Intensive Care Nurse Work Wellbeing: A Mixed Methods Study

Rebecca J. Jarden

A thesis submitted to Auckland University of Technology

in fulfilment of the requirements for the degree of

Doctor of Philosophy (PhD)

2019

School of Clinical Sciences

Abstract

Intensive care nursing is a professionally challenging role. This is elucidated in the body of research focusing on nurses' illbeing, including aspects such as burnout, stress, moral distress, and compassion fatigue. In contrast, little is currently known about intensive care nurse work wellbeing. The objectives of this programme of research were to conceptualise intensive care nurse wellbeing by identifying intensive care nurses' perspectives of work wellbeing and strategies that strengthen their work wellbeing.

In a two-stage mixed methods approach firstly, the existing evidence base was explored through text analytics and a systematic review. Secondly, intensive care nurses' perspectives were sought in an online prototype analysis and a descriptive exploratory study. In stage one, a text analytics model was developed and applied to explore the size and impact, disciplinary reach, and semantics of the online publications investigating wellbeing generally, and intensive care nurse wellbeing. The intensive care nurse wellbeing literature was then systematically reviewed in an electronic search. In stage two, the prototype analysis sought intensive care nurse's perceptions of the characteristics of their work wellbeing and explored the internal structure of the construct of work wellbeing. Finally, in a descriptive exploratory study, using free text responses, intensive care nurses reported strategies strengthening their work wellbeing. These mixed methods were then synthesised to develop a framework to support organisational change.

The text analysis and systematic review identified that conceptions of illbeing were strongly represented and intensive care nurse wellbeing was virtually absent. Four primary research studies were identified in the systematic review, focusing on intensive care nurse spiritual wellbeing, team commitment, emotional wellbeing, and the effects of a mindfulness programme. The studies were heterogeneous, and of variable quality and generalisability. The prototype analysis found the terms 'support', 'work-life balance', and 'workload' were in the top five most frequently endorsed and rated in the top 12 most central to their conception of work wellbeing. The nurses identified personal work wellbeing strengtheners such as mindfulness and yoga. Both relational (i.e., between nurses and

colleagues) and organisational strengtheners were also evident, including aspects such as peer supervision, formal debriefing, and working as a team to support each other.

Work wellbeing was found to be best described as a collection of elements; a multifaceted construct. Strengtheners of intensive care nurses' work wellbeing extended across individual, relational, and organisational resources. Actions such as simplifying their lives, giving and receiving team support, and accessing employee assistance programmes were just a few of the intensive care nurses' identified strengtheners. The findings of this programme of research were synthesised into a framework for job crafting and redesign. This synthesis informs future strategic work wellbeing programmes, creating opportunities for positive change.

Keywords: bibliometrics; critical care nurses; ICU; prototype analysis; systematic review; text analytics; text mapping; wellbeing; work wellbeing.

Table of Contents

List of Figures

List of Tables

List of Abbreviations

ICU: Intensive Care Unit

NZ: New Zealand

NZCCCN: New Zealand College of Critical Care Nurses

NZNO: New Zealand Nurses' Organisation

POS: Positive Organisational Scholarship

RN: Registered Nurse

WHO: World Health Organisation

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 another degree or diploma of a university or other institution of higher learning.

Rebecca Jarden

24 January 2019

Co-authored Works

Chapters three, four, five, six and seven of this thesis have been submitted for publication in peer-reviewed journals. The contribution of co-authors to these publications was as follows:

- Chapter three: Jarden, R. (80%), Narayanan, A. (5%), Sandham, M. (5%), Siegert, R. (5%), & Koziol-McLain, J (5%). (2019). Bibliometric mapping of intensive care nurses' wellbeing: Development and application of the new iAnalysis model. *BMC Nursing, 18*(21), 1-11. doi:10.1186/s12912-019-0343-1

- Chapter four: Jarden, R. (85%), Sandham, M. (5%), Siegert, R. (5%), & Koziol-McLain, J (5%). (2019). Intensive care nurse wellbeing: A systematic review. *Australian Critical Care*. doi:10.1016/j.aucc.2018.11.068

- Chapter five: Jarden, R. (85%), Sandham, M. (5%), Siegert, R. (5%), & Koziol-McLain, J (5%). (2018). Intensive care nurse conceptions of wellbeing: A prototype analysis. *Nursing in Critical Care, 23*(6), 324-331. doi: 10.1111/nicc.12379

- Chapter six: Jarden, R. (85%), Sandham, M. (5%), Siegert, R. (5%), & Koziol-McLain, J (5%). (2018). Strengthening workplace wellbeing: Perceptions of intensive care nurses. *Nursing in Critical Care*. doi:10.1111/nicc.12386

- Chapter seven: Jarden, R. (85%), Sandham, M. (5%), Siegert, R. (5%), & Koziol-McLain, J (5%). (In review). A conceptual framework for intensive care nurse work wellbeing.

The following publication for the future research agenda has developed from this programme of research:

- Jarden, R. (85%), Sandham, M. (5%), Siegert, R. (5%), & Koziol-McLain, J (5%). (2018). Systematic review and quality appraisal of workers' wellbeing measures: A protocol. *BMC Systematic Reviews, 7*(240), 1-5. doi:10.1186/s13643-018-0905-4.

Co-authors Agreement on Co-authored Contributions

Rebecca Jarden

Professor Jane Koziol-McLain:

Professor Richard Siegert:

Dr. Margaret Sandham:

Professor Ajit Narayanan:

Co-authors Agreement on Co-authored Contributions

Acknowledgements

Ethics Approval and Cultural Consultation

Auckland University of Technology Ethics Committee (AUTEC) approval: 17/180 Conceptualising and measuring critical care nurse wellbeing was obtained on 03 July 2017 (see Appendix A). This approval encompassed the advertising (see Appendix B), consent, enrolment (see Appendix C), and survey for the prototype analysis and identification of strengtheners. The Auckland University of Technology, Department of Nursing's Kawa Whakaruruhau Komiti and the Faculty of Health and Environmental Science's Mātauranga Māori Committee (11 April 2017) were consulted in the design of this research project.

Chapter 1. Introduction

1.1. Background

As a psychology student of the early 1990s who moved into nursing, transitioning through different Intensive Care Unit (ICU) nursing roles from novice, to experienced nurse, to nurse manager, to nurse educator, to nurse researcher in a variety of different ICUs, one question remained with me. Where is the health promotion for the wellbeing of ICU nurses? My interest in positive psychology, with its focus on wellbeing, has evolved over the past ten years as the field has become increasingly prevalent in the health literature. The strengthening evidence base of positive psychological interventions and my hopes for the wellbeing of ICU nurses provided an opportunity to combine these two interests into a research programme. This introductory chapter: 1) contextualises this research programme within the New Zealand ICU nursing setting; 2) introduces positive psychology, wellbeing and work wellbeing; 3) states the research questions; and 4) explains the structure of this thesis and programme of research with the associated peer-reviewed publications.

1.2. Intensive care nursing context

Intensive care nurses provide specialised expertise managing complex and challenging situations with patients, patients' families and inter-professional teams. In NZ, 2,245 registered nurses (4.5% of the NZ nursing workforce) identify as working in one of 30 ICUs (Australia and New Zealand Intensive Care Society, 2015; Nursing Council of New Zealand, 2015). These nurses are exposed to various psychological risks from a variety of sources. Firstly, personal or family health concerns or crises, such as, a sick child or a chronic medical condition. Secondly, as a team member in the workplace, for example, negotiating work allocation for high acuity patients. Thirdly, within the work role, such as, changes in advanced technology or high responsibility. Fourthly, as an employee of an organisation, for example, working rotating night shifts or extended shift hours. Fifthly, as a professional required to be responsive both nationally and to society, such as, meeting national health targets (Ministry of Health, 2015), and cultural (Nursing Council of New

Zealand, 2011), ethical (New Zealand Nurses' Organisation, 2010), legislative (Ministry of Health, 2003), and professional requirements (Nursing Council of New Zealand, 2012). Given such stressors, nurses may be vulnerable to significant psychological harms such as burnout (Epp, 2012; Pereira, Teixeira, Carvalho, & Hernández-Marrero, 2016), compassion fatigue (Jenkins & Warren, 2012), moral distress (Choe, Kang, & Park, 2015), and bullying (Ganz et al., 2015). These harms have been the focus of a large body of international research exploring illbeing (or the 'negative side' of wellbeing; Mäkikangas, Kinnunen, Feldt, & Schaufeli, 2016). More recently, global leaders have called for a shift in our gaze from nurse illbeing (as opposed to illness which has a strong focus on physical health) to nurse health and wellbeing (World Health Organisation, 2013). The emerging field of positive psychology suggests the value in balancing the focus on illbeing with a focus on wellbeing.

1.3. Positive psychology

"What is good about life is as genuine as what is bad and therefore deserves equal attention" (Peterson, 2006a, p. 4)

Positive psychology explores "…what makes life worth living…", and builds upon "…the enabling conditions of a life worth living" (Seligman, 2011, pp. 1-2). This movement that started in 1998 drove psychology to focus on "building positive qualities" alongside the traditional focus on healing and "repairing damage within a disease model of human functioning" (Seligman & Csikszentmihalyi, 2000, p. 5). With this growth, positive psychology has developed into a field of study that is now linked to research related to strengths (Proyer, Gander, Wellenzohn, & Ruch, 2015), thriving (Kern, Waters, Adler, & White, 2014), flourishing (Hone, Jarden, Schofield, & Duncan, 2014; Seligman, 2011), resilience (Vanhove, Herian, Perez, Harms, & Lester, 2015), and optimal functioning (Colman, 2010), just to name a few areas. Positive psychology's reach now extends to research in leadership (Cameron, 2013; Lewis, 2011), education (White, 2014), organisational development (Money, Hillenbrand, & da Camara, 2009), and career counselling (Zunker, 2016). This reach is evident in both the development of theoretical

constructs, and the application of both positive psychological interventions (interventions, activities, and recommendations empirically and theoretically driven to enhance wellbeing; Schueller, Kashdan, & Parks, 2014) and positive psychology interventions (those interventions uniquely and specifically associated with the field of positive psychology; Bolier et al., 2013; Schueller et al., 2014; Sin & Lyubomirsky, 2009). From the developing positive psychology field, arguably one of the most significant areas of ongoing research is 'wellbeing' (with or without the hyphen).

1.4. Wellbeing

"The first question a scientific investigator must ask is not 'How can I measure it?' but rather, 'What is it?'" (Locke, 1969, p. 334)

The foundations of wellbeing have grown from a wide range of theoretical perspectives, for example, Maslow's Hierarchy of Needs (Maslow, 1958), Flow Theory (Csikszentmihalyi, 1975), Self-Efficacy Theory (an example of a Social Learning Theory) (Bandura, 1977; Bandura & Adams, 1977), Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1977a, 1995), Control Theory (Carver & Scheier, 1982), Bowlby's Attachment Theory (Bretherton, 1985, 1992), and Self-Determination Theory (Deci & Ryan, 2000). Along with these various theories, there are a broad range of definitions of wellbeing (Forgeard, Jayawickreme, Kern, & Seligman, 2011). For example, "the balance point between an individual's resource pool and the challenges faced" (Dodge, Daly, Huyton, & Sanders, 2012, p. 230), "the combination of feeling good and functioning effectively" (Huppert, 2009b, p. 139), and "subjective bodily and emotional states; how an individual feels; a state of mind distinct from functioning that pertains to behaviours and activities" (Patrick, Guyatt, & Acquadro, 2011, para. 4). Models of wellbeing, illustrated in Figure 1, will now be considered chronologically in further detail.

