchers select the appropriate tool for their particular research needs. For instance, Huppert and So's model is the only one to assess resilience and Keyes' model covers social wellbeing more broadly. It also allows them to see which of the four operationalisations are psychometrically validated measures for assessing, and predicting, flourishing (and wellbeing) among different populations.

Using a nationally representative sample, and survey data containing a large range of wellbeing variables ($n = 87$), also allowed investigation of measurement equivalence, making an additional, and unique, contribution to international research on flourishing. This study found that all four operationalisations are significantly different from one another, and reported substantial differences in New Zealand flourishing prevalence rates according to different operational definitions: ranging from 24% national flourishing according to replication of Huppert and So's model, to 47% flourishing according to replication of Seligman and colleagues' model. This important finding has serious implications for the field, placing substantial limitations on the usefulness of extant epidemiology conducted using different operational definitions. It demonstrates that prevalence rates calculated using different operationalisations cannot be used for international comparison.

Detailed examination of the four models of flourishing also highlighted the significant influence researchers' decision-making over thresholds indicating endorsement has on epidemiology. For example, Huppert and So generally categorised responses on a 5-point scale from 'strongly agree' to 'strongly disagree' as endorsing a component if respondents indicated that they 'agreed'. But, on two variables where the ESS data was particularly strongly negatively skewed, Huppert and So raised the threshold so that only 'strongly agree' responses were categorised as endorsement. Their data-driven

approach to selecting thresholds therefore had a substantial impact on prevalence rates. This realisation was an unexpected finding to come from out of these doctoral studies, and may be under-appreciated by policy-makers, organisational decision-makers, and positive psychology researchers.

Testing the psychometric properties of the Flourishing Scale on an English-speaking nationally representative adult population sample substantially improved upon the scale's generalisability which had previously been limited to a female-biased convenience sample of students (Diener et al., 2010) and a Spanish sample of adults, the majority of whom were aged under 50 (Silva & Caetano, 2011a). Exploratory and confirmatory factor analysis demonstrated the scale's one factor structure, and evidence supporting its reliability and discriminant and convergent validity was reported. These findings build on previous evidence and indicate the FS to be a useful, brief, summary measure of the eudaimonic dimensions of flourishing.

Choosing to use a prototype analysis (Rosch, 1975) as the methodology to investigate the conceptualisation of wellbeing further, makes a unique contribution to the literature, and builds on the existing empirical understanding of wellbeing; in addition to be recognised as a dynamic multi-dimensional construct, this study shows wellbeing to be prototypically, not classically, organised. In other words, rather than taking an all or nothing approach to category membership, the prototype approach accepts that not all instances of a concept share all the features of the prototype. This study shows that some components of wellbeing are more widely recognised as being more typical of the construct than others. For a construct receiving such focused interest as wellbeing, it is important for researchers, practitioners and policy-makers to understand both academic and workers' perspectives of wellbeing. Furthermore, findings indicating awareness among workers of some of the components of wellbeing common to academic models (including positive relationships, good mental health, resilience, purpose/meaning and happiness) but that workers perceive wellbeing in a broader fashion than researchers, also makes a valuable contribution to the literature.

Epidemiology

The calculation, for the first time, of the national prevalence rate of flourishing among adult New Zealanders is a major strength of this thesis marking initial steps towards accumulation of evidence on national flourishing, and demonstrating to New Zealand policy-makers the utility of such epidemiology. While objective measures of national progress are important, they provide only limited insights into prosperity at the population level, making the epidemiology of human flourishing an important, but little researched, topic. Additionally, the prospective nature of the SWI, with the second round of data collected in October 2014 and a further round due in 2016, will allow for the prevalence of flourishing to be monitored over time.

The subsequent reporting of contemporary population norms for the FS makes a further contribution to empirical research on flourishing among adult New Zealanders. It provides a much-needed benchmark for the estimation of population wellbeing, and permits cross-study and international comparisons. The publication of demographic and percentile norms will be useful for occupational health practitioners wishing to use a brief validated measure of flourishing among English-speaking adult populations, enabling them to compare individual and group scores from different demographic groups against published data. Since the publication of this study several New Zealand companies have already used the FS to measure employee flourishing, using the national statistics published from this research as benchmarks (L. Scopes, Vitality Works, personal communication, November 11th 2013).

This thesis' importance also lies in its transferral of epidemiological research techniques focused on flourishing from the field of positive psychology to the field of occupational health. While occupational health studies have traditionally focused on the organisational benefits associated with positive emotions, life satisfaction, engagement, and job satisfaction (Page & Vella-Brodrick, 2009), this thesis emphasises the importance of looking beyond these traditional metrics among those seeking to understand and promote employee productivity, and reported important findings guiding this process. Prior to this research, epidemiological evidence concerning employee flourishing was limited to Australian teachers, South African IT workers, and US adults, with no data available on flourishing among New Zealand workers.

Beyond introducing epidemiological research on flourishing to the field of occupational health, this research made additional specific contributions to the body of knowledge: 1) by applying Huppert and So's categorical diagnosis of flourishing to the full SWI Round 1 dataset, it found that work is good for wellbeing, with significantly more participants in paid employment categorised as flourishing than those not working or permanently sick/disabled; 2) it estimated that 25% of New Zealand workers were flourishing, providing a benchmark for future and international comparisons; and 3) it indicated which lifestyle behaviours, physical health, psychosocial, and work-related indicators were associated with employee flourishing. For example, it found a significant association between practicing the Mental Health Foundation's *Five Ways to Wellbeing* and flourishing. This study is the first to provide peer-reviewed empirical evidence that all five behaviors are significantly associated with worker flourishing, independent of demographic differences (H. Norriss, Mental Health Foundation of New Zealand, personal communication, August 11th 2015). Similarly, the evidence showing the importance of strengths use, not just awareness, on the odds of flourishing among New Zealand workers, will also be useful for those involved in health and productivity management considering implementing a strengths-based programme in their workplaces. Importantly, all the variables identified by this study as significantly associated with employee flourishing are modifiable protective factors, thereby providing useful evidence informing targeted organisational wellbeing intervention programmes in the future. Given research shows the potential for adults to learn effective strategies for sustainably improving personal wellbeing (Sin & Lyubomirsky, 2009), it is hoped this evidence supports the importance of wellbeing assessment at national policy and organisational level.

Intervention effectiveness research
The review of selected PPI effectiveness studies shows the potential for interventions to promote wellbeing across diverse populations (including clinical and non-clinical) and a number of different real world settings. However, it also identified limitations concerning the external validity of existing evidence, particularly the large proportion of trials relying on specialist agents (45%) and researchers (30%) for delivery, and the paucity of evidence regarding maintenance and costs.

Using the RE-AIM tool specifically highlighted the limited reach and representativeness of existing intervention research. With less than half these studies reporting participation rates, and surprisingly low participation rates among those studies that did report them, it is impossible to estimate the field's current, or potential, reach with any accuracy. The low participation rate (43%) questions PPIs' acceptability, while the largely homogenous study samples question the generalisability of their findings. Furthermore, the lack of reporting on non-participants means the field currently has no evidence regarding non-participants' characteristics, nor their motivation for non-participation. Positive psychology researchers need to know 'who' PPIs are failing to attract, as well as 'why'. This type of evidence is vital for researchers and practitioners, and these evidence gaps place substantial limitations on PPIs' readiness for mass-market application.

A further important finding of the intervention review is the lack of Intent-to-Treat analysis used in effectiveness trials. Conducting statistical analysis using only participants that completed the trial prevents accurate evaluation of intervention utility, potentially biasing results, and therefore compromising the generalisability of study findings. Researchers cannot claim to be accurately measuring intervention or programme effectiveness without employing Intent-to-Treat analysis.

This review also highlighted the fact that no peer-reviewed published evidence concerning multi-site intervention trials targeting adults currently exists. While multi-site PPI trials are occurring in organisations around the world, results for these studies have yet to be published in peer-reviewed journals. Consequently, positive psychology's application in real world contexts is hampered by a complete lack of empirical evidence regarding setting-level aspects of intervention delivery.

Using the RE-AIM assessment framework introduced this practice-friendly tool to the positive psychology research community for the first time, and demonstrated the key advantages it holds over other reporting guidelines commonly used in psychological research. By acknowledging the sensitive balance between internal and external validity required for meaningful effectiveness research, RE-AIM makes an important contribution to PPI research. Specifically, using RE-AIM to design and evaluate future studies will encourage more comprehensive reporting of sample and setting

representativeness, programme costs, and the long-term duration of intervention effect at both the individual and organisational level (all of which were identified by this review as currently lacking evidence).

Research limitations

This research, while making significant and substantive contributions to research and practice, was subject to de-limitations (see Chapter 1) and limitations. Its findings, therefore, should be considered in relation to the extensive use of subjective data and the target populations studied. Specifically, readers are asked to consider the following limitations when considering the implications of this research:

1. The external validity of these findings is limited to the populations investigated, namely, New Zealand adults and New Zealand workers. Evidence from previous studies indicating differences between East Asians, Europeans and Americans in population wellbeing surveys indicates the importance of testing their generalisability in future studies. For example, Koreans have shown a reluctance to report positive emotions to another person, and their future-orientation means that they tend to underestimate satisfactions with present experience, and over-estimate those associated with future successes (Y.-J. Lim et al., 2013b). Future research is required to establish whether adolescents and adults in other New Zealand contexts (and specific cultural groups) show the same flourishing prevalence and whether this prevalence is more or less stable over time.