Jahoda (1958)	Ryff (1989)	Ryan and Deci (2001)	Seligman (2011)	Huppert and So (2013)
• Attitude to self • Growth, development, or self-actualisation • Integration • Autonomy • Perception of reality • Environmental mastery	• Self-acceptance • Positive relations with others • Autonomy • Environmental mastery • Purpose in life • Personal growth	• Optimal experience • Optimal functioning	• Positive emotion • Engagement • Positive relationships • Meaning • Accomplishment	• Feeling good • Functioning effectively

Figure 1. Models of wellbeing.

The World Health Organisation (WHO) defines health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization, 1946). A 1958 review of the term "mentally healthy" drew attention to the ambiguity of the term "mental health" and highlighted at that time "knowledge about deviations, illness, and malfunctioning far exceed[ed] knowledge of healthy functioning" (Jahoda, 1958, p. 6). Six categories of concepts for positive psychological health were proposed: 1) attitudes of an individual toward his own self; 2) growth, development, or self-actualisation; 3) integration; 4) autonomy; 5) perception of reality; and 6) environmental mastery (Jahoda, 1958, p. 23). The 1958 review saw a paradigm shift from a deficit-oriented approach, to the mental health promotion and prevention approach now reflected locally (Waitemata District Health Board, 2016), nationally (Mental Health Foundation of New Zealand) and internationally (World Health Organization, 2013).

In 1989, Ryff proposed a model of wellbeing that operationalised six dimensions of psychological wellbeing (or mental wellbeing; as opposed to wellbeing in more global terms). These six dimensions included self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. In this validation study, Ryff found self-acceptance and environmental mastery were highly correlated with previously reported measures of life satisfaction, affect balance, self-esteem, and morale. However, positive relations with others, autonomy, purpose in life, and personal growth were not strongly associated with previously reported measures.

Ryan and Deci (2001) describe wellbeing as a complex construct related to both optimal experience and optimal functioning. They suggested wellbeing research derived from two approaches; hedonic and eudaimonic. The hedonic approach originated from Greek philosophy, focusing on happiness, pleasure attainment, and the avoidance of pain. Hedonic psychology then studies the pleasant and unpleasant experiences of life (Kahneman, Diener, & Schwarz, 1999). Subjective wellbeing (SWB) is one method of evaluating the pleasure and pain continuum and the cognitive appraisal of life satisfaction (see Diener, Suh, Lucas, & Smith, 1999). The eudaimonic approach focuses on meaning and

self-realisation (Ryan & Deci, 2001); living as one inherently intended to live (Deci & Ryan, 2008).

In 2011, Seligman suggested wellbeing equates to human flourishing, based on five elements: Positive emotion, Engagement, Positive relationships, Meaning, and Accomplishment (PERMA; 2011, p. 16). The measurable elements contribute to wellbeing, but not one element specifically defines (nor operationalises) wellbeing. Each of these elements of wellbeing need three properties: 1) it contributes to wellbeing; 2) people pursue it for its own sake; and 3) it is defined and measured independently (2011, p. 16). As an example, for positive emotion to be considered an element it must, as its own entity, contribute to wellbeing, be pursued by people, and be defined and measured independently.

Similar to Ryan and Deci (2001), for Huppert and So (2013) flourishing is a combination of feeling good and functioning effectively. Drawing from their previous work (Huppert, 2009a, 2009b), and that of Keyes (2002) and Ryff, Singer, Keyes, and Haidt (2003), Huppert and So (2013) suggest flourishing epitomises mental wellbeing. More specifically, flourishing is described as having high levels of both hedonic wellbeing and eudaimonic wellbeing (Schotanus-Dijkstra et al., 2016). Flourishing research frequently focusses on either hedonic or eudaimonic wellbeing (Schotanus-Dijkstra et al., 2016) as opposed to both (e.g., Huta & Ryan, 2010; Keyes, Shmotkin, & Ryff, 2002; Peterson, Park, & Seligman, 2005).

Determining the relationship between wellbeing and physical health is still evolving (Aspinwall & Tedeschi, 2010; Coyne & Tennen, 2010; Pressman & Cohen, 2005; Steptoe, Deaton, & Stone, 2015). For example, two recent studies suggest an association between physical health and psychological health. Firstly, in a systematic review of literature that included 14,000 individuals with cardiovascular disease, DuBois et al. (2015) found in over 60% of studies that positive psychological constructs (such as optimism) were significantly associated with positive health outcomes (such as reduced hospital readmissions). Secondly, Gana et al. (2016) measured the relationship between functional physical health (hearing, vision, medications prescribed, and dyspnoea) and positive affect at six time intervals over a period of 13 years in 3,755 older adults (age 62-102 years). They found good functional

health at baseline significantly predicted subsequent positive affect, however positive affect at baseline did not predict subsequent good health.

To summarise, wellbeing is considered a construct with measurable elements. As Seligman (2011) mentions, wellbeing is thought to be operationalised through a dashboard of these elements, but none individually is thought to either define nor operationalise wellbeing as a whole. Others concur, and this is evident in the varied theoretical views of the components of wellbeing (Keyes, 1998; World Health Organization, 1998).

1.5. Work wellbeing

More than 60 percent of New Zealanders are employed (Statistics New Zealand, 2018), reflecting similar global rates (Organization of Economic Cooperation and Development, 2018). Population health is influenced in many ways by both employment and work quality. Each of these create their own global challenges such as material deprivation, experiences of injustice, exposure to hazards, and lack of work (Donkin, Allen, Allen, Bell, & Marmot, 2014). Work (encompassing the variety of elements related to work and working and workers) becomes a means of survival and power, social connection and self-determination (Blustein, 2006). The WHO mental health action plan conceptualises mental health as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (World Health Organization, 2013, p. 6). The dynamic and evolving work environment influences both the way people work and their roles, for example, technology, working patterns, labour force and globalisation, and organisational structure (Zibarras & Lewis, 2013). The relationship between work and non-work domains suggests expansion of the reach of work demands to non-work domains (and vice versa), impacting on health and wellbeing. For example, increased job pressure is associated with increased role-blurring activities such as multitasking on work and family activities, being contacted for work purposes at home and experiencing work-related thoughts while at home (Schieman & Glavin, 2016). Given the likes of this increased job pressure, the Global Plan of Action (GPA) on Workers' Health 2008-2017 provides a policy framework for action to protect, promote and improve workers' health (World Health

Organisation, 2013). A key component of this policy framework relates to the health promotion and prevention of noncommunicable diseases. Specifically, advocating for a healthy diet and physical activity, and promoting mental and family health at work.

The key aspects of working conditions proposed to affect employees can broadly be categorised into job design and physical workplace design (Munir & McDermott, 2013). Job design is a potential enabler of wellbeing whether related to work demands (physical, cognitive and emotional), job role (clarity and alignment), work hours (shift work, flexibility and overtime), job control (flexibility in meeting the demands of the job), or social support (emotional and informational). The relationship of the job's characteristics with employee motivation, engagement, satisfaction, and performance has previously been described both in theory and various models, for example the Job Characteristics Theory (Hackman & Oldham, 1976), Person-Organisation Fit Theory (Verquer, Beehr, & Wagner, 2003), and the Job Demands-Resources Model (Gordon, Demerouti, Bipp, & Le Blanc, 2015). Workplace design not only relates to optimal operation, but safety and comfort. Warr (2006) suggests the focus on environmental (as opposed to personal) sources of wellbeing is pragmatic, in that environments may be modified to improve wellbeing.

The impact of health workers' wellbeing on healthcare system performance was reviewed by Ray-Sannerud, Leyshon, and Vallevik (2015). Their review identified positive and negative determinants associated with healthcare workers' wellbeing and their potential risk and contribution to system performance. Positive determinants such as empowerment, quality sleep and positive workplace relationships were associated with high performance, patient satisfaction, and lower turnover intentions. Negative determinants such as burnout, psychological distress, and poor social capital were associated with suboptimal patient care, unprofessional conduct, and medical leave.

A recent systematic review of longitudinal studies that investigated employee wellbeing found the majority of the 40 identified studies focussed on illbeing, or the "negative side" of employee wellbeing (Mäkikangas et al., 2016). For example, over half of the studies focused on burnout. This focus on illbeing is consistent with the literature on the assessment of nurses (Borteyrou, Truchot, & Rascle, 2014; Burgess, Irvine, & Wallymahmed,

2010; Choe et al., 2015; De Villers & DeVon, 2013; Dewe, 1987; O'Connell, 2014; Pereira et al., 2016; Sacco, Ciurzynski, Harvey, & Ingersoll, 2015; Vévoda et al., 2016; Weigl et al., 2016; Zarei, Khakzad, Reniers, & Akbari, 2016).

To summarise, the relationship between work wellbeing, engagement, and performance has become increasingly evident in the research base (e.g., Brunetto et al., 2013; Moghimi, Zacher, Scheibe, & Van Yperen, 2016; Sharma, Kong, Kingshott, Kandampully, & Subramony, 2016; Soane et al., 2013). Both locally (Ministry of Health, 2015) and globally (World Health Organisation, 2013) the vision is to achieve a health and disability system that focuses on wellbeing and prevention. To realise this vision and capitalise on the new opportunities arising from fields such as applied positive psychology, wellbeing promotion for ICU nurses needs to begin with conceptualising the term 'work wellbeing'. For this research programme, 1) a 'concept' is an idea or notion that includes all that is associated with it and can be elaborated into a pattern (*Macquarie Dictionary and Thesaurus Online*, 2018), 2) to 'conceptualise' is to form a concept of (*Macquarie Dictionary and Thesaurus Online*, 2018), and 3) a 'construct' is a "hypothetical concept, i.e., a way of talking about features of the world that make the term more comprehensible…" (Shum, O'Gorman, Myors, and Creed (2013, pp., p. 92), and a 'conceptual notion' due to its existence needing to be inferred through observable actions or features (Morgeson & Hofmann, 1999). Identifying the facets of the construct of work wellbeing in this research programme will determine how the construct of ICU nurse work wellbeing may be operationalised (i.e., enacted in the real world). Thus, this research will be a first step in establishing construct validity, that is, it will provide future opportunities to test the enabling conditions and mechanisms that are thought to give the construct meaning. As stated by Locke, "the first question a scientific investigator must ask is not 'How can I measure it?' but rather, 'What is it?'" (1969, p. 334). Thus, the objective of this research programme is to conceptualise ICU nurse work wellbeing. Greene, Caracelli, and Graham (1989) suggests the strengths of individual methods in mixed methods design increases the validity of constructs and inquiry. To this end, in a mixed methods programme of research, I investigated both the published literature and ICU nurse's conceptions of work wellbeing.

1.6. Research questions

Four studies of mixed methods sequential design were used to investigate the following five questions:

1)   *How is ICU nurse work wellbeing conceptualised in the literature? (Studies one & two)*

2)   *How do ICU nurses conceptualise work wellbeing? i.e., what are the key components of work wellbeing from their perspective? (Study three)*

3)   *What do ICU nurses think promotes work wellbeing? (Study four)*

4)   *What strategies do ICU nurses personally use to promote their work wellbeing? (Study four)*

5)   *What work wellbeing strategies are currently used in the ICU nurses' workplace? (Study four)*

1.7. Thesis structure

This thesis integrates and links peer-reviewed publications from this programme of research investigating the above five research questions. Due to the structural requirements of publications, there is a small overlap in the background and discussion sections of the four studies. In chapter one I have highlighted the complexity of New Zealand ICU nursing, and introduced positive psychology, wellbeing, and work wellbeing. In chapter two I describe the research design, including the methodology and methods of this research programme. In chapters three and four I highlight the gap in the existing published literature, presenting two studies that investigate both the breadth and depth of ICU nurse wellbeing literature. In chapter three (study 1), a text analytics approach broadly maps both wellbeing and ICU nurse wellbeing. In chapter four I build on chapter three with a systematic review (study 2) of the primary research investigating ICU nurse wellbeing. After identifying the gaps in understanding of ICU nurse wellbeing I move to original research. In chapter five (study 3) I investigate ICU nurse perceptions of work wellbeing in a prototype analysis of ICU

nurse wellbeing, involving three linked sub-studies. In chapter six I build on these nurse perceptions of work wellbeing (study 4) in a qualitative exploration of strengtheners of ICU nurse wellbeing, investigated online as free-text open-ended responses. In chapter seven I synthesise the findings from the four studies and propose a conceptual model of the facets of ICU nurse work wellbeing. Finally, in chapter eight I discuss the findings from the programme of research, exploring the research impact of these findings, and proposing future research opportunities.

Chapter 2. Research Design

"Science is a conversation between rigor and imagination" (Abbott, 2004, p. 4)

The previous chapter highlighted the complexity of New Zealand ICU nursing, explored the theoretical underpinnings of this research programme, stated the five research questions and outlined the structure of this thesis. This chapter explores the research design, including the methodology and methods of this research programme.

2.1. Methodology

This research is primarily grounded epistemologically in objectivism from a post-positivist theoretical perspective. My research questions and answers are influenced by my personal history, values, conception of self, and philosophical assumptions. My view of 'knowing' considers reality to be situated within a context, and influenced by the nature of human experience, i.e., 'knowing' considers multiple realities. Whilst I believe multiple realities exist, within research we can acknowledge our underlying assumptions and ascertain a degree of 'truth' through a series of logical steps. This lends well to the post-positivist position in which there is no absolute truth gained from research (Giddings & Grant, 2007). Within this post-positivist paradigm, hypotheses are supported, and degrees of probability are established.

Post-positivism has evolved from the earlier positivist paradigm (Tashakkori & Teddlie, 2010), which views science from a lens of absolute truths and objectivity. Crotty (1998) suggests the origins of post-positivism lie in the work of the scientists Heisenberg and Bohr who challenged the positivist paradigm. Crotty, Heisenberg and Bohr pointed out the uncertainty of scientific knowledge. This perspective was reinforced by Popper (1959) who suggested science discovers tentative answers to research questions that will be continuously subject to renewed and more rigorous testing. Feyerabend and Preston take this further, claiming "all empirical concepts are theoretical concepts" (Feyerabend & Preston, 1999, p. 22), and highlighting the cultural and socio-political foundations of scientific truths, just like beliefs (Feyerabend, 1987). During this time period, Kuhn's book

The Structure of Scientific Revolutions questioned the objectivity of scientific discovery (Kuhn, 1970). Kuhn proposed that where existing paradigms do not sufficiently address anomalies, a paradigm shift occurs.

As the philosophy of science has evolved, so too has controversy as to the 'proper methodology' for human science (Polkinghorne, 1983). Polkinghorne suggests the study of human sciences is complex for a variety of reasons, for example, science's systemic organisation, unclear definitions and boundaries, and the complexities due to ongoing human development. As such, following a 'correct' research method does not guarantee 'true' results rather, using different systems of inquiry helps develop the best knowledge at the present time (Polkinghorne, 1983). Such an approach challenges the concept of empiricism, which is dependent on the ability of the researcher to make reliable observations. Baronov (2015) suggests there are dynamic tensions raised by each of the research paradigms. For example, those tensions raised by the post-positivists challenge the generation of the objective, judgement-free, and eternal truths of the positivists. The impact of the tensions between paradigms creates challenges in conducting research of mixed methods. As highlighted by Sale, Lohfeld, and Brazil (2002), integrating qualitative and quantitative methods in a single study requires sound methodological and philosophical consideration. They suggest that multiple methods may be combined for complementary purposes.

Mixed methods research is defined by the combination of both a qualitative and quantitative research methods within a single research project (Bergman, 2008). A variety of typologies of mixed methods research exists. One example is where qualitative and quantitative approaches are combined into the research methods of a multi-phased study, such as those illustrated in the four models of Steckler, McLeroy, Goodman, Bird, and McCormick (1992). This may be in the form of a sequential exploratory design (Creswell & Plano Clark, 2007) which is a design increasingly facilitated by the internet. Internet-mediated research is usually described as 'mixed mode' with both online and offline data collection, or 'single mode' with one or the other mode of data collection (Hewson, 2008).

The mixed methods approach was used within the current research programme to obtain the variety of data in different phases of this research that would not be achievable using either quantitative or qualitative methods alone. Specifically, neither the depth of a solely qualitative approach nor the breadth of a solely quantitative approach, would answer the research questions alone. Two principally quantitative (text analytics and systematic review), one mixed-methods (prototype analysis) and one qualitative research method (exploratory descriptive) were used to conceptualise and investigate the construct of work wellbeing in ICU nurses. The research methods used in this research programme will now be described in further detail.

2.2. Methods

To conceptualise ICU nurses work wellbeing, the programme of research included a series of four studies (Figure 2).

Study 1.

Text analytics

Analysed the peer reviewed wellbeing and ICU nurse wellbeing literature using text analytics

(qualitative & quantitative)

Study 2.

Systematic review:

Analysed the peer reviewed ICU nurse work wellbeing literature

(qualitative & quantitative)

Study 3.

Prototype analysis:

Three linked studies exploring ICU nurse conceptions of work wellbeing

(qualitative & quantitative)

Study 4.

Exploratory descriptive:

Explored the strengtheners of ICU nurse work wellbeing

(qualitative)

Investigated existing evidence

Investigated intensive care nurses

Figure 2. Outline of the series of studies in this research programme.

These four studies drew from different research methods to conceptualise ICU nurse wellbeing and support the future development of measures and work wellbeing programmes. This research programme capitalised on inherent strengths of a variety of methods. These methods included a text and bibliographical analysis and a systematic review of the literature. This review of the literature was followed by a study of the conceptions of work wellbeing in a prototype analysis in a sample of NZ ICU nurses. Finally, alongside the prototype analysis, participants were asked to identify strengtheners of their wellbeing and these were mapped to their conceptions of wellbeing. The methods for each study are now outlined in relation to the research questions. More detail of each study is included in the subsequent chapters.

2.3. Brief outline of the four research studies

2.3.1. Study One - Empirical conceptions of wellbeing and ICU nurse wellbeing: A text analytics approach.

In study one, I investigated the research question: *How is ICU nurse work wellbeing conceptualised in the literature?* Complex, multidimensional constructs are challenging to define. The diversity in the definitions of wellbeing described in chapter one highlights this challenge. Methodologically, text analytics has been proffered as well aligned with the views of Kuhn (Hjørland, 2013) in that it provides a dynamic view of concepts and semantics, and was thus appropriate to address this particular research question. Study one drew from text analytics approaches to quantitatively identify the empirical conceptions of wellbeing and work wellbeing from full text publications. This quantitative analysis was augmented by a qualitative exploration of the semantics of the publications. Semantic and bibliographic analysis methods (Cohen & Hersh, 2005) of full text publications (as opposed to abstracts, see Lin, 2009) were used. Results enabled the broad mapping of wellbeing and work wellbeing conceptions within the published literature, including semantics, size, disciplinary reach, impact, and topic breadth. This method to broadly map the published literature was then complimented by an in-depth analysis of the literature; a systematic review.

2.3.2. Study Two - ICU nurse wellbeing: A systematic review.

In study two, I investigated the research question: *How is ICU nurse work wellbeing conceptualised in the literature?* To complement the text analytics approach, the systematic review provided a structured and rigorous approach to identify, appraise, and summarise studies relevant to a research question (Clarke, 2007), providing new insights (Harden, 2006). Methodologically, the systematic review is grounded in positivism, seeking to increase the strength of knowledge through evidence (Tranfield, Denyer, & Smart, 2003). Broadening the types of included studies to both qualitative and quantitative primary research is well aligned with post-positivism, seeking a degree of 'truth' through a series of logical steps and gaining a possible truth (Giddings & Grant, 2007).

This study 1) systematically identified primary research studies reporting ICU nurse wellbeing, and 2) critically appraised the methodological quality of the study properties using the relevant quality assessment tool. The review followed the Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) guideline (Moher et al., 2009). Additionally, the review explored the text of the included studies using NVivo™ (qualitative data software; QRS International, Victoria AU). The review inclusion criteria were 1) population: critical or intensive care nurses working with adult or mixed adult and paediatric patients, 2) study type: primary research studies, 3) outcome: ICU nurse wellbeing, and 4) publication available in the English language. Studies were excluded if findings for the population group of intensive care nurses were not independently reported. The included studies were appraised using relevant critical appraisal tools, such as, the cross-sectional appraisal tool of the Center for Evidence Based Management (CEBMa) (2014), or the qualitative appraisal tool of Critical Appraisal Skills Programme (CASP) (2006), or the quasi-experimental appraisal tool of Greenhalgh, Robert, Bate, Macfarlane, and Donaldson (2005).

2.3.3. Study Three - Conceptualising ICU nurse wellbeing and work wellbeing: A prototype analysis.

Study three investigated the research question: *How do ICU nurses conceptualise work wellbeing? i.e., what are the key components of work wellbeing from their perspective?* Historically, the prototype analysis emerged from the study of concept formation within learning theory with a base in empiricism (e.g., see the work of Locke in the 1600's; Winkler, 1996) and the cognitive sciences extending back to Plato (e.g., see Fodor, Garrett, Walker, & Parkes, 1980). Rosch and Mervis (1975) critiqued the work in the fields of philosophy, psychology, linguistics, and anthropology for assuming categories are "logical bounded entities, membership in which is defined by an item's possession of a simple set of criterial features, in which all instances possessing the criterial attributes have a full and equal degree of membership" (p. 574-575). Similarly, in their paper *Against definitions*, Fodor et al. (1980) suggest the very idea of 'definitions' needs reconsideration and highlight the few attempts in providing "direct empirical evidence for the psychological reality of definitions" (p. 264). As such, this study seeks to investigate ICU nurse conceptions rather than rely on existing definitions of work wellbeing.

It has been shown that, for some New Zealand workers, wellbeing is prototypically structured (Hone, Schofield, & Jarden, 2015). That is, some components of wellbeing are more typical than others. For example, good mental health, good relationships, work-life balance, and good physical health were endorsed as more central to the workers' conception of wellbeing than spirituality, accomplishments, mindfulness, and engagement (Hone et al., 2015). The prototype analysis method has been used to investigate natural language concepts with a "fuzzy collection of features" (Lambert, Graham, & Fincham, 2009, p. 1195). For example, love and commitment (Fehr & Sprecher, 2009), gratitude (Lambert et al., 2009), infidelity (Weiser, Lalasz, Weigel, & Evans, 2014), and forgiveness (Kearns & Fincham, 2004). This prototype analysis involved three sub-studies investigating how wellbeing is conceived and defined by ICU nurses.

2.3.4. Study Four - Strengtheners of ICU nurse work wellbeing.

Study four investigated the research questions: *What do ICU nurses think promotes work wellbeing; what strategies do ICU nurses personally use to promote their work wellbeing; and what work wellbeing strategies are currently used in the ICU nurses' workplace?* A qualitative inductive research design enables the exploration of a phenomenon and the creation of new conceptual knowledge (Bradshaw, Atkinson, & Doody, 2017). Using a qualitative exploratory descriptive approach as described by Sandelowski (2000), participants of the online prototype analysis were asked two free-text open-ended questions. These questions focused on 1) what they think would promote work wellbeing, and 2) what work wellbeing strategies were currently used to promote work wellbeing. Nurses were asked to identify strategies at the individual, team, and organisational levels. In a six phase inductive thematic analysis (Braun & Clarke, 2006, 2013) I will 1) familiarise myself with data to inform the initial stages of the analysis, 2) generate initial codes, 3) search for themes, 4) review themes, 5) define themes, and 6) produce a report. Drawing from my post-positivist position, I will seek to find a possible truth from the multiple realities of the participants.