2. Accurate replication of three of the four operationalisations of flourishing was challenging using the SWI. While the SWI's large number of wellbeing variables presented a unique opportunity to compare these common operationalisations, the fit was not perfect. Differences in questionnaire items and response formats required subjective decision-making regarding the best way to replicate the original models. For instance, in the absence of a categorical diagnosis of flourishing for the PERMA-P I devised my own. While I acknowledge the limitations in this approach, and respect the PERMA-P research team's preference for a dashboard-style of reporting, categorical diagnoses of flourishing provide vital information for decision-makers, thereby justifying the research decision to apply a categorical definition to the PERMA-P. Likewise,

three of the MHC-SF's social wellbeing items were poorly matched with SWI variables. Despite these obvious limitations, having such a large number of wellbeing variables available through the SWI, a large representative sample, and with the ESS and FS models represented in their entirety, made comparison of the four models a worthwhile exercise.

3. The use of different response formats in the SWI survey meant that some of the variation in prevalence rates revealed in Chapter 2 might be due to the use of different thresholds, making international comparisons inaccurate. In other words, New Zealand's 24% flourishing according to this study's replication of Huppert and So's model may not be directly comparable to the Danes' 41% flourishing or Portugal's 10% flourishing (diagnosed using Huppert and So's model, 2013). Similarly, New Zealand's 39% adult flourishing calculated using this study's replication of Keyes' model of flourishing, cannot be directly compared to other national prevalence rates of flourishing using Keyes' operationalisation because we used different thresholds. However, the comprehensive publication of our decision-making around thresholds (and their inclusion in the appendix) does enable other researchers to replicate this study's methodology in other countries and therefore make comparisons. Furthermore, by applying consistent methodology for selecting thresholds across all four models, this study uniquely provides prevalence rates that are comparable with each other, allowing me to demonstrate the impact different operational definitions has on the epidemiology of flourishing for the first time.

4. The external validity of findings of Chapter 2 is limited by the small sample size in one of the studies ($n = 21$) and by a gender bias towards women. I therefore recommend future studies conduct prototype analyses using larger and different populations to test the generalisability of findings.

5. The psychometric evaluation of the FS study was limited by cross-sectional methodology preventing investigation of test-retest reliability within the scope of this thesis, although the publication of Time 2 data (Mackay, Schofield, Jarden, & Prendergast, 2015) makes this possible for future studies.

6. The epidemiological research conducted in this thesis was limited by the variables included in the SWI. As such, it was not possible to compare productivity outcomes, turnover, health care use, and other outcomes

important for occupational health. While I have used the available variables to demonstrate the positive associations of flourishing among New Zealand workers, this thesis would have been able to make a stronger case for moving occupational health priorities beyond disease and risk prevention towards wellbeing promotion if there had more work-place specific variables available. Similarly, components of wellbeing and flourishing were operationalised using single items of the SWI while it would have been better to have multiple items, thereby reducing the size of error. However, population studies such as the SWI are designed with participant burden in mind, and limitations in the number of variables studied are inevitable.

7. In the absence of any agreed upon definition of what constitutes a PPI, and a degree of 'wooliness' in positive psychology's interpretation of what constitutes an 'effectiveness trial', determining the search strategy and inclusion/exclusion criteria to identify studies for the intervention review was challenging. Certain exclusion criteria narrowed the scope of the review. For instance, studies with samples comprising a majority of psychology students were excluded on the grounds that such samples were biased. While the merit of our study criteria can be debated, further analysis indicated that the findings would have stayed the same even if such studies had been included.

8. Finally, the studies that make up this doctoral thesis are limited by the absence of objective data. The inclusion of objective and subjective measures simultaneously, while preferable, was not possible within this thesis. The reliance on subjective data, and the self-report bias it brings, is acknowledged as a limitation with this thesis, as is the preclusion of personality trait measures. Unfortunately, it was beyond the scope of this thesis to include such useful measures.

Recommendations for future research

In light of the findings described above, recommendations for future research are discussed in relation to the following areas of research and practice: 1) conceptualisations and operationalisations of flourishing, and their subsequent impact

on epidemiology; 2) intervention research; 3) public health policy; and, 4) organisational and occupational health policy.

Conceptualisations and operationalisations of flourishing, and their impact on epidemiology

This thesis has provided the first epidemiological evidence on flourishing among New Zealand adults, making a start on the accumulation of evidence to guide and inform policy. This is only the first step, however, and rigorous longitudinal studies evaluating the beneficial outcomes of wellbeing and flourishing are now required.

The psychometrics of flourishing is in its infancy, and epidemiological research employing different operational definitions is limiting the usefulness of the evidence. Researchers and practitioners must think carefully in selecting their assessment tools, ensuring they are supported by evidence of the scale's reliability and validity for use with their target population, and that they employ identical thresholds for categorical endorsement if they are wishing to make cross-study comparisons. Until an identical measurement approach is adopted across countries, the possibility that observed national differences are a reflection of methodological differences cannot be ruled out. Policy-makers, human resource management, and researchers stand to benefit significantly from the rationalisation and standardisation of measurement tools. This will take time, but it must be recognised as a pressing need enabling accurate and useful epidemiological research to be conducted in the future. In the meantime, further psychometric validation research must continue, testing the reliability, validity and utility of the tools featured here among new populations and sub-groups.

While there is substantially more psychometric research supporting the utility, reliability and validity of the MHC-SF (Keyes, 2005) over the three other operationalisations of flourishing, further psychometric evaluation of the FS in this thesis does indicate it to be a valid and reliable, brief summary measure suitable for use among different demographic groups, particularly when combined with a measure of affect (such as the SPANE, see Diener et al. 2010) and life satisfaction (for Satisfaction With Life Scale 5-point scale norms see Kobau et al. 2010). For this reason I recommend its use, particularly in workplaces where the newly published population norms provide useful benchmarks for comparison. Similarly, these studies found Huppert and So's operationalisation useful for measuring population and employee wellbeing in New

Zealand. Used annually, these measures will provide practical information for policy-makers tracking wellbeing over time, and their continued use will allow for the accumulation of more psychometric evidence.

Although categorical diagnoses of flourishing are useful, I also stress the importance of measuring the various components of wellbeing separately, as this provides rich data for informing policy decisions both at the national and organisational level.

Furthermore, the psychometric measurement of wellbeing will be greatly assisted by a concerted effort on behalf of all stakeholders to stop muddling up terminology. For example, in Quality of Life Therapy Coaching, Frisch argues emotional control skills are essential to "goal striving, and to basic happiness, wellbeing, or positive mental health" (Frisch, 2013, p.218), when he has previously stated positive affect, negative affect and satisfaction with life as target outcomes of his therapy. Using these distinct constructs interchangeably places severe limitations on the reliability of the field's findings. Researchers must explicitly state which measure they are using for specific outcome variables, and provide theoretical evidence to support their choice.

As a final note concerning conceptualisation of wellbeing, I wish to draw researchers attention to the finding that wellbeing is a prototypically organised construct, meaning that it may be conceptualised differently across time, cultures and different population groups. Based on findings from the prototype analysis of wellbeing, researchers and practitioners should take note of the relative importance workers place on balance/work-life balance, good physical health, and feeling valued, in their conceptualisation of wellbeing, and include them in part of any overall assessment of employee wellbeing. More research using the prototype methodology now needs to be conducted among other populations expanding the external validity of these findings, and enabling cross-cultural comparisons. Prototype analyses of flourishing, ideally cross-culturally, are another useful line of enquiry for future research.

Intervention research

To maximise the potential of PPIs for population wellbeing promotion, expanded reporting on effectiveness trials is urgently required. The RE-AIM website (see: www.re-

aim.org) offers extensive practice-friendly resources for researchers and delivery agents encouraging them to design, implement and test interventions with real world dissemination in mind. Using RE-AIM will help interested parties plan and select samples, interventions, settings, and agents in ways that make it more likely that results will be replicated in later studies (Glasgow et al., 2003). If not RE-AIM, then the American Psychological Association's Journal Article Reporting Standards (JARS; APA Publications and Communications Board, 2008). Specifically, future research needs to report participation rates and costs, and expand reporting on the representativeness of study samples, intervention location, those delivering the intervention, their expertise, intervention type/intensity, fidelity to protocol, and run longer trials investigating maintenance. Information on external validity of worksite wellbeing promotion research is urgently required to empirically establish PPIs' real world reach, acceptability, and sustainability, and inform effective translation of evidence to practice. The accumulation of this evidence is a vital prerequisite of population flourishing.

The current reliance upon specialist agents for programme delivery is also placing major limitations on the potential reach and sustainability of positive psychology programmes in organisational settings. In light of this finding, this thesis recommends two future developments to assist the large-scale translation of research to practice. Firstly, the continued use of Internet delivery, which several studies included in this review indicate to be a promising platform for PPI dissemination, is recommended. Secondly, researchers and practitioners need to harness the potential of the train-the-trainer model of programme delivery. Already used for the widespread dissemination of the Comprehensive Fitness Programme throughout the US Army (Reivich, Seligman, & McBride, 2011), training internal delivery agents to disseminate programmes independent of researcher-input is likely to boost fidelity to protocol and could potentially represent a more cost-effective and sustainable delivery model for population wellbeing promotion. Academia and qualified practitioners may be well placed to assist in the development and dissemination of evidence-based professional development programmes aimed at training human resource management and occupational health. Personal experience as a practitioner operating in a range of organisations indicates that having internal champions to instigate, implement, and maintain wellbeing programmes is an essential part of their continued success, and vital

for overcoming the major challenges of recruiting and retaining participants. Only when the above changes are achieved, and additional evidence accrued, can the widespread implementation of previously validated programmes hope to become a reality.