2.4. Cultural considerations

Consultation with the Mātauranga Māori Committee resulted in several amendments to the research methods to support Māori engagement. These amendments were primarily related to the recruitment processes. Two examples included wider sampling and targeted recruitment pathways.

This chapter has outlined how a mixed methods approach was used in this research programme that conceptualised and investigated the construct of wellbeing in ICU nurses across four sequential studies. The primary research contribution, and original contribution to knowledge, was the synthesising of these studies to provide a conceptualisation of ICU nurse work wellbeing. This research informs individuals, teams, organisations, and policy makers of the potential enablers of ICU nurse work wellbeing and how these fit with such a conceptualisation. In chapter three I present study one, which analyses the online published

literature, exploring the bibliometrics and text of wellbeing and ICU nurse wellbeing literature.

Chapter 3. Mapping Intensive Care Nurse Wellbeing: Development and Application of the iAnalysis Model

The previous chapter outlined the four sequential studies of this research programme. In this chapter, study one, I present a text analysis of the published literature[1]. The bibliometrics and text of the identified literature were analysed to determine the empirical conceptions of wellbeing, and ICU nurse wellbeing. These empirical conceptions included the semantics, size, disciplinary reach, impact, and topic breadth of the wellbeing and work wellbeing literature. This study investigated the research question: *How is ICU nurse work wellbeing conceptualised in the literature?*

3.1. Abstract

Objectives: This study develops and applies a new iAnalysis model to explore the empirical knowledge underpinning wellbeing and intensive care nurse wellbeing in terms of the size and impact, disciplinary reach, and semantics of published literature.

Design: Mixed methods bibliometric study. Firstly, a new model coined 'iAnalysis' was developed for the analysis of published data. Secondly, iAnalysis was applied to examine wellbeing and ICU nurse wellbeing.

Methods: For wellbeing, data from a title search with search terms [wellbeing OR well-being] were explored. For work wellbeing data from a topic search with search terms [(intensive OR critical) AND (nurs*) AND (wellbeing OR well-being)] were explored.

Results: For both wellbeing and intensive care nurse wellbeing, records were predominantly published in the past 5 years, in English language, and from the USA. The highest keyword

---

[1] Study one, largely similar to the content documented here in chapter 3, has been submitted for publication.

co-occurrence for wellbeing was "health and well-being", and for intensive care nurse wellbeing, "family and model". Terms commonly associated with illbeing were highly prevalent in both wellbeing and intensive care nurse wellbeing datasets, but more so in intensive care nurse wellbeing data.

Conclusions: Conceptions of illbeing were strongly represented in wellbeing and intensive care nurse wellbeing literature. Intensive care nurse wellbeing was virtually absent in this literature. The iAnalysis model provided a valuable method for text mapping.

Key words: bibliometrics; critical care nurses; ICU; text analytics; text mapping; wellbeing.

3.2. Background

3.2.1. Wellbeing and intensive care nurses.

The wellbeing of intensive care (ICU) nurses is a fundamental component of a healthy healthcare workforce. Opportunities to enhance the working lives of nurses are increasingly evident in the literature (Carolan, Harris, & Cavanagh, 2017; Häggman-Laitila & Romppanen, 2018; Ivandic, Freeman, Birner, Nowak, & Sabariego, 2017; Perry, Nicholls, Duffield, & Gallagher, 2017; Romppanen & Häggman-Laitila, 2016). These opportunities are coupled with ongoing calls for more rigour in the research process to provide evidence of the effectiveness and sustainability of interventions to improve wellbeing (Ivandic et al., 2017; Romppanen & Häggman-Laitila, 2016).

Wellbeing has a broad range of definitions, such as, "the balance point between an individual's resource pool and the challenges faced" (Dodge et al., 2012, p. 230), and "the combination of feeling good and functioning effectively" (Huppert, 2009b, p. 139). Increasingly the literature is pointing to wellbeing being a rich and multi-faceted construct (Hone et al., 2015). Work wellbeing has equally varied and predominantly Western theoretical views and definitions (Dewe & Kompier, 2008; Fisher, 2014; Grant, Christianson, & Price, 2007; Laine & Rinne, 2015; Page & Vella-Brodrick, 2009). Whilst no one specific feature is evident across all models, variations of the element 'relationships' or 'social connections' are apparent in most theoretical models. No models specifically for 'nurse wellbeing' nor 'nurse work wellbeing' were identified in the literature. Wellbeing is increasingly prevalent in policy and legislation both nationally (Ministry of Health, 2015) and internationally (Global Health Workforce Alliance & World Health Organization, 2013). Measuring how this policy and legislation translates into the working lives of ICU nurses is an ongoing challenge for key stakeholders including nurses, employers, professional organisations, and government bodies.

Enhanced work wellbeing in healthcare has widespread benefits including improved performance, engagement, patient satisfaction, and lower turnover costs (Brunetto et al., 2013; Duffield, Roche, Homer, Buchan, & Dimitrelis, 2014; Moghimi et al., 2016; North et al.,

2013; Ray-Sannerud et al., 2015; Sharma et al., 2016; Soane et al., 2013). However, little is known about the structure of the empirical foundations of work wellbeing for ICU nurses. Mapping the empirical structure of ICU nurse wellbeing will create unique opportunities to identify the patterns and trends in relation to the semantics, literary reach, and impact of the literature.

3.2.2. Information metrics.

Online publication processes have given rise to opportunities for quantitative analysis of academic publishing. This quantitative analysis has various forms under the umbrella of *information metrics* (iMetrics) (Milojević & Leydesdorff, 2013). One of the most common forms of iMetrics is bibliometrics. Bibliometrics is purported to provide a "dynamic view of concepts and semantics" (Hjørland, 2013, p. 1315), and enables quantitative analysis of large amounts of data. Its most common use to date has been characterising scientific output and citations of researchers (for example, the h-index), journals (for example, the Journal Impact Factor), and article impact (Levitt & Thelwall, 2011). Debate and controversy exist within these key areas (Davidson et al., 2014), with common definitions and measurement indicators still evolving (Abramo, 2018).

Bibliometric techniques are also being used for opinion mining and sentiment analysis (Piryani, Madhavi, & Singh, 2017) and to explore concepts such as nursing identity and patient-centeredness (Bell, Campbell, & Goldberg, 2015). Using computation text analysis, Bell et al. (2015) identified a disconnect between the two concepts of nursing identity and patient-centeredness, suggesting the text analysis provided a "bird's eye view" and a valuable "scoping method" (p. 14). In another example, Goodwin, VanDyne, Lin, and Talbert (2003) examined the use of data-mining techniques with patients' clinical records. Whilst authors noted the potential for clinical data entry errors to bias findings ("garbage-in… garbage-out", p. 387), Goodwin et al. (2003) acknowledge the value of data-mining methods in building knowledge. Discovering knowledge from these textual databases requires the extraction of meaningful data (Hung & Zhang, 2012). To achieve this meaningful data extraction, many different methods have been proposed (Avram, Caragea, & Dumitrache, 2012; Chen, Ibekwe-SanJuan, & Hou, 2010; Vijayarani, Ilamathi, & Nithya,

2015). However, no model has yet been identified that draws together the proposed methods and translates these into a practice-friendly model that can be applied to a range of clinical questions. The current research draws on the early approach to Knowledge Discovery in Databases (KDD) of Fayyad (1996), developing a new model for exploring electronic research publications.

The aim of this research was to quantitatively define the concept of wellbeing, and more specifically, ICU nurse wellbeing. To achieve this, firstly, the iAnalysis model was developed. With the exponential growth in online publishing, practice-friendly tools were needed to identify and extract relevant data to inform nursing research and practice advancements. Secondly, the iAnalysis model was applied to two bodies of online data. Such a process created new knowledge in relation to the size and impact, disciplinary reach, and semantics of both wellbeing, and ICU nurse wellbeing literature.

3.3. Methods

3.3.1. iAnalysis model development.

The Knowledge Discovery in Databases process and co-word analysis approaches (e.g., Fayyad, 1996) were used to examine the nature of relationships and structure of knowledge of the wellbeing and ICU nurse wellbeing literature. This study employed research tools generally available in academic settings, rather than specialised tools and programme plug-ins, to develop a flexible and adaptable mixed methods approach to explore online published literature. Thus, the model is intended to be generalisable to researchers across a variety of practice-based fields. The iAnalysis model was then applied to two datasets, 1) wellbeing and 2) ICU nurse wellbeing. Application of the model explored two datasets in terms of size and impact, disciplinary reach, and semantics. The adapted text analysis method, coined in this research as 'iAnalysis', is depicted in Figure 3.
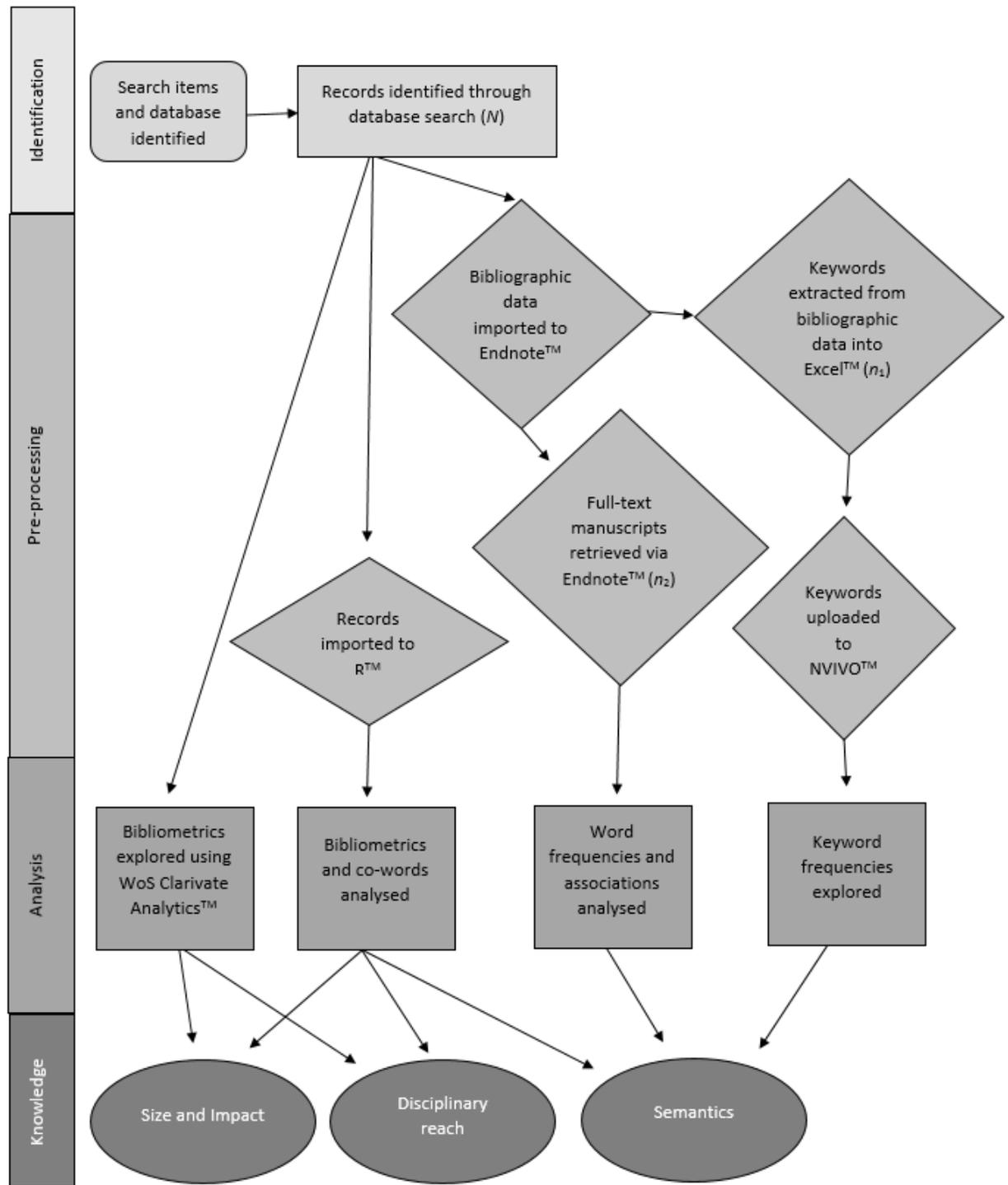
Figure 3. iAnalysis model.