Public health

Despite the accumulation of a growing body of evidence showing that high levels of wellbeing are associated with individual and societal benefits, public health policy, programmes, funding, and assessments continue to be oriented towards the alleviation of illness, impairment, and recovery. Public health is lagging behind evidence demonstrating that wellbeing is more than the absence of illness.

Both the WHO and the Mental Health Commission of New Zealand advocate for population wellbeing promotion, however, their pathological stance remains entrenched. For instance, the extent of the WHO's current recommendation for implementing strategies for promotion and protection of mental health is for mass media campaigns against discrimination and programmes targeting vulnerable groups such as children exposed to adverse life events. While I in no way want to diminish the critical importance of these initiatives, they clearly illustrate the deficit nature of the WHO's current approach to mental health promotion (Mental Health Action Plan, WHO). While it is not possible to get a financial breakdown of funds targeting pathology in New Zealand, versus those specifically targeting wellbeing promotion (B. Croxson, Ministry of Heatlh, personal communication, 28th August 2015), New Zealand's mental health policy also remains focused on those at high risk or with severe needs, rather than population wellbeing promotion. For example, the only wellbeing indicator currently employed in New Zealand's mental health strategy is the proportion of people aged 15 years and over who reported that they were 'very satisfied' or 'satisfied' with their life as a whole (Mental Health Commission, 2012). The same is true of the Organisation for Economic Co-operation and Development's (OECD) Better Life Index (2014), which measures life satisfaction with a single item. Given the widely acknowledged insufficiency of a one-item life satisfaction measure to assess the multidimensional construct of wellbeing, this thesis urges for the inclusion of measures

that accurately depict the multidimensional nature of wellbeing to be used in future national evaluations.

There is no doubting that New Zealand's mental health policy has made substantial advances since the first Blueprint (1998) with an initial focus on providing services for the 3% of people most seriously affected by mental health and addiction issues. With its "mental health and wellbeing is everyone's business" message Blueprint II, New Zealand's current mental health policy, is showing preliminary signs of translating evidence to practice, but it does not go far enough. While I acknowledge competing priorities from other issues impacting on population and individual wellbeing (such as income, housing, education and employment), and that health budgets are already stretched, a growing body of evidence suggests that mental health (just like physical health) is best increased at the population level rather than through costly individual treatment plans (Huppert, 2009; Keyes, 2007a; Keyes et al., 2010; Rose, 2008). The time for policy makers to catch up with the evidence, and view and deliver public and occupational health as a complete state (with equal attention and funding given to wellbeing as ill-being) is long over-due.

Governments across the developed world will benefit from creating health care/health and productivity management delivery systems in which wellbeing assessments and interventions are given parity. Some countries are on their way to doing so. In the UK, for example, the promotion of population wellbeing has been part of the policy agenda since the publication of the government's ground-breaking *No Health Without Mental Health* strategy (Department of Health, 2011). The UK Mental Health Commission has identified five big shifts in policy and practice for England: making the 'pursuit of happiness' a clear and measureable government goal; the dissemination of a National Wellbeing Programme run by local Health and Wellbeing Boards; parity of care and funding between physical and mental illness over the next decade; and making workplaces mental health friendly (CentreForum, 2014). According to CentreForum's chair, Paul Burstow, "the cost of doing nothing, or simply settling for gradual change, runs to billions of pounds, but the real cost is measured in human misery, misery for want of a determination to act on the evidence" (2014, p. 8).

Here in New Zealand, the Mental Health Foundation has been proactive about adopting a positive approach to wellbeing and continues to advocate for population wellbeing promotion (Norriss, 2015). Initiatives such as the Mental Health Foundation's *All Right?* campaign, *The Wellbeing Game,* and the *Five Ways to Wellbeing,* have demonstrated that public health awareness campaigns can have a significant effect on wellbeing. For example, 64% of Christchurch residents agreed or strongly agreed that the *All Right?* campaign gave them ideas of things to do to help their wellbeing and that 82% of participants valued information campaigns suggesting wellbeing activities (C. Fox, Mental Health Foundation of New Zealand, personal communication, 19th August 2015). Future studies are now required to test the external validity of such campaigns outside of Christchurch, to help the Mental Health Foundation build a case for population wellbeing promotion.

Occupational and organisational health

Occupational health has a significant role to play in the future promotion of population wellbeing in New Zealand. Yet, while substantial anecdotal evidence points to a growing level of interest in understanding, promoting and measuring wellbeing in organisational contexts, "almost universally the emphasis on mental health at work is as a liability to be reduced rather than a positive resource to be realised, so that mental health becomes a reactive responsibility in the occupational health and safety realm, rather than a positive resource to protect and build" (Norriss, 2015, p. 2). A 'do no harm' attitude persists in New Zealand, illustrated by the Business Leaders' Health and Safety Forum (a forum of over 100 chief executive officers or managing directors of significant New Zealand companies) whose continued deficit approach to health and safety is demonstrated by their stated vision of achieving Zero Harm Workplaces.

As with public health, a substantial gap exists between research and real world practice, with occupational health failing to translate epidemiological and other research into simple, consistent and business-friendly actions to improve job quality and employee wellbeing.

Research in this thesis highlights the importance and value of promoting and protecting wellbeing to all stakeholders involved in occupational health decision-making. But, in

light of the above comments, it is hoped that by demonstrating the reliability and validity of psychometric tools, providing population norms for different demographic groups, and reporting determinants of employee flourishing, these studies will provide the tools to bridge that gap effectively, and greater confidence to devise comprehensive and holistic wellbeing progammes resulting in measureable and sustainable benefits. Doing so enables the promotion of population wellbeing independent of public, or individual, funding. While this requires organisations to bear the financial burden, international research suggests they stand to see a return on their investment in terms of enhanced productivity and cost reduction (Jeffrey et al., 2014).

Looking beyond occupational health, and expanding the recommendations to include other organisations, recent developments concerning wellbeing promotion within New Zealand schools are particularly worth noting. In the course of writing this thesis, the Ministry of Education has commissioned the Education Review Office (ERO) to devise and test new wellbeing indicators for dissemination in all state-owned primary and secondary schools in New Zealand (Education Review Office, 2015). Intended as a tool to help schools improve and respond to student wellbeing, the draft indicators represent a major advancement in the population promotion of wellbeing. However proactive individual organisations are in promoting employee wellbeing, the benefits of focusing on, promoting, and assessing wellbeing within the public school system is likely to achieve a substantially greater impact than any government or private wellbeing initiative to date. It is also noteworthy that this puts New Zealand at the front of international trends, given that we are one of the first countries to make wellbeing promotion and assessment part of national education policy (International Positive Education Network, personal communication, 20th August 2015). Universal wellbeing education, in New Zealand, at least is set to become a reality.

There's no doubt, from a policy-maker's perspective, occupational and organisational wellbeing promotion represents several advantages including cost reductions, the potential for widespread (in the case of schools, universal) dissemination and long-term sustainability. For meaningful shift in the nation's mental health to become a reality, public health, occupational and organisational health researchers and practitioners need to transition from their current pathological stance to one giving parity to promoting wellbeing and reducing ill-being across policy, funding and practice.

Conclusion

In the face of the substantial personal and societal costs associated with sub-optimal wellbeing and evidence indicating that the promotion of population wellbeing may be a more effective way to reduce mental illness than individual or targeted approaches, this research urges public health, organisational health, and occupational health to embrace the measurement and promotion of wellbeing as a complementary strategy to the treatment and prevention of ill-being. The studies making up this doctoral thesis pave the way for such a transition by advancing the understanding of how wellbeing is conceptualised and operationalised, adding to the reliability and validity evidence of existing psychometric wellbeing measures, identifying current limitations in the reach and reporting of interventions aimed at promoting wellbeing, and demonstrating the practical utility of epidemiological research on flourishing. Armed with these new insights, tools and evidence, it is my ultimate hope that these studies act as a bridge between empirical research and real world practice, providing the will and the way to finally make a positive impact on population health.

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Appendix A.   AUTEC approval for the Sovereign Wellbeing Index

MEMORANDUM
Auckland University of Technology Ethics Committee (AUTEC)

To: Grant Schofield
From: Rosemary Godbold, Executive Secretary, AUTEC
Date: 23 August 2012
Subject: Ethics Application Number **12/201 Sovereign Wellbeing Index**

Dear Grant

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 13 August 2012 and I have approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement by AUTEC at its meeting on 10 September 2012.

Your ethics application is approved for a period of three years until 23 August 2015.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through http://www.aut.ac.nz/research/research-ethics/ethics. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 23 August 2015;

- A brief report on the status of the project using form EA3, which is available online through http://www.aut.ac.nz/research/research-ethics/ethics. This report is to be submitted either when the approval expires on 23 August 2015 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all written and verbal correspondence with us. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at ethics@aut.ac.nz or by telephone on 921 9999 at extension 6902. Alternatively you may contact your AUTEC Faculty Representative (a list with contact details may be found in the Ethics Knowledge Base at http://www.aut.ac.nz/research/research-ethics/ethics).

On behalf of AUTEC and myself, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Dr Rosemary Godbold
Executive Secretary
Auckland University of Technology Ethics Committee

Cc: Julia McPhee

Appendix B.   AUTEC approval for Prototype analysis of wellbeing study (Chapter 3)

AUT UNIVERSITY | AUTEC SECRETARIAT

5 May 2015

Grant Schofield
Faculty of Health and Environmental Sciences

Dear Grant

Re Ethics Application: 15/74 NZ workers' perspectives on wellbeing: Varieties of wellbeing experience in workplace setting.

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 5 May 2018.

As part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through http://www.aut.ac.nz/researchethics. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 5 May 2018;
- A brief report on the status of the project using form EA3, which is available online through http://www.aut.ac.nz/researchethics. This report is to be submitted either when the approval expires on 5 May 2018 or on completion of the project.

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to obtain this. If your research is undertaken within a jurisdiction outside New Zealand, you will need to make the arrangements necessary to meet the legal and ethical requirements that apply there.

To enable us to provide you with efficient service, please use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at ethics@aut.ac.nz.

All the very best with your research,

Kate O'Connor
Executive Secretary
Auckland University of Technology Ethics Committee

Cc: Luch Hone lucyhone@xtra.co.nz

Appendix C. SWI indicator items for each operationalisation of flourishing (Chapter 2)

Components of flourishing, original indicator items according to each operationalisation, selected SWI indicator items, thresholds and threshold frequencies

Operationalisation	Construct	Original Indicator Item	Selected SWI Indicator Item	Thresholds: Participant categorised as endorsing this feature if SWI score =	% of SWI sample above this threshold
Keyes	Positive affect	During past month, how often did you feel happy? (1-6; never to every day)	During past week, how much of the time did you feel happy? (0-3; none/almost none-all/almost all of the time)	≥ 2	68%
	Positive affect	During past month, how often did you feel interested in life? (1-6; never to every day)	How much of the time would you generally say you are interested in what you are doing? (0-10; none of the time-all of the time)	≥ 8	40%
	Life satisfaction	During past month, how often did you feel satisfied with life? (1-6; never to every day)	How satisfied are you with your life as a whole nowadays? (0-10; extremely dissatisfied-extremely satisfied)	≥ 8	39%
	Social contribution	During past month, how often did you feel you had something important to contribute to society? (1-6; never to every day)	I generally feel that what I do in my life is valuable and worthwhile (1-5; strongly disagree-strongly agree)	≥ 4	71%
	Social integration	During past month, how often did you feel you belonged to a community? (1-6; never to every day)	I feel close to the people in my local area (1-5; strongly disagree-strongly agree)	≥ 4	25%
	Social growth	During past month, how often did you feel our society is a good place, or is becoming a better place, for all people? (1-6; never to every day)	For most people in NZ life is getting worse rather than better REV (1-5; strongly disagree-strongly agree)	≥ 3	51%
	Social acceptance	During past month, how often did you feel that people are basically good? (1-6; never to every day)	Generally speaking, most people can be trusted, or you can't be too careful (0-10; can't be too careful/most people can be trusted)	≥ 8	14%
	Social coherence	During past month, how often did you feel the way our society works makes sense to you? (1-6; never to every day)	n/a	n/a	n/a
	Self-acceptance	During past month, how often did you feel you liked most parts of your personality? (1-6; never to every day)	In general, I feel very positive about myself (1-5; strongly disagree-strongly agree)	≥ 4	67%

Components of flourishing, original indicator items according to each operationalisation, selected SWI indicator items, thresholds and threshold frequencies

Operationalisation	Construct	Original Indicator Item	Selected SWI Indicator Item	Thresholds: Participant categorised as endorsing this feature if SWI score =	% of SWI sample above this threshold
	Environmental mastery	During past month, how often did you feel good at managing the responsibilities of your daily life? (1-6; never to every day)	How difficult or easy do you find it to deal with important problems that come up in your life? (0-10; extremely difficult-extremely easy)	≥ 6	62%
	Positive relationships	During past month, how often did you feel you had had warm and trusting relationships with others? (1-6; never to every day)	How often do you meet socially with friends, relatives or work colleagues? (1-7; never-every day)	≥ 6	30%
	Personal growth	During past month, how often did you feel you had experiences to grow and become and a better person? (1-6; never to every day)	To what extent do you learn new things in your life? (0-6; not at all-a great deal)	≥ 5	44%
	Autonomy	During past month, how often did you feel confident to think/express your own ideas and opinions? (1-6; never to every day)	I am free to decide for myself how to live my life (1-5; strongly disagree-strongly agree)	≥ 4	70%
	Purpose in life	During past month, how often did you feel your life has a sense of direction? (1-6; never to every day)	To what extent do you feel you have a sense of direction in your life? (0-10; not at all-completely)	≥ 8	35%
Huppert & So	Competence	Most days I feel a sense of accomplishment from what I do (1-5; strongly agree-strongly disagree)	Most days I feel a sense of accomplishment from what I do (1-5; strongly disagree-strongly agree)	≥ 4	58%
	Emotional stability	In the past week, I felt calm and peaceful (1-4; none or almost none of the time-all or almost all of the time)	In the past week, I felt calm and peaceful (1-4; none or almost none of the time-all or almost all of the time)	≥ 2	88%
	Engagement	I love learning new things (1-5; strongly agree-strongly disagree)	To what extent do you learn new things in your life? (0-6; not at all-a great deal)	≥ 5	44%
	Meaning	I generally feel that what I do in my life is valuable and Worthwhile (1-5; strongly agree-strongly disagree)	I generally feel that what I do in my life is valuable and worthwhile (1-5; strongly disagree-strongly agree)	≥ 4	71%
	Optimism	I am always optimistic about my future (1-5; strongly agree-strongly disagree)	I am always optimistic about my future (1-5; strongly disagree-strongly agree)	≥ 4	62%

Components of flourishing, original indicator items according to each operationalisation, selected SWI indicator items, thresholds and threshold frequencies

Operationalisation	Construct	Original Indicator Item	Selected SWI Indicator Item	Thresholds: Participant categorised as endorsing this feature if SWI score =	% of SWI sample above this threshold
	Positive emotion	Taking all things together, how happy would you say you are? (0-10; extremely unhappy-extremely happy)	Taking all things together, how happy would you say you are? (0-10; extremely unhappy-extremely happy)	≥ 8	41%
	Positive relationships	There are people in my life who really care about me (1-5; strongly agree-strongly disagree)	To what extent do you receive help and support from people you are close to when you need it? (0-6;not at all- completely)	≥ 4	68%
	Resilience	When things go wrong in my life it generally takes me a long time to get back to normal (1-5; strongly agree-strongly disagree)	When things go wrong in my life it generally takes me a long time to get back to normal (1-5; strongly disagree-strongly agree) REV	≥ 4	45%
	Self-esteem	In general, I feel very positive about myself (1-5; strongly agree to strongly disagree) REV	In general, I feel very positive about myself (1-5; strongly disagree-strongly agree)	≥ 4	67%
	Vitality	In the past week, I had a lot of energy (1-4;none or almost none of the time-all or almost all of the time)	During the past week, you had a lot of energy? (1-4; none or almost none of the time-all or almost all)	≥ 3	39%
Diener et al.	Flourishing	I lead a purposeful and meaningful life (1-7; strongly disagree-strongly agree)	I lead a purposeful and meaningful life (1-7; strongly disagree-strongly agree)		
	Flourishing	My social relationships are supportive and rewarding (1-7; strongly disagree-strongly agree)	My social relationships are supportive and rewarding (1-7; strongly disagree-strongly agree)		
	Flourishing	I am engaged and interested in my daily activities (1-7; strongly disagree-strongly agree)	I am engaged and interested in my daily activities (1-7; strongly disagree-strongly agree)		
	Flourishing	I am competent and capable in the activities that are important to me (1-7; strongly disagree-strongly agree)	I am competent and capable in the activities that are important to me (1-7; strongly disagree-strongly agree)		
	Flourishing	I am a good person and live a good life (1-7; strongly disagree-strongly agree)	I am a good person and live a good life (1-7; strongly disagree-strongly agree)		
	Flourishing	I am optimistic about my future (1-7; strongly disagree-strongly agree)	I am optimistic about my future (1-7; strongly disagree-strongly agree)		

Components of flourishing, original indicator items according to each operationalisation, selected SWI indicator items, thresholds and threshold frequencies