Note. N = all records; n_1 = sample of keywords; n_2 = sample of full-text manuscripts; WoS = Web of Science.

3.3.2. Procedure.

3.3.2.1. Data collection.

The data collection (identification), pre-processing, and analysis method are illustrated in Figure 3. The Web of Science^{TM} (WoS) advanced search engine was used to retrieve the dataset. Records retrieved in the WoS Core Collection^{TM} title search were explored using seven tools described in the following data analysis section.

3.3.2.2. Identification.

Given the vast number and variable quality of publications available through online publishers and databases, clarity of the inclusion criteria for this study was essential. A wide range of web-based databases are available. For this study, the WoS was selected primarily because the journals in the database are in the Science Citation Index (SCI) and the Social Science Citation Index (SCCI). Further, the WoS makes detailed bibliometric analysis possible. For wellbeing, the key search terms in the WoS search engine included: *wellbeing* OR *well-being*. The article title search was conducted on the 16 February 2018 for all years up until 2017. No language limiters were applied. For ICU nurse wellbeing, the key search terms in the WoS search engine included: critical OR intensive, AND nurs*, AND wellbeing OR well-being. The article search was conducted on 14 February 2018 with the date limiter from 1900 – 2017 applied. No language limiters were applied. The broadest search category in WoS, "Topic Search", was selected.

3.3.2.3. Pre-processing.

Both the wellbeing and ICU nurse wellbeing datasets (*N*) comprised all bibliographic data from this initial search (e.g., authors, titles, journals, publication dates, citations). A subset of this primary dataset were the full-text manuscripts retrieved (n_2). The primary dataset was explored with WoS Clarivate Analytics^{TM} (WoS^{TM} data analysis software), imported to Endnote^{TM} (bibliographic referencing software), and to Excel^{TM} (Microsoft office programme). Both author keywords (n_1) and the full text manuscripts (n_2) were imported to NVivo^{TM} (qualitative data software; QRS International, Victoria AU). Records were also

imported to the open source statistical programme RStudio^{TM} with the Bibliometrics^{TM} package (Aria & Curccurullo, 2017) and the Vosviewer^{TM} plugin (open source data analysis software).

3.2.2.4. Analysis.

Data analysis focused on 1) size and impact, 2) disciplinary reach, and 3) semantics. Once the data was collected, for *size and impact,* WoS Clarivate Analytics^{TM} and RStudio^{TM} were used to explore publication dates, frequencies, and citation performance, (i.e., h-index or Hirsh factor; Hirsch, 2005). For *disciplinary reach,* RStudio^{TM} (with the Bibliometrics^{TM} package & Vosviewer^{TM} plugin) was used to explore the records in terms of mapping country, journal and author. For *semantics*, once the bibliographic data was imported to RStudio^{TM} (with the Bibliometrics^{TM} package & Vosviewer^{TM} plugin) keyword co-occurrences were identified and visualised. Full-text manuscripts were imported to NVivo^{TM}, and common stopwords were excluded from the analysis (e.g., method, results). NVivo^{TM} was used to explore word frequencies of both the keywords (n_1) and full-text manuscripts (n_2) using the word frequency search for the 1,000 most frequent words with a minimum length of 5 letters.

3.4. Results

3.4.1. Wellbeing.

The WoS Core Collection^{TM} topic search identified 17,543 records with bibliographic data (*N*). This dataset included 20,526 keywords (n_1). Of the identified records (*N*), 10,715 full-text manuscripts were retrieved (n_2).

3.4.1.1. Size and impact.

The retrieved records (*N* = 17,543) had an average number of citations per record of 21.9. The highest number of citations were for the American Psychologist publication, *Self-determination theory and the facilitation of intrinsic motivation, social development and well-being* (Ryan & Deci, 2000), with 7,880 citations (437 per annum [pa]). The second most highly cited was the Journal of Personality and Social Psychology publication, *Happiness is*

everything, or is it? Explorations on the meaning of psychological well-being (Ryff, 1989). Greater than 50% of all records were published in the past 5 years and the earliest record was from the year 1917. The records covered a range of health-related areas, such as psychology and medicine.

3.4.1.2. Disciplinary reach.

The most frequent journals represented were *Social Indicators Research* (*n* = 605)*, Journal of Happiness Studies* (*n* = 246)*, Personality and Individual Differences* (*n* = 201)*, Social Science and Medicine* (*n* = 159)*,* and *Aging and Mental Health* (*n* = 108). Eight authors had published on more than 30 occasions (Diener, E; Casas, F; Oishi, S; Cummins, R; Ryff, C; Kaplan, R; Ryan, R; Shek, D), the most frequently observed author was Diener with 79 identified publications. The most frequently appearing country of research was USA (*n* = 5,307), followed by England (*n* = 1,783), Australia (*n* = 1,380), Canada (*n* = 1,005), and Germany (*n* = 630) (source: R^{TM}). More than 95% of publications were in the English language (96%), followed by Spanish (1%) and German (1%) (source: WoS Clarivate Analytics^{TM} & RStudio^{TM}).

3.4.1.3. Semantics.

Firstly, keywords of the bibliographic dataset (*n* = 20,526) were explored. The ten most frequently appearing terms (excluding common stopwords) included "health" (10,387), "psychology" (6,181), "social" (5,926), "satisfaction" (4,199), "sciences" (3,585), "quality" (3,404), "stress" (2,870), "mental" (2,616), "environmental" (2,519) and "depression" (2,513). The most frequent keywords are illustrated in a word cloud in Figure 4.

Figure 4. Keyword cloud for wellbeing.

Note. Figure from NVivo's™ word frequency query illustrating the most frequent exact word matches with minimum length of five characters. Word size represents frequency.

The highest keyword co-occurrence was "health and well-being" (*n* = 562) followed by "happiness and subjective well-being" (*n* = 412), "happiness and well-being" (*n* = 390), "satisfaction and wellbeing" (*n* = 352), "quality of life and wellbeing" (*n* = 323), "quality-of-life and quality of life" (*n* = 299), "mental health and well-being" (*n* = 298), "life and well-

being" (*n* = 290), "stress and well-being" (*n* = 272), and "depression and well-being" (*n* = 256), illustrated in Figure 5.

Figure 5. Keyword co-occurrences for wellbeing.

Note. Visualisation from *VOSviewer^TM* (*n* = 200). The size of the label and the circle of an item indicates the frequency of the keyword. The higher the frequency the larger the size. The colour of an item indicates the cluster the keywords belong to. Distances between keywords indicates relatedness of keywords in terms of co-occurrence links. Closer terms indicate closer relatedness. The strongest co-occurrences are represented by lines.

Secondly, the full-text manuscripts (n = 10,715) were explored. The most frequently presenting words were identified and are presented in terms of weighted percentage in full in Appendix D. Examples included "health" (n = 335,637), "social" (n = 280,696), "children" (n = 144,235), "psychological" (n = 137,772), "satisfaction" (n = 133,768), "positive" (n = 129,053), "support" (n = 112,173), "family" (n = 109,738), "women" (n = 92,704) and "mental" (n = 91,586). "Family" and "support" were explored in further detail using a text search query and word tree. Firstly, "family" presented in relation to "support", "conflict" and "responsibilities". "Support" presented as "professional" and "organisational" support within the workplace, and "family" and "social" support. The manuscripts were also searched for additional terms commonly associated with wellbeing in the literature. The following terms were identified: "relationships" (n = 57,158), "happiness" (n = 53,849), "meaning" (n = 23,692), "engagement" (n = 20,359), "motivation" (n = 17,182), "purpose" (n = 16,660) and "achievement" (n = 11,480). Of note, terms commonly associated with illbeing were also frequent, such as "stress" (n = 74,014), "depression" (n = 65,383) and "anxiety" (n = 41,501).

3.4.2. ICU nurse wellbeing.

This subset of wellbeing was identified in a new systematic search. The WoS Core Collection™ topic search identified 383 records with bibliographic data (N). This dataset included 1,223 author keywords (n_1). Of the identified records (N), 328 full-text manuscripts were retrieved (n_2).

3.4.2.1. Size and impact.

The retrieved records (N = 383) had an h-index of 37, with an average number of citations per item of 14.9, number of times cited 5,731 and citing articles 5,496. The highest number of citations for an individual publication was 342 (26 per annum [pa]) for the Diabetic Medicine publication, *Psychosocial problems and barriers to improved diabetes management: Results of the Cross-National Diabetes Attitudes, Wishes and Needs (DAWN) Study (Peyrot et al., 2005).* The second most highly cited was the American Journal of Critical Care publication, *Moral distress of staff nurses in a medical intensive care unit (Elpern,*

Covert, & Kleinpell, 2005). Almost 50% of all records were published in the past 5 years and the earliest record was from the year 1992. The records covered a range of health-related areas such as psychological wellbeing, emotion regulation, moods and judgements, and models of wellbeing.

3.4.2.2. Disciplinary reach.

The most frequent journals represented were *Journal of Advanced Nursing* (*n* = 29)*, Journal of Clinical Nursing* (*n* = 25)*, Nursing in Critical Care* (*n* = 9)*, International Journal of Nursing Studies* (*n* = 8)*, Critical Care Medicine* (*n* = 7) and *Intensive and Critical Care Nursing* (*n* = 7). Ten authors had published on more than two occasions (Kleinpell, R.; Good, V.; Gozal, D.; Moss, M.; Sessler, C.; Jackson, D.; Le Blanc, P.; Lee, S.; Mixer, S.; Schaufeli, W.), the most frequently observed author was Kleinpell with 6 publications. The most frequently appearing country of research was USA (*n* = 114), followed by Australia (*n* = 32), England (*n* = 32), Canada (*n* = 25), and Sweden (*n* = 19) (source: R^{TM}). More than 90% of publications were in the English language (96%), followed by German (2%) (source: WoS Clarivate Analytics^{TM}).

3.4.2.3. Semantics.

Firstly, author keywords of the bibliographic dataset (*n* = 1,223) were explored. The ten most frequently appearing terms (excluding stopwords such as "unit", "intensive", "critical", "nurse", "units") included "family" (*n* = 38), "stress" (*n* = 31), "education" (*n* = 27), "quality" (*n* = 22), "burnout" (*n* = 21), "neonatal" (*n* = 20), "communication" (*n* = 16), "social" (*n* = 16), "child" (*n* = 15) and "cancer" (*n* = 13). The term "wellbeing" ("well being" OR "well-being" OR "wellbeing") appeared on 24 occasions in the keywords in association with the words "psychological" (i.e., "psychological well-being"), "spiritual", "subjective", "caregiver" and "emotional". The most frequent keywords are illustrated in a word cloud (see Figure 6).