Operationalisation	Construct	Original Indicator Item	Selected SWI Indicator Item	Thresholds: Participant categorised as endorsing this feature if SWI score =	% of SWI sample above this threshold
Diener et al.cont.	Flourishing	People respect me (1-7; strongly disagree-strongly agree)	People respect me (1-7; strongly disagree-strongly agree)		
Seligman et al.	Positive emotion	In general, how often do you feel joyful? (0-10; never-always)	How much of the time (past week) did you enjoy life? (0-3; none/almost none of the time-all/almost all) REV	≥ 2	67%
	Positive emotion	In general, how often do you feel positive? (0-10; never-always)	How much of the time (past week) were you happy? (0-3; none/almost none of the time-all/almost all)	≥ 2	68%
	Positive emotion	In general, to what extent do you feel contented? (0-10; not at all-completely)	How much of the time (past week) were you calm/peaceful? (1-4; none/almost none of the time-all/almost all)	≥ 2	88%
	Positive emotion	In general, to what extent do you feel excited (0-10; not at all-completely)			
	Engagement	How often do you become absorbed in what you are doing? (0-10; never-always)	How much of time are you absorbed in what you're doing? (0-10; none of the time/all of the time)	≥ 8	34%
	Engagement	In general, to what extent do you feel excited and interested in things? (0-10; not at all-completely)	How much of time are you interested in what you're doing? (0-10; none of the time/all of the time)	≥ 8	34%
	Engagement	How often do you lose track of time while doing something you enjoy? (0-10; never-always)	How much of time are you enthusiastic about what you're doing? (0-10; none of the time/all of the time)	≥ 8	40%
	Relationships	To what extent do you receive help and support from others when you need it? (0-10; not at all-completely)	To what extent do you receive help and support from others when you need it? (0-6; not at all-completely)	≥ 4	68%
	Relationships	To what extent have you been feeling loved? (0-10; not at all-completely)	To what extent do you give help and support to others when you need it? (0-6; not at all-completely)	≥ 3	96%
	Relationships	How satisfied are you with your personal relationships? (0-10; not at all-completely)	How many people are there with whom you can discuss intimate and personal matters? (1-7; none-10 or more)	≥ 3	72%
	Meaning in life	In general, to what extent do you lead a purposeful and meaningful life? (0-10; not at all-completely)	I lead a purposeful and meaningful life (1-7; strongly disagree-strongly agree)	≥ 6	54%
	Meaning in life	In general, to what extent do you feel that what you do in your life is valuable and worthwhile? (0-10; not at all-completely)	I generally feel that what I do in my life is valuable and worthwhile (1-5; strongly disagree-strongly agree)	≥ 4	71%
	Meaning in life	To what extent do you generally feel you have a sense of	To what extent do you feel that you have a sense of	≥ 8	35%

Domain				
	direction in your life? (0-10; not at all-completely)	direction in your life? (0-10; not at all-completely)		
Accomplishment	How much of the time do you feel you are making progress towards accomplishing your goals? (0-10; never-always)	Most days I feel a sense of accomplishment from what I do (1-5; strongly disagree-strongly agree)	≥ 4	58%
Accomplishment	How often do you achieve the important goals you have set for yourself? (0-10; never-always)	In my daily life I get very little chance to show how capable I am (1-5; strongly disagree-strongly agree) REV	≥ 4	36%
Accomplishment	How often are you able to handle your responsibilities? (0-10; never-always)	There are lots of things I feel I am good at (1-5; strongly disagree-strongly agree)	≥ 4	78%

n/a = not applicable
REV = reverse scored variable

Appendix D. Raw data from the prototype analysis of wellbeing (Chapter 3)

Linguistic unit	Endorsement (*n*)	Component category allocated to
Happiness	50	**Being happy**
Laughter	12	x
Enjoyment	12	**Experiencing enjoyment**
Fun	2	x
Healthy	35	**Good physical health**
Contentment	19	**Contentment**
Physical fitness	14	x
Physical activity/regular exercise	16	x
Good humour	6	x
Interests/hobbies/recreation	6	x
Good sleep	25	x
Work-life balance	28	**Balance/work-life balance**
Faith in higher being	1	**Faith/spirituality**
Spirituality	11	**Faith/spirituality**
Healthy eating/balanced diet	12	x
sense of balance	12	**Balance/work-life balance**

Enthusiasm	3	x
Energetic	7	Feeling energetic/a sense of vitality
Vitality	5	Feeling energetic/a sense of vitality
Good emotional health	8	Being happy
Physical wellbeing	11	Good physical health
Good physical health	28	Good physical health
Mental	6	Good mental health
Good mental health	16	Good mental health
Being listened to	1	x
Having time to listen to others	1	x
Prioritising family over work	1	x
Dedicating time to family and friends	2	x
Family and friends	4	Good relationships
Companionship with colleagues	3	Good relationships
Having social groups (out of work)	1	Good relationships
Socialising with colleagues	1	x
Family relationships	8	Good relationships
Positive/good relationships	37	Good relationships

Family	16	**Good relationships**
Good relationships with work colleagues	9	**Good relationships**
community	2	**Community**
Community belonging	2	**Community**
Community participation	2	x
Social	6	**Good relationships**
Social activities	1	x
Socially active	5	x
Socially supported	8	**Good relationships**
Social contribution	4	x
Socially supportive	6	x
Supportive work mates	4	**Good relationships**
Church	1	x
Friends	9	**Good relationships**
Sense of belonging	5	**Community**
Sense of purpose	5	**Sense of purpose/meaning**
Meaning	3	**Sense of purpose/meaning**
Support for personal growth	1	x

Continued learning	9		x
Feeling valued	14		**Feeling valued**
Sense of/feeling calm	15		**Sense of/feeling calm**
Being able to relax	1		x
Feeling relaxed	9		**Sense of/feeling calm**
Relaxation/recovery time	9		x
Engaged/engagement	14		**Engaged/engagement**
Being respected	6		**Being respected**
Respectful	4		x
Appreciation/gratitude/feeling blessed	5		**Gratitude**
Mindfulness/being present minded	4		**Mindfulness**
Fulfilled/fulfillment	6		**Contentment**
Self confidence	5		**self confidence/self esteem**
Personal satisfaction	9		**Personal satisfaction**
Patience	4		x
Tolerance	2		x
Self-esteem	4		**self confidence/self esteem**
Optimism	4		**Optimism**

Item	Count	Grouping
Autonomy	5	**Autonomy**
Accomplishments/achievements	4	**Accomplishments/achievements**
Effective functioning (physical)	7	x
Resilience	8	**Being resilient**
Coping strategies	3	x
Lack of/low stress	10	**Manageable/low stress**
Manageable stress	4	**Manageable/low stress**
Coping with stress	9	**Being resilient**
Low stress	2	**Manageable/low stress**
Manageable challenge	2	x
Coping well with life	9	**Being resilient**
Physical security	2	**Physical security**
Financial security	8	**Financial security**
Feeling secure/having security	3	x
Being able to focus on what's really important	1	x
Being able to separate stressors (home, work, personal)	1	x
Control over thoughts/feelings/behavoiurs	1	x
Emotional clarity	1	**Good mental health**

Mental stability	6	**Good mental health**
Positivity	2	**A positive attitude**
Positive thinking	1	**A positive attitude**
Positive frame of mind	3	**A positive attitude**
Positive outlook	3	**A positive attitude**
Clear thinking	5	**Good mental health**
positive attitude	5	**A positive attitude**
Mental strength	1	**Being resilient**
Emotional strength	1	**Being resilient**
Psychological wellbeing	3	**Good mental health**
Having sufficient time	5	x
Time for reflection	3	x
Doing things you enjoy	5	x
Not rushing	1	x
Time away from work	2	x
Feeling in control	3	**Being resilient**
Support for new ideas	2	x
Positive environment	3	x

Item	Value	Outcome
Healthy body weight	5	x
Illness free	4	x
No addictions	2	x
Physical strength	2	x
CV health	1	x
Concentration of adrenalin in blood	1	x
Heartrate	3	x
Anxiety state	1	x
Motivated	1	x
Being in a state of peace	2	**Sense of/feeling calm**
Basic human needs satisfied	3	x
Being engaged in change in the workplace	1	x
Supportive management	4	x
Being paid well	1	**Financial security**
Job satisfaction	3	**Enjoying work**
Positive work environment	3	**Enjoying work**
Enjoying work	7	**Enjoying work**
Health & safety in the workplace	3	x

Item	Number	Category
Job security	1	x
fulfilling work	1	**Enjoying work**
Fair treatment	3	x
Stimulating work	2	**Enjoying work**
Clear understanding of expectations	1	x
Control over workload	2	x
Work-life separation	4	**Balance/work-life balance**
Happy to go to work in the morning	6	x
Balance at work	1	**Balance/work-life balance**
Manageable/regulated workflow	2	x
Secure	1	x
Support at work	4	x
Setting and achieving goals	3	x
Holidays/travel	3	x
Smiling	2	x
Communicative/able to communicate well	2	x
Believing in your values	2	x
Self worth	2	**self confidence/self esteem**

Empathy	2	x
Curiosity	2	x
Sense of empowerment	2	x
Trust	2	x
Self reflection	1	x
Observant/awareness of surroundings	2	x
Awareness	2	x
Productivity	2	x
Keeping things in perspective	2	x
Wanting to get out of bed in the morning/waking up feeling it will be a good day	2	
Giving to others	1	x
Sympathy	1	x
Identity	1	x
Injury free	1	x
Healthy digestive system	1	x
Medication free	1	x
Emotional control	1	x

Self-belief	2	self confidence/self esteem
Pets	1	x
Moderation in some things	1	x
Clear skin	1	x
Personal self care	3	x
Openness	1	x
Inclusiveness	1	x
Organised	1	x
Excitement	1	x
Cheerful	1	**Being happy**
Generosity	1	x
Kindness	1	x
Positive emotions	1	**Being happy**
Sound house	1	x
Participation	1	x
Forgiveness	1	x
Pursuing activities that give a sense of peace	1	x
Feeling restful	1	**Sense of/feeling calm & relaxed**

Healthy lifestyle	1	x
Holding things lightly	1	x
Control	1	x
Lifestyle	1	x
Leisuretime	1	x
Entertainment	1	x
Having "toys"	1	x
Sex	1	x
Cashflow	1	x
Income	1	**Financial security**
Home life in order	1	x
Things to look forward to	1	x
Loyalty	1	x
Good wine	1	x
Good shoes	1	x
Comfortable bed	1	x
Good weather	1	x
Breathing long breaths/breathing easy	2	x

State of being	1	x
Managing metal illness	1	x
Self acceptance	1	x
Acceptance	1	x
Managing self/others expectations	1	x
Personal space	1	x
The ability to sit happily with oneself	1	**Contentment**
Not warming up on caffeine and cooling down on wine	1	x
Doing one's best	1	x
Able to give/take feedback	1	x
Lack of complaining peers	2	x
Value	1	x
Being centre of my circles of influence	1	x
Mentally & physically adapted to your environment - in harmony	1	x
Endurance	1	x
Outward signs of peace	1	x
BP	4	x

	1	x
Happy in the company of others	1	x
Positive connections	1	**Good relationships**
Appropriate interactions with family and friends	1	x
Able to practice religion if they choose	1	x
Not sick	1	x
Feedback from employer	1	x
Praise from employer	1	x
The energy to care	1	**Feeling energetic/a sense of vitality**
Physically challenged but not burdened	1	x
Time to laugh, eat, smile	1	x
Retirement plan	1	x
Thriving not just surviving	1	x
Cardio	1	x
Flexibility	1	x
Positive feedback	1	x
Plenty of water	1	x
Cholesterol	1	x
Care	1	x

Being recognised for doing a good job	1	x	
Other people enjoying spending time with you	1	x	
Component categories shown in bold	947		

Appendix E.   Reproduction of all measures (Chapter 4)

<u>The Flourishing Scale:</u>

Below are eight statements with which you may agree or disagree. Using the 1–7 scale below, indicate your agreement with each item by indicating that response for each statement.

> 7. Strongly agree
> 6. Agree
> 5. Slightly agree
> 4. Mixed or neither agree nor disagree
> 3. Slightly disagree
> 2. Disagree
> 1. Strongly disagree

- 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 well-being 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

Scoring: Add the responses, varying from 1 to 7, for all eight items. The possible range of scores is from 8 (lowest possible) to 56 (highest possible). A high score represents a person with many psychological resources and strengths.

Permission for Using the Scales: Although copyrighted, the SPANE and Flourishing Scale may be used as long as proper credit is given. Permission is not needed to employ the scales and requests to use the scales will not be answered on an individual basis because permission is granted here. This article should be used as the citation for the scales, and this note provides evidence that permission to use the scales is granted. Copyright by Ed Diener and Robert Biswas-Diener, January 2009.

<u>Life Satisfaction</u>
All things considered, how satisfied are you with your life as a whole nowadays?

> 0 – Extremely Dissatisfied
> 1
> 2
> 3
> 4
> 5
> 6
> 7
> 8
> 9

10 – Extremely Satisfied

Happiness

Taking all things together, how happy would you say you are?

    0 – Extremely unhappy
    1
    2
    3
    4
    5
    6
    7
    8
    9
    10 – Extremely happy

Centre for Epidemiological Studies Depression Scale, ESS 8 Item Version

Please indicate, how much of the time during the past week…

    3. All or almost all of the time
    2. Most of the time
    1. Some of the time
    0. None or almost none of the time

- …you felt depressed?
- …you felt that everything you did was an effort?
- …your sleep was restless?
- …you were happy?
- …you felt lonely?
- …you enjoyed life?
- …you felt sad?
- …you could not get going?

Appendix F. Components of flourishing, original ESS indicator item and corresponding SWI indicators (Chapter 5)

Components of flourishing, original ESS indicator item and corresponding SWI indicator items, thresholds and threshold frequencies

Component	Original ESS Indicator Item	Selected SWI Indicator Item	Threshold	% of SWI workers above this threshold and categorised as endorsing this feature of flourishing
Competence	Most days I feel a sense of accomplishment from what I do (1-5; strongly agree-strongly disagree)	Most days I feel a sense of accomplishment from what I do (1-5; strongly disagree-strongly agree)	≥ 4	62%
Emotional stability	In the past week, I felt calm and peaceful (1-4; none or almost none of the time-all or almost all of the time)	In the past week, I felt calm and peaceful (1-4; none or almost none of the time-all or almost all of the time)	≥ 2	90%
Engagement	I love learning new things (1-5; strongly agree-strongly disagree)	How much of the time would you generally say you are absorbed in what you are doing? (0-10; none of the time-all of the time)	≥ 8	32%
Meaning	I generally feel that what I do in my life is valuable and Worthwhile (1-5; strongly agree-strongly disagree)	I generally feel that what I do in my life is valuable and worthwhile (1-5; strongly disagree-strongly agree)	≥ 4	75%
Optimism	I am always optimistic about my future (1-5; strongly agree-strongly disagree)	I am always optimistic about my future (1-5; strongly disagree-strongly agree)	≥ 4	65%
Positive emotion	Taking all things together, how happy would you say you are? (0-10; extremely unhappy-extremely happy)	Taking all things together, how happy would you say you are? (0-10; extremely unhappy-extremely happy)	≥ 8	41%
Positive relationships	There are people in my life who really care about me (1-5; strongly agree-strongly disagree)	To what extent do you receive help and support from people you are close to when you need it? (0-6;not at all-completely)	≥ 4	69%
Resilience	When things go wrong in my life it generally takes me a long time to get back to normal (1-5; strongly agree-strongly disagree)	When things go wrong in my life it generally takes me a long time to get back to normal (1-5; strongly disagree-strongly agree) REV	≥ 4	48%
Self-esteem	In general, I feel very positive about myself (1-5; strongly agree to strongly disagree) REV	In general, I feel very positive about myself (1-5; strongly disagree-strongly agree)	≥ 4	70%
Vitality	In the past week, I had a lot of energy (1-4;none or almost none of the time-all or almost all of the time	During the past week, you had a lot of energy? (1-4; none or almost none of the time-all or almost all)	≥ 3	42%

Appendix G. Checklist for suggested standards of intervention effectiveness research

The following reporting standards are offered to encourage more comprehensive reporting of intervention research.

REACH

Reach concerns the representativeness of samples. Best practice Reach reporting requires authors supply the following information:
1. Methods used to identify <u>and</u> recruit the target population ☐
2. Identification of inclusion criteria ☐
3. Identification of exclusion criteria ☐
4. Sample size and participation rate (number participating/number eligible) ☐
5. Characteristics of both participants and non-participants ☐
6. Motivation for non-participation and drop out ☐

EFFICACY/EFFECTIVENESS

Best practice Efficacy reporting requires authors supply the following information:

1. At least one validated measure of SWB/PWB and results for at least post-test ☐
2. The use of intention-to-treat analysis ☐
3. Negative outcomes ☐
4. The degree of participant attrition from the trial at immediate post-test, and follow-up ☐

ADOPTION

Best practice Adoption reporting requires authors supply the following information:
1. Description of specific intervention location ☐
2. Description of staff delivering the intervention ☐
3. Methods used to identify and recruit delivery agent/s ☐
4. Level of expertise of the delivery agent/s ☐
5. Inclusion/exclusion criteria for participating settings ☐
6. Adoption rate among participating settings ☐
7. The characteristics of adopting/non-adopting settings ☐
8. Motivations for non-participating settings ☐

IMPLEMENTATION

Best practice Implementation reporting requires authors supply the following information:
1. The intervention type and intensity/level of activity ☐
2. Sufficient details of intervention content (via web links/appendices if necessary) enabling replication by non-researchers ☐
3. The extent to which the protocol was delivered as intended ☐
4. Measures of cost of implementing the intervention/programme ☐

MAINTENANCE

Best practice Maintenance reporting requires authors supply the following information:
1. Individual behaviour assessment using at least on validated SWB/PWB measure at least 6 months following completion of intervention ☐
2. Adherence to protocol at 6 month follow-up
3. The current status of the programme ☐
4. Measures of the cost of maintaining the intervention ☐