Figure 6. Keyword cloud for ICU nurse wellbeing.

Note. Figure from NVivo's™ word frequency query illustrating the most frequent exact word matches with minimum length of five characters less common stop words. Word size represents frequency.

The ICU nurse wellbeing keywords were also searched for additional terms commonly associated with wellbeing in the literature. The text search identified the following terms and frequencies, "satisfaction" (*n* = 11), "teamwork" (*n* = 1), "relationships" (*n* = 7) and "engagement" (*n* = 2). The top 20 keyword co-occurrences all included the term "model" for example, "family" (i.e., "model & family"), "stress" and "intervention" (see

Figure 7). Keywords potentially related to wellbeing (as opposed to illbeing) occurring in the top 200 co-occurrences included "satisfaction", "mental health", and "quality of life".

Figure 7. Keyword co-occurrences for ICU nurse wellbeing.

Note. Visualisation from *VOSviewer*^TM (*n* = 200). The size of the label and the circle of an item indicates the frequency of the keyword. The higher the frequency the larger the size. The colour of an item indicates the cluster the keywords belong to. Distances between keywords indicates relatedness of keywords in terms of co-occurrence links. Closer terms indicate closer relatedness. The strongest co-occurrences are represented by lines.

Secondly, the full-text manuscripts (n = 328) were explored. The most frequently presenting words were identified and are presented in terms of weighted percentage in greater detail in Appendix D. Examples included "health" (n = 11,298), "family" (n = 4,561), "support" (n = 3,190), "social" (n = 3,185), "stress" (n = 2,986), "people" (n = 2,492), "information" (n = 2,488), "quality" (n = 2,459), "experience" (n = 2,422), "children" (n = 2,332), "education" (n = 2,109), and "management" (n = 1,998). Family and support were explored in further detail using a text search query and word tree. Firstly, 'family' presented as the nurses' relationships with patients' families in ICU, (e.g., connections, presence, satisfaction, & communication). Secondly, 'support' presented as logistics, organisational, management, senior staff, communication, mentorship, and for patient and family. Manual searching for additional terms commonly associated with wellbeing identified: "relationships" (n = 1,079), "happiness" (n = 0), "meaning" (n = 768), "engagement" (n = 415), "motivation" (n = 219), "purpose" (n = 492), and "achievement" (n = 0). Of note, terms commonly associated with illbeing were also highly frequent, such as "stress" (n = 2,986), "anxiety" (n = 1,240), "depression" (n = 1,069), and "burnout" (n = 1,473).

The frequencies in the full-text manuscripts of wellbeing and ICU nurse wellbeing were then compared to identify which of the most commonly presenting words occurred in both studies (see Appendix D). Examples of commonly co-occurring words included "health", "social", "children", "psychological", "satisfaction", "positive", "support", "family", "wellbeing", "women", and "mental". Of note, "stress", "depression", and "anxiety" were terms present in the top 100 most frequently co-occurring terms in these full-text manuscripts.

3.5. Discussion

3.5.1. iAnalysis model.

Evolving technological advances support the creation of new and emerging techniques in the analysis of text. The iAnalysis model provided a practice-friendly tool to explore a large source of online, published literature. We were able to obtain a broad understanding of the existing selected research in relation to ICU nurse wellbeing using this approach. The iAnalysis model affords benefits for researchers such as mapping theoretical structures of concepts, reviewing trends in research over time and identifying opportunities for future research.

3.5.2. Mapping wellbeing.

The salience of illbeing, specifically stress, anxiety, depression and burnout, in wellbeing research was evident in this iAnalysis. This salience was particularly prominent in the ICU nurse wellbeing literature. The iAnalysis sought to explore the empirical knowledge underpinning wellbeing and intensive care nurse wellbeing, yet the presence of illbeing occurred in semantic analyses of key words and co-terms. Such a result is likely due to a relatively recent paradigm shift to health promotion approaches, which is yet to translate into, and be observed in, the published literature. The semantics analysis identified several key elements thought to be indicative of wellbeing, such as meaning, engagement, motivation, purpose, positive emotions (e.g., happiness) and achievement. Whilst these elements were evident in the iAnalysis, they were under-represented in the results in comparison to terms such as stress, depression, anxiety and burnout.

Research focusing on illbeing has an important place in terms of healthcare. However, there is an increasing movement to balance illbeing research with research related to wellbeing, particularly in relation to health promotion and prevention. Peterson (2006a) suggested "what is good about life is as genuine as what is bad and therefore deserves equal attention" (p. 4). Whilst this iAnalysis maps an image of illbeing, there is considerable work underway to create a balanced perspective. The growth in the field of positive psychology is just one area where this is evident, promoting the scientific

exploration of what makes life worth living (e.g., Seligman, 2011). With the recent adoption of this more balanced approach, future application of iAnalysis will likely identify new and emerging trends in the literature with an increased focus on wellbeing.

3.5.3. Limitations.

This study has identified a distinct focus on illbeing in this collection of wellbeing literature. This literature base has been described by reporting the *h*-index, average citations, and most frequently occurring journals publishing in this area. However, although widely used, the *h*-index has been termed "counter-intuitive", providing inconsistent results when aggregating publication and citation statistics into a single number (Waltman & Van Eck, 2012). Similarly, counting citations is also problematic and error-prone due to the complete-normalised counts (see Rousseau, Egghe, & Guns, 2018). Thus, care needs to be taken with the interpretation of the findings. The iAnalysis method lacked elements of both specificity and sensitivity. There is likely bias from several sources, for example, publication bias, bias in source selection, and bias in publication language. Also, the technical problems related to counting publications, such as normal probability curves of publication growth rates and partial capturing of research publications by databases (Larsen & von Ins, 2010) are a further limitation, as is the inability for the iAnalysis to identify individual study innovations. For example, the use of the WoS^{TM} database is a limitation in itself, given the low number of nursing publications included (Powell & Peterson, 2017). Finally, the iAnalysis may be influenced by researcher decisions and programme limitations, such as the use of stopwords. Thus, the use of this method in construct and content validity in the future development of measures and/or interventions associated with ICU nurse wellbeing needs to be both considered and guarded. Nevertheless, this study provides insight into the theoretical structure of both wellbeing, and ICU nurse wellbeing literature in relation to size and impact, disciplinary reach, and semantics.

3.6. Conclusion

This chapter has presented the development and application of a newly developed 'iAnalysis' model that integrated several readily available online research resources. Using the model, two WoS^{TM} literature datasets were electronically exported and analysed. The analyses determined the size and impact, disciplinary reach, and semantics of the wellbeing, and ICU nurse wellbeing literature. The iAnalysis identified a substantial focus on illbeing. The application of this new iAnalysis model provides evidence of a valuable method for exploring electronically available literature. To add further depth to this exploration of the empirical conceptions of ICU nurse wellbeing, the next chapter presents study two, a systematic review and critical appraisal of primary research.

Chapter 4. Intensive Care Nurse Wellbeing: A Systematic Review

In the previous chapter, study one, I analysed the bibliometrics and text of online published literature. In this chapter, study two, I systematically review the intensive care nurse wellbeing literature[2]. This review 1) systematically identified primary research studies reporting intensive care nurse wellbeing, and 2) critically appraised the methodological quality of each study's properties using the relevant quality assessment tool. Additionally, the review explored the full-text of the included studies to identify commonly used terms in the intensive care nurse wellbeing literature. Study two investigated the research question: *How is ICU nurse work wellbeing conceptualised in the literature?*

4.1. Abstract

Background and purpose: Unique work challenges of intensive care nurses can cause both stress and distress to nurses, evident in prevailing literature regarding burnout, compassion fatigue, and moral distress. Identifying factors contributing to intensive care nurse wellbeing would complement this focus on nurse illbeing, supporting the development of work wellbeing initiatives. The current review seeks to balance the existing negatively skewed evidence base by investigating intensive care nurse wellbeing rather than illbeing.

Objectives: Systematically identify, appraise and synthesise original research reporting intensive care nurse wellbeing.

Methods: The electronic search strategy included 1) bibliographic databases for published work, and 2) forward and backward citation searches. Key search terms included [critical OR intensive] AND [nurs*] AND [well*]. Inclusion criteria were 1) Population: critical or intensive

---

[2] Study two, largely similar to the content documented here in chapter four, has been accepted for publication.

care nurses working with adult or mixed adult and paediatric patients, 2) Study type: original research studies of either qualitative or quantitative design, 3) Outcome: investigation of ICU nurse wellbeing, either as the phenomena of a qualitative study, or measured in a prevalence study, or as an independent or dependent variable in a quantitative study, and 4) publication available in the English language. Studies were excluded if the population group of intensive care nurses was not independently reported. Included studies were critically appraised and results were synthesised and presented descriptively. Semantics of the included studies were explored to identify frequently used terms.

Results: Four primary research studies met the inclusion criteria, focusing on spiritual wellbeing, team commitment, emotional wellbeing, and the effects of a mindfulness programme. The studies were heterogeneous in terms of study design, focus, definitions and measures, with small sample sizes, and of variable quality and generalisability.

Conclusions: The wellbeing of intensive care nurses is currently understudied. Conceptualising intensive care nurse wellbeing, understanding correlates of wellbeing, and testing work interventions to improve wellbeing remain significant opportunities for future research.

Key words: critical appraisal; critical care nurses; intensive care unit; systematic review; wellbeing.

4.2. Background

The contemporary intensive care work environment requires nurses to respond rapidly to complex situations, often with indeterminable patient outcomes. In this work environment, nurses may experience a variety of potential psychological harms such as burnout (Epp, 2012; Pereira et al., 2016) and moral distress (Choe et al., 2015). These harms have been the focus of a large body of international research focusing on illbeing (e.g., Mäkikangas et al., 2016). More recently, global leaders have called for a shift in focus from nurse illbeing to nurse health and wellbeing (World Health Organisation, 2013).

The emerging field of positive psychology highlights the value in balancing this focus on illbeing with a complementary focus on what makes and enables a life worth living (Seligman, 2011, pp. 1-2). Wellbeing research resonates strongly with positive psychology, exploring "the balance point between an individual's resource pool and the challenges faced" (Dodge et al., 2012, p. 230). Aspirational visions of health and disability systems focusing on wellbeing and prevention (e.g., Ministry of Health, 2015; World Health Organisation, 2013) require new ways of thinking, such as these of applied positive psychology. This systematic review builds from the iAnalysis, with a comprehensive examination of the existing intensive care unit (ICU) nurse wellbeing evidence. The objectives were to 1) systematically identify and synthesise original research studies reporting intensive care nurse wellbeing, and 2) critically appraise the methodological quality of each study's properties using a relevant quality assessment checklist.

4.3. Methods

For rigour and clarity in reporting, this systematic review followed the recommended Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) guidelines (Moher et al., 2009). Additionally, the review explored the full-text documents of the included studies using NVivo[TM] (qualitative data software; QRS International, Victoria AU) to identify commonly used terms in the intensive care nurse wellbeing literature.

4.3.1. Review inclusion criteria.

There were four inclusion criteria for this review which included 1) population: critical or intensive care nurses working with adult or mixed adult and paediatric patients, 2) Study type: original research studies of either qualitative or quantitative design, 3) Outcome: investigation of ICU nurse wellbeing, either as the phenomena of a qualitative study, or measured in a prevalence study, or as an independent or dependent variable in a quantitative study, and 4) publication available in the English language. Studies of nurse wellbeing were excluded if findings for the population group of intensive care nurses were not independently reported.