Appendix H RE-AIM scores Chapter 6

Study	Gander 2012	Frieswijk 2006	Fredrickson 2008	Feicht 2013	Fava 2005	Fava 1998	Emmons 2003 S3	Dubé 2005	Boehm 2011	Abedi 2010	Abbott 2009
Campus-based	0	0	0	0	0	0	1	1	0	0	0
Age (mean)	45	73	41	37	42	28	49	58	36	-	43
Age (SD)	10	6	10	9	12	7	-	3	11	-	10
Females %	95	58	60	69	65	55	68	65	53	100	13
% Participation rate	-	22	11	14	-	-	-	X	X	92	-
Methods to identify & recruit participants	1	1	1	1	1	1	1	1	1	1	1
Inclusion criteria	1	1	1	1	1	1	1	1	1	1	1
Exclusion criteria	0	0	0	1	1	1	0	0	1	1	0
Participation rate	0	1	1	1	0	0	0	X	X	1	0
Characteristics of participants compared to non-participants	0	0	0	0	0	0	0	X	X	0	0
REACH	**40**	**60**	**60**	**80**	**60**	**60**	**40**	**67**	**100**	**80**	**40**
Participants educated to university level or beyond %	55	-	100	-	-	-	42	-	-	-	59
Caucasian participants %	-	-	74	-	-	-	-	-	-	-	-
Post-test outcomes	1	1	1	1	1	1	1	1	1	1	1
Intent-To-Treat analysis	0	0	1	0	0	0	0	0	0	0	1
Negative outcomes	0	1	1	1	1	1	1	0	0	1	0
Attrition rates	1	1	1	1	1	1	0	0	0	1	1
% Attrition rate	74	15	29	31	20	13	-	17	-	18	42
EFFICACY	**50**	**57**	**70**	**57**	**57**	**57**	**50**	**57**	**25**	**57**	**57**
Location	1	1	1	1	1	1	1	0	1	1	1
Description of delivery agent/s	X	X	1	X	1	1	1	1	X	1	1
Method to target delivery agent/s	X	X	0	X	1	1	1	0	X	1	1
Expertise of delivery agent/s	X	X	1	X	1	1	1	1	X	1	1
Inclusion & exclusion criteria for settings	X	X	X	X	X	X	X	X	X	X	X
Adoption rate for settings	X	X	X	X	X	X	X	X	X	X	X
Characteristics of adopting & non-adopting settings	X	X	X	X	X	X	X	X	X	X	X
ADOPTION	**100**	**100**	**75**	**100**	**100**	**100**	**100**	**50**	**100**	**100**	**100**
Type/intensity of intervention	1	1	1	1	1	1	1	1	1	1	1
Adherence to protocol	1	1	1	1	1	1	1	0	0	0	1
Costs	0	0	0	0	0	0	0	0	0	0	0
IMPLEMENTATION	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**33**	**33**	**33**	**67**
Follow up (6 months or more)	1	1	0	0	1	0	0	1	0	0	0
Current intervention/programme status	0	0	0	0	0	0	0	0	0	0	0
Maintenance costs	0	0	0	0	0	0	0	0	0	0	0
MAINTENANCE	**33**	**33**	**0**	**0**	**33**	**0**	**0**	**33**	**0**	**0**	**0**
TOTAL RE-AIM SCORE FOR EACH RCT	**58**	**67**	**60**	**64**	**67**	**60**	**51**	**52**	**52**	**58**	**56**

Study																																			
Giannopoulus 2011	0	33	11	66	X	1	1	0	X	X	**67**	50	-	1	1	0	1	12	**50**	1	0	0	0	X	X	X	X	**25**	1	1	0	**67**	0	0	0	**42**
Grant 2009	0	50	-	93	-	1	1	0	0	0	**40**	-	-	1	1	0	1	18	**75**	1	0	0	0	X	X	X	X	**25**	1	1	0	**67**	0	0	0	**51**
Grant 2010	0	43	-	70	-	1	1	0	0	0	**40**	-	-	1	1	0	1	12	**75**	1	0	1	1	X	X	X	X	**75**	1	1	0	**67**	0	0	0	**51**
Green 2006	-	43	-	75	-	1	1	1	0	0	**40**	-	-	1	1	0	1	11	**75**	1	0	1	1	X	X	X	X	**75**	1	1	0	**33**	1	0	0	**51**
Huffman 2011	0	-	-	-	-	1	1	1	0	0	**60**	-	-	1	1	0	1	13	**75**	1	0	1	1	X	X	X	X	**75**	1	1	0	**67**	0	0	0	**55**
Kremers 2006	0	64	7	100	X	1	1	0	X	X	**40**	-	-	1	1	0	0	16	**50**	1	0	0	0	X	X	X	X	**25**	1	1	0	**33**	0	0	0	**43**
Lapierre 2007	0	57	2	48	X	1	1	0	X	X	**67**	-	-	1	1	0	1	22	**25**	0	1	1	1	X	X	X	X	**75**	1	0	0	**33**	1	1	1	**58**
Luthans 2008	1	32	-	-	-	1	1	0	1	0	**75**	-	-	1	1	0	1	-	**25**	1	1	1	1	X	X	X	X	**50**	1	0	0	**67**	0	0	0	**40**
Millear 2008	0	36	10	-	19	1	1	1	1	0	**80**	-	-	1	1	0	1	29	**75**	1	0	1	1	X	X	X	X	**75**	1	0	0	**67**	1	0	0	**66**
Mitchell 2009	0	37	11	83	-	1	1	1	X	X	**100**	76	-	1	1	1	1	69	**100**	1	1	0	1	X	X	X	X	**100**	1	1	0	**67**	0	0	0	**73**
Mongrain 2011	0	34	12	82	X	1	1	1	X	X	**100**	83	79	1	0	1	1	34	**75**	1	1	1	1	X	X	X	X	**100**	1	1	0	**67**	0	0	0	**75**
Mongrain 2012	0	33	-	83	X	1	1	0	X	X	**67**	64	78	1	0	1	1	76	**75**	1	1	1	1	X	X	X	X	**100**	1	0	0	**33**	1	0	0	**62**
Odou 2011	0	34	14	75	X	1	1	0	X	X	**67**	50	-	1	0	1	1	64	**75**	1	1	1	1	X	X	X	X	**100**	1	0	0	**67**	0	0	0	**62**
Ouweneel 2013	0	46	10	55	X	1	0	0	X	X	**33**	36	-	1	0	0	1	82	**50**	1	1	0	1	X	X	X	X	**100**	1	0	0	**33**	0	0	0	**43**
Page 2013	0	40	10	73	5	1	1	0	1	0	**60**	-	-	1	0	1	1	62	**75**	1	1	1	1	X	X	X	X	**100**	1	1	0	**67**	0	0	0	**67**
Parks 2013	1	-	-	64	-	0	1	0	0	0	**20**	100	68	1	0	1	1	0	**75**	1	1	1	1	X	X	X	X	**100**	1	1	1	**100**	1	0	1	**72**
Pietrowsky 2012	0	44	9	53	53	1	1	1	1	0	**80**	-	-	1	1	1	1	24	**100**	1	0	0	0	X	X	X	X	**25**	1	0	0	**33**	0	0	0	**48**
Powell 2013	0	41	13	78	36	1	1	0	1	0	**60**	-	92	1	1	1	1	50	**100**	1	1	1	1	X	X	X	X	**100**	1	1	0	**67**	0	0	0	**65**

Study																																			
Proyer 2013	1	41	13	59	X	1	1	1	X	X	X	**100**	25	-	1	0	0	1	24	**50**	1	0	0	1	X	X	X	**50**	1	0	0	**33**	0	0	0	**47**
Rodrigue 2005	0	49	11	66	72	1	1	1	1	1	1	**75**	-	74	1	1	1	1	11	**75**	1	1	0	1	X	X	X	**75**	1	1	0	**67**	0	0	0	**68**
Rodrigue 2006	0	49	12	29	80	1	1	0	1	0	0	**60**	-	82	1	1	1	1	4	**100**	1	1	0	1	X	X	X	**75**	1	0	0	**33**	0	0	0	**54**
Rodrigue 2006	0	52	12	54	70	1	1	1	0	1	0	**80**	65	65	1	1	1	1	10	**100**	1	1	0	1	X	X	X	**75**	1	1	0	**67**	0	0	0	**64**
Rodrigue 2011	0	52	12	54	70	1	1	1	0	1	0	**80**	-	65	1	1	1	1	10	**100**	1	1	0	1	X	X	X	**75**	1	1	0	**67**	0	0	0	**64**
Seligman 2006 S2	1	-	-	70	-	1	1	1	0	1	0	**60**	65	55	1	0	1	1	29	**75**	1	1	1	1	X	X	X	**75**	1	1	0	**67**	0	0	0	**60**
Sergeant 2011	0	34	12	81	X	1	1	0	X	X	X	**67**	55	76	1	0	1	1	18	**67**	1	1	1	1	X	X	X	**67**	1	0	0	**33**	0	0	0	**68**
Shapira 2010	0	34	-	81	X	1	1	1	X	X	X	**100**	-	79	1	0	1	1	35	**67**	1	1	1	1	X	X	X	**67**	1	0	0	**33**	0	0	0	**75**
Sheldon 2010	1	34	-	82	-	1	0	0	1	0	0	**20**	-	87	1	1	1	1	4	**67**	1	1	1	1	X	X	X	**67**	1	0	0	**33**	0	0	0	**59**
Spence 2007	0	39	10	75	X	1	0	1	1	X	X	**75**	-	-	1	1	1	1	10	**75**	1	1	0	1	X	X	X	**75**	1	0	0	**67**	0	0	0	**57**
Wing 2006	0	40	16	64	X	1	0	1	X	X	0	**75**	-	-	1	0	1	1	6	**75**	1	0	0	1	X	X	X	**67**	1	0	0	**67**	0	0	0	**58**
Zautra 2008	0	52	13	68	-	1	1	1	1	0	0	**60**	62	87	1	0	1	1	5	**75**	1	1	0	1	X	X	X	**75**	1	1	0	**67**	1	0	0	**62**
TOTAL SCORE	18	43	10	68	43	98	93	45	44	7		**64**	62	78	100	20	78	93	27	**73**	90	88	36	88	X	X	X	**84**	100	70	2.5	**58**	40	2	2.5	**16**	**59**