4.3.2. Search strategy.

A two-staged electronic search strategy was used to identify studies that met the inclusion criteria: 1) electronic bibliographic databases for published work, and 2) forward and backward citation searches. The following electronic databases were searched: Ovid (psycINFO), EBSCO Health Databases (CINAHL Plus with Full Text and Medline), Scopus, Pubmed, and Web of Science Core Collection. The search occurred in July 2017. No date nor country limiters were applied. Grey literature was not searched. The database key search terms included [critical OR intensive] AND [nurs*] AND [well*]. A sample of the search strategy is provided in Table 1.

Table 1. Sample search strategy for Scopus^TM.

Search term number	Search terms
1	*[well*]. TITLE-ABS-KEY*
2	*[critical OR intensive]. TITLE-ABS-KEY*
3	*[nurs*]. TITLE-ABS-KEY*
4	*1 AND 2 AND 3*
5	*LIMIT-TO: journals, articles, English language*

The sample search strategy from Table 1 is illustrated in the following search string for Scopus^TM: (TITLE-ABS-KEY (well*) AND TITLE-ABS-KEY (critical OR intensive) AND TITLE-ABS-KEY (nurs*)) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j")).

4.3.3. Study screening.

Study titles and abstracts were reviewed for potential inclusion by the first author (RJ) and duplicates removed. Studies were excluded at this point if they did not report ICU nurse wellbeing (e.g., studies reporting patient wellbeing were excluded). Then two reviewers (RJ & MS) independently read and assessed the full text manuscripts against the inclusion criteria (see Appendix E). There was no disagreement between reviewers.

4.3.4. Data extraction.

A data extraction form (see Appendix F) included the following elements: study location, research design, wellbeing definition/s, wellbeing dimension/s measured, wellbeing measure/s, sample size (*n*), participant characteristics, intervention (if appropriate), analyses, and main outcomes. The full-text of each study was imported to NVivo^TM.

4.3.5. Quality assessment.

The included studies were appraised using one of three relevant critical appraisal tools. For surveys the cross-sectional appraisal tool of the Center for Evidence Based Management (CEBMa) (2014) was used, for grounded theory the qualitative appraisal tool of Critical Appraisal Skills Programme (CASP) (2006) was used, and for quasi-experimental studies the quasi-experimental appraisal tool of Greenhalgh et al. (2005) was used.

4.4. Data analysis

Results were synthesised and are presented descriptively, secondary to heterogeneity of the eligible studies. Semantics and frequencies of the included studies were explored using NVivo's^{TM} word frequency search for the 1,000 most frequent words with a minimum length of 4 letters. Common 'stopwords' (terms such as 'were' and 'this') were excluded from the word frequency search, as is common practice (e.g., see Bazeley & Jackson, 2013). The word frequencies are presented as a word cloud.

4.5. Results

4.5.1. Identification of studies.

Database searches identified 1,652 documents, with three additional records from citation searches. Following removal of duplicates, and title and abstract screening for potential inclusion, four full text articles were assessed and met the inclusion criteria. The primary reason for studies being excluded were due to reporting patient wellbeing as opposed to ICU nurse wellbeing. The search strategy results are shown in Figure 8.
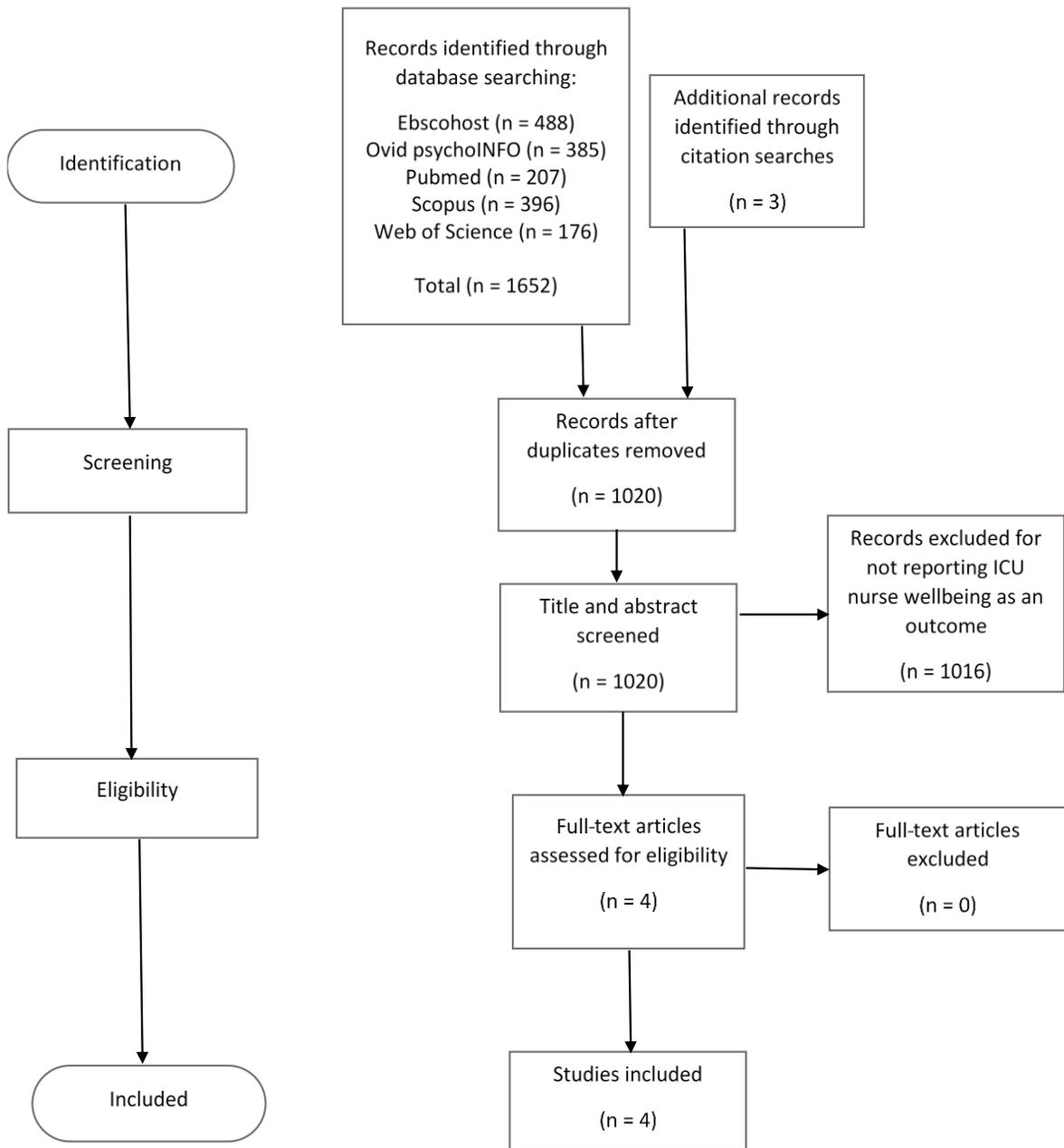
Figure 8. Flow chart of search strategy results.

The characteristics of the four studies that met inclusion criteria (Azarsa, Davoodi, Markani, Gahramanian, & Vargaeei, 2015; Galletta, Portoghese, Coppola, Finco, & Campagna, 2016; Hee Kim, Subramanian, Rahmat, & Phang Cheng, 2014; Siffleet, Williams, Rapley, & Slatyer, 2015) are summarised in Table 2.

Table 2. Characteristics of included studies.

Authors	Location	Study focus	Intervention	Research design	Variables of interest	Sample size (*n*)	Main findings
Azarsa et al. (2015)	Iranian ICU	ICU nurse spiritual wellbeing	N/A	Survey	SWS, SCRS, SCCS	109	The higher the nurses' spiritual wellbeing and the more positive their attitude was toward spiritual care, the more they could provide spiritual care to patients.
Galletta et al. (2016)	Italian ICU	ICU nurse team commitment	N/A	Survey	Adapted NWI-R, WDQ, SPOS, QSO, OCQ	222	Nursing work characteristics are directly related to team commitment. The nursing work characteristics and team commitment relationship was mediated by both perceived supervisor support and job satisfaction, which in turn strengthen individual-organisation relationships and wellbeing.
Hee Kim et al. (2014)	Malaysian ICU	Mindfulness intervention for ICU nurses	Mindfulness-based cognitive therapy	Quasi-experimental	PSS, DASS, MAAS, SHS	41	Significant decrease in the level of perceived stress, stress, anxiety, depression post intervention and increase in mindfulness and happiness, with a moderate to large effect size.

Authors	Location	Study focus	Intervention	Research design	Variables of interest	Sample size (*n*)	Main findings
							Wellbeing outcome measures were the MAAS and SHS.
Siffleet et al. (2015)	Australian ICU	ICU nurse emotional wellbeing	N/A	Grounded theory	N/A	15	Five key categories described the maintenance of emotional wellbeing for ICU nurses: 'achieving best care', 'caring for the patient's family', 'autonomy within the ICU environment', 'teamwork', and 'previous nursing and life experience'.

Note. Not applicable (N/A); Perceived Stress Scale (PSS); Depression, Anxiety, Stress Scale (DASS); Mindfulness Attention and Awareness Scale (MAAS); Subjective Happiness Scale (SHS); Spiritual Wellbeing Scale (SWS); Spiritual Care Rating Scale (SCRS); Spiritual Care Competence Scale (SCCS); Nursing Work Index-Revised (NWI-R); Work Design Questionnaire (WDQ); Survey of Perceived Organisational Support (SPOS); Questionnaire of Organisational Satisfaction (QSO); Organisational Commitment Questionnaire (OCQ).

The included studies were all original research studies which varied in their research focus. Research areas included spiritual wellbeing (Azarsa et al., 2015), team commitment (Galletta et al., 2016), effects of a mindfulness programme (Hee Kim et al., 2014), and emotional wellbeing (Siffleet et al., 2015). Three of the research methodologies were quantitative (Azarsa et al., 2015; Galletta et al., 2016; Hee Kim et al., 2014) and one was a qualitative grounded theory study (Siffleet et al., 2015). Research extended globally through Iran (Azarsa et al., 2015), Italy (Galletta et al., 2016), Malaysia (Hee Kim et al., 2014) and Australia (Siffleet et al., 2015). Publications were in *Nursing in Critical Care*, *Australian Journal of Advanced Nursing*, *Applied Nursing Research* and *Journal of Caring Science*. The number of participants ranged from 15 (grounded theory) to 222 (survey). In total, 387 ICU nurses participated in the four studies.

4.5.2. Overview and synthesis of included studies.

The findings of the four included studies are now summarised individually, then synthesised in terms of wellbeing definitions, word frequencies and wellbeing measures. Firstly, Azarsa et al. (2015) identified in their survey of 109 Iranian ICU nurses that the higher the nurses' spiritual wellbeing (r = 0.51) and the more positive their attitude was toward spiritual care (r = 0.47), the more they could provide spiritual care to patients (adjusted R square = 0.422; F = 14.15; p = 0.00). Secondly, Galletta et al. (2016) found in their survey of 222 Italian ICU nurses that nursing work characteristics and team commitment relationship was mediated by both perceived supervisor support and job satisfaction, which in turn strengthened individual-organisation relationships and wellbeing. Thirdly, Hee Kim et al. (2014) identified in their quasi-experimental study of 41 Malaysian ICU nurses that a mindfulness-based cognitive therapy intervention demonstrated significant improvements in the level of perceived stress, stress, anxiety, depression, mindfulness, and happiness, with a moderate to large effect size. Fourthly, Siffleet et al. (2015) found in their grounded theory study of 15 Australian ICU nurses five key categories describing emotional wellbeing for ICU nurses: 'achieving best care', 'caring for the patient's family', 'autonomy within the ICU environment', 'teamwork', and 'previous nursing and life experience'. Across the four studies,

'relationships' was the only feature common to more than one study, present in the studies of Galletta et al. (2016) (as support) and Siffleet et al. (2015) (as teamwork).