Appendix I.   Raw data from workers' self-reported pathways to wellbeing (Chapter 7)

Linguistic unit	Endorsed (n)	Pathway category attributed to
Avoid angry/ negative people/ colleagues	6	Surround myself with positive/avoid negative people
Avoid unnecessary conversations	1	Time management
Maintain perspective/ don't sweat small stuff	5	Strategies to reduce stress
Exercise/ sport/ physical activity	147	Physical activity/exercise
Email curfew/ turn off emails	3	Preserving work-life separation/balance
Limit time spent in meetings/reduce unnecessary meeetings	2	Time management
Take occasional mental health days	2	Strategies to reduce stress
Manage expectations	1	Strategies to reduce stress
Active holidays	1	Holidays/breaks away
Employment/income	1	x
Study	2	x
OE	1	Holidays/breaks away
Varied work experiences	1	x
Community participation	3	Community participation/social contribution
Phone family	3	Nurture relationships
Time with pets/animals	13	Pets/animals
Helping partner	1	Nurture relationships
Time with family/ prioritise family time	87	Nurture relationships
Restful holidays	1	Holidays/breaks away
Visit beautiful places/outdoor NZ experiences	2	Holidays/breaks away
Enjoy a good coffee/cuppa	2	x
Try to have fun	3	Having fun
Bake	1	Interests/hobbies/cultural activities
Time alone	8	Time alone
Time with friends	57	Nurture relationships
Minimal work at home	8	Preserving work-life separation/balance
Watch TV/ movies	18	Digital entertainment
Slow down when I can	1	Practicing mindfulness/being present
Prioritise what's important	1	Being organised, planning, making lists
A quiet wine/drink good wine	20	A quiet drink/good wine

Shopping	7	Shopping
Participate in or attend cultural activities	3	Interests/hobbies/cultural activities
Eating well	46	Eat healthily
Eat out	3	x
Try to get enough sleep/get a good night's sleep	32	Try to get a good night's sleep
Reading	24	Interests/hobbies/cultural activities
Holidays & travel & trips away	27	Holidays/breaks away
Supportive management	1	Supportive management strategies
Time out to relax & rest	22	Take time out to rest & relax
Having a laugh	8	Using humour/having a laugh
Not getting stressed over issues	2	Strategies to reduce stress
Time out from stressors	1	Take time out to rest & relax
Walk	18	Walk
Sex	5	Nurture relationships
Being organised	6	Being organised, planning, making lists
Digital entertainment	4	Digital entertainment
Sleep in	1	Try to get a good night's sleep
Writing lists to get organised/ tick things off	4	Being organised, planning, making lists
Creative pasttimes/ crafts	11	Interests/hobbies/cultural activities
Take pleasure in cooking	7	Interests/hobbies/cultural activities
Listen to music	10	Interests/hobbies/cultural activities
Gardening	9	Interests/hobbies/cultural activities
Noticing the difference I make	1	Strategies to reduce stress
Date/time with partner	13	Nurture relationships
Clean my car	1	DIY/doing jobs around the house
Housework/ clean/ jobs around the home	3	DIY/doing jobs around the house
Have a massage	3	x
Hot bath	1	x
Getting feedback	2	Supportive management strategies
Maintaining/ checking on work-home balance	13	Preserving work-life separation/balance

Positive work relationships	1	Nurture relationships
Work as a team	1	x
Good weekends/downtime	2	Take time out to rest & relax
Staying on top of things	1	Being organised, planning, making lists
Socialising	14	Socialising
Time in nature	6	Spending time in nature/getting outside
Planning	6	Being organised, planning, making lists
DIY/ build things	3	DIY/doing jobs around the house
Evaluate my life	1	x
Be kind to myself	2	x
Appreciate life/feel grateful	6	Feel grateful/practice gratitude
Giving to others	8	Giving to others
Surround myself with positive people	1	Surround myself with positive/avoid negative people
Do things that make me happy/ that I enjoy	6	Do things that make me feel happy/I enjoy
Coach sport	4	Giving to others
Talking to colleagues/ Time with colleagues I enjoy being with	13	Nurture relationships
Doing meaningful things	2	Do meaningful things/work
Hobbies/ interests	11	Interests/hobbies/cultural activities
Take time for myself	11	Take time out to rest & relax
Time for spirituality	1	Practicing religion/spirituality
Keep interested in current events	1	Interests/hobbies/cultural activities
Time away from work	14	Preserving work-life separation/balance
Good health	2	x
Turn phone off	1	Preserving work-life separation/balance
Do meaningful work	3	Do meaningful things/work
Go to church or prey/ practice religion	6	Practicing religion/spirituality
Attend supervision sessions monthly	1	Talking through issues
Continued learning	6	Continued learning

Have things to look forward to	1	x
Keep warm	1	x
Surround myself with good people/ be with people I like	3	Surround myself with positive/avoid negative people
Write or journaling	4	Interests/hobbies/cultural activities
Enjoying the moment	1	Practicing mindfulness/being present
Relax/ relaxation	11	Take time out to rest & relax
Taking care of myself	3	x
Watch sport	1	Interests/hobbies/cultural activities
Time for reflection	3	Take time out to rest & relax
FB	1	Digital entertatinment
Techniques to reduce stress	2	Strategies to reduce stress
Improve my environment	1	x
Getting outdoors	11	Spending time in nature/getting outdoors
Minimise negative thoughts	1	Strategies to reduce stress
Laugh	2	Using humour/having a laugh
Drive my car	1	x
Be mindful of the good things I've got	2	Feel grateful/practice gratitude
Eating dinner athe table	1	x
Goals (setting, planning, achieving)	5	Goals (setting planning etc)
Not letting myself stew/ don't over think things	2	Strategies to reduce stress
Ask for & accept help	2	Seek help and advice
Treat myself	3	x
Twitter	1	Digital entertainment
Dress well	1	x
Vary work/ tasks	3	x
Focus on the positive/ good	4	Strategies to reduce stress
Speak my mind!	1	Strategies to reduce stress
Therapy	2	Strategies to reduce stress
Meditation	5	Strategies to reduce stress
Budget	1	x
Singing	1	Interests/hobbies/cultural activities
Be mindful/ mindfulness	7	Practicing mindfulness/being present
Trusted relationships	1	x
Positive self talk	1	Strategies to reduce stress

Smile	1	x
Don't do guilt	1	Strategies to reduce stress
Saying no	2	Time management
Turn off electronic devices	1	Preserving work-life separation/balance
Drink lots of water	1	x
Self motivate	1	x
Dance	1	Interests/hobbies/cultural activities
Use humour at work	1	Using humour/having a laugh
Seek advice	5	Seek help and advice
Talking through issues	12	Talking through issues
Time management	2	Time management
Make decisions	1	x
Focus on outcome rather than difficulties	1	Strategies to reduce stress
Medicate with alcohol at weekends	1	x
Choose what I focus on	1	Strategies to reduce stress
Glide time/ flexible working hours	1	Time management
Positive environment (work or home)	3	x
Feeling valued	1	x
Sincerity	1	x
Feeling in control	1	x
Reduced work hours	1	x
Differentiate between work time, hobby time and relaxation	1	Preserving work-life separation/balance
Being Kind	2	Kindness
Nurture relationships	3	Nurture relationships
Savour the moment	1	Practicing mindfulness/being present
Minimize 'fake' electronic relationships and focus on real relationships	1	Nurture relationships
Work smart, not long	1	Time management
Don't belong to Facebook	1	x
Hugs	1	Nurture relationships
Work that inspires/challenges me	2	x
Avoid caffeine	1	x
Limit alcohol	2	x
Ensure I share work experiences	1	x
Stay socially connected	1	Nurture relationships
Trying to remain healthy/ pursuing a healthy lifestyle	4	x
Don't let difficult tasks fester	1	Being organised, planning, making lists
Early nights	1	Try to get a good night's

		sleep
Be nice to those around me	1	Kindness
Work hard to havea caring, loving family environment	1	Nurture relationships
Getting out and about	1	x
Manage workload	1	Being organised, planning, making lists
Live a life surrounded by people and things that fulfill me	1	x
Choose good friends	1	x
Dream	1	x
Spending leisure time wisely	1	Time management
Self discipline	1	x
Freedom to express myself	1	x
Run events	1	x
Realise job expectations are unrealistic	1	Strategies to reduce stress
Drink green tea	1	x
Control my circles of influence	1	x
Try to do my best at everything I do	1	x
Attend weddings/funerals	1	x
Total	994	
Linguistic units & their allocated pathway categories shown in bold.		

Appendix J.   Permissions to include the published works in this thesis[1]

License Number	3691220656976
License date	Aug 17, 2015
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Licensed content author	Lucy Hone
Licensed content date	Jan 1, 2013
Volume number	119
Issue number	2
Type of Use	Book/Textbook
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Publisher	AUT University
Portion	Full text
Format	Print and Electronic
Will you be translating?	No
Print run	1
Author of this Springer article	Yes and you are the sole author of the new work
Title of new book	Understanding and measuring wellbeing
Author of new book	Lucy C Hone
Expected publication date of new book	Mar 2016
Estimated size of new book (pages)	187
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