The present review intended to extract and compare definitions of wellbeing. However, none of the four studies specifically defined wellbeing, nor their focal area of wellbeing (e.g., spiritual wellbeing or emotional wellbeing). The authors broadly discussed wellbeing in terms of their study focus. Azarsa et al. (2015) discusses wellbeing in terms of spirituality and spiritual wellbeing, stating that "spiritual wellbeing is one of the most important factors in human health and healthy lifestyle" (p. 309). They describe spiritual wellbeing as a "coordinated and integrated connection between the internal forces" (p. 309). Galletta et al. (2016) discusses wellbeing in terms of quality of working life, suggesting that "improving nursing QWL [quality of working life] is crucial for the well-being and effectiveness of an organization" (p. 146), and highlighting the links between the characteristics of nursing practice and employees' general wellbeing. Hee Kim et al. (2014) discuss wellbeing in relation to a measure of mindfulness and one of subjective happiness. Siffleet et al. (2015) discusses wellbeing in terms of emotional wellbeing. When describing the results from their study they suggest emotional wellbeing is characterised by the "feelings of happiness, enjoyment and personal satisfaction…experienced when nurses felt that they had done their best" (p. 306).

The present review also intended to identify measures of wellbeing used in ICU nursing research, however, despite drawing conclusions specifically stating the term 'wellbeing', only one of the four studies included specific wellbeing measures (Azarsa et al., 2015). This was a specific 10-item measure of spiritual quality of life, originally developed by Paloutzian and Ellison (1982). The measure has two subscales, 1) religious wellbeing and 2) existential wellbeing. Validity and reliability of the measure was reported by study authors (Azarsa et al., 2015).

Exploration of the words extracted from each of the four studies highlighted the most frequently documented words were emotional (n = 25), experience (n = 20), families (n = 18), family (n = 18), stress (n = 18), spiritual (n = 15), anxiety (n = 14), satisfaction (n =

14), and support (*n* = 13). The top 1000 word-frequency report (NVivo^TM) is illustrated as a word cloud (Figure 9).
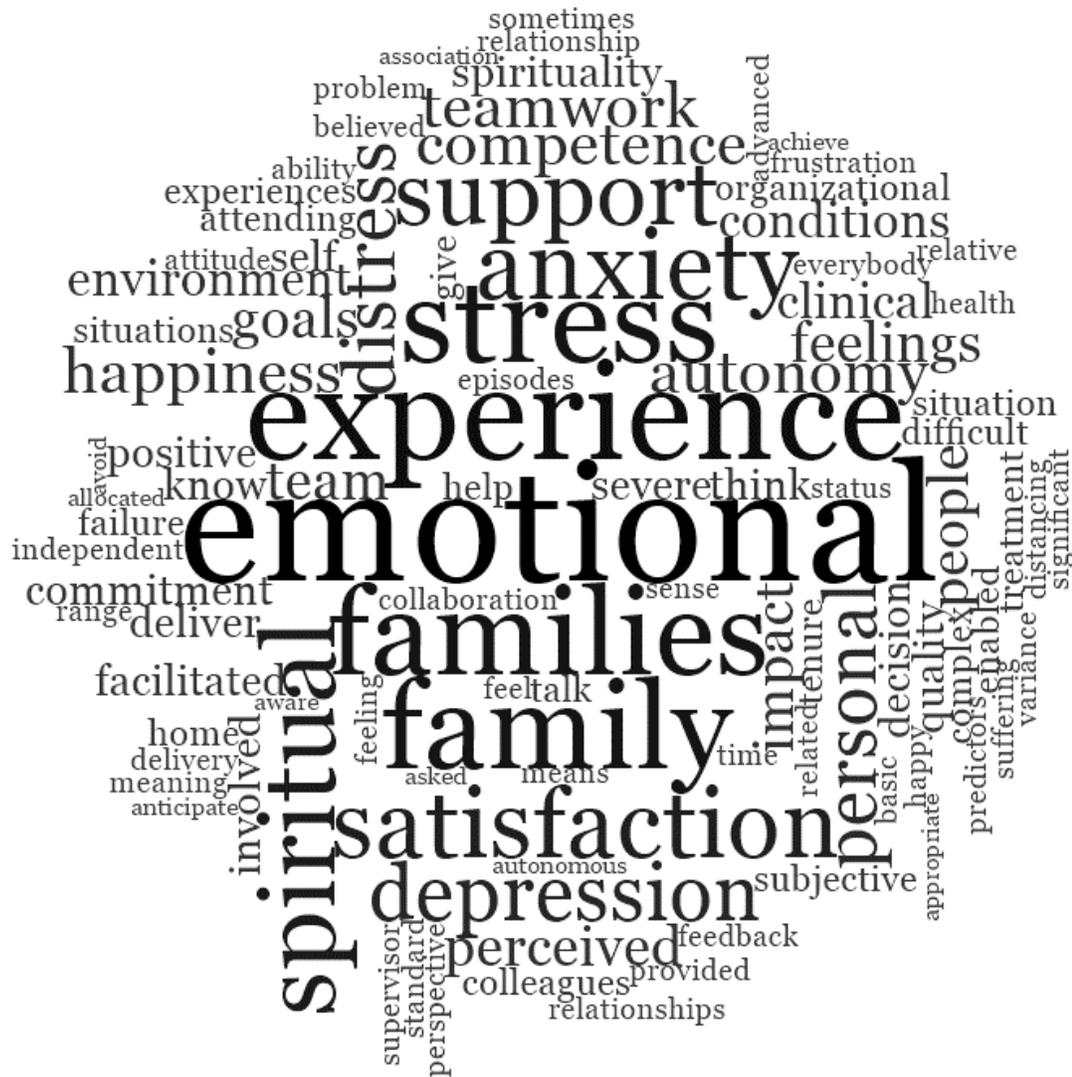
Figure 9. Exploratory NVivo^TM word frequency cloud for the four included full text documents.

Note. Figure from NVivo's^TM word frequency query illustrating the 1,000 most frequent exact word matches with minimum length of four characters. Word font size represents frequency, with larger font indicating more commonly used words.

The terms 'emotional' and 'stress' were evident in all four studies. 'Emotional' was most commonly combined with terms such as 'needs' and 'distress' (Azarsa et al., 2015); socio-emotional needs of employees (Galletta et al., 2016), wellbeing, exhaustion, dissatisfaction, barriers, fallout and the avoidance of distress to maintain wellbeing (Siffleet et al., 2015); and negative emotional states (Hee Kim et al., 2014). 'Stress' was most commonly associated with the challenges of working in ICU and was evident both as a word on its own or extended to form terms such as 'moral distress', 'stressors' and 'distress'. The second most frequently presented word was 'experience'. 'Experience' was used in relation to positive work experiences, satisfaction with job experience and perceived support, lack of experiences of teamwork, the experiences of identification and commitment among ICU staff nurses (Galletta et al., 2016); and how different situations were managed, including the negative impact extensive nursing experience could have, for example, resulting in exhaustion due to nurses being over exposed to complex patients (Siffleet et al., 2015). In sum, the overview and synthesis of the studies highlight four very disparate studies in terms of study design, focus, definitions and measures. The one commonality was the use of the terms 'emotional' and 'stress'. The studies are now quality appraised to determine their individual empirical rigour.

4.5.3. Quality assessment.

Both studies using surveys (Azarsa et al., 2015; Galletta et al., 2016) were quality appraised using the cross-sectional appraisal tool of the Center for Evidence Based Management (CEBMa) (2014). Of the 12 appraisal items, Azarsa et al. (2015) met six. For Galletta et al. (2016) nine of the appraisal items were met, with the remaining three being unclear. Examples of strengths included clearly focused research aims and having high response rates of 68% (Galletta et al., 2016) and 78% (Azarsa et al., 2015). However, neither study identified *a priori* sample size considerations for statistical power, reducing the potential for scientifically valid results (Kadam & Bhalerao, 2010). Authors reported measure validity and reliability, and results included statistical significance analysis with confidence intervals. However, the potential for confounders was only briefly acknowledged and dismissed in one study (Azarsa et al., 2015) and not in the other (Galletta et al., 2016). Overall, generalisability

of results was minimal in both studies due to the unique participant demographics of each study's convenience samples.

The quasi-experimental pre-test/post-test study of a mindfulness based cognitive therapy intervention (Hee Kim et al., 2014) was appraised using the quasi-experimental appraisal tool of Greenhalgh et al. (2005). Of the eleven items in the checklist, Hee Kim et al. (2014) met six of the items. Key limitations to the study included their design; either a randomised or non-randomised controlled study rather than their quasi-experimental design could have strengthened their research. Whilst their research was clearly defined, it was difficult to ascertain whether the intervention was independent of other changes over time given there was no control group. The intervention adapted the original eight-week intervention to five weeks to reduce the nurses' workload, however 10% of participants did not complete the programme, and just 60% attended all five weeks. Given this level of dropout, and the lack of a measure of compliance with the associated activities, it is difficult to ascertain the feasibility of the intervention from a resourcing and workload perspective. The pre- and post-intervention data collection, and the validity and reliability of the primary outcome measures provided data to enable reliable statistical inference. Longer follow-up with further time-points for data collection may have demonstrated whether the benefit is sustainable.

The Critical Appraisal Skills Programme (CASP) (2006) qualitative appraisal tool was used to explore Siffleet et al.'s (2015) grounded theory study. Of the 10 items of this appraisal, nine were met, suggesting the study was credible, relevant and rigorous. For example, Siffleet et al. (2015) used an appropriate qualitative methodology and research design to explore a clearly stated research aim. The recruitment strategy appeared appropriate to the aim of the research, as were the methods with which data were collected. The one aspect not addressed was related to reflexivity; researchers did not disclose any information pertaining to their relationship with participants.

To summarise, the quality assessment of the four studies demonstrated similar heterogeneity to the studies themselves. There was variable quality with both strengths and limitations. The key strengths in Azarsa et al.'s (2015) study were the clear research aims

and response rate of 78%, a limitation was the lack of documented sample size considerations. For Galletta et al. (2016), similarly, the strength was the clear research aims, and the absent sample size considerations were a limitation. For Hee Kim et al. (2014), a strength was their clearly stated research question, however treatment fidelity needed further reporting. For Siffleet et al. (2015), the strength was in their execution of appropriate methods, with a limitation the lack of documented reflexivity. One important limitation extending across all the studies was the lack of generalisability of their findings, primarily due to study design or sample size.

4.6. Discussion

Research exploring intensive care nurse wellbeing was found to be largely absent in the existing published primary studies. Even within the four identified studies investigating wellbeing, features of illbeing were evident, illustrated in the exploratory word cloud where terms such as stress, anxiety, distress and depression were prevalent. Whilst there were identified strengths in some of the studies (e.g., see Siffleet et al., 2015), there were considerable opportunities for methodological improvements across the majority. These findings reflect broader employee wellbeing research. For example, a systematic review of longitudinal studies that investigated employee wellbeing constructs found the majority of the 40 identified studies focussed on illbeing, or the "negative side" of employee wellbeing (Mäkikangas et al., 2016). Of the studies identified in this systematic review, over half focused on burnout. This paucity of wellbeing research reflects a similar gap in the broader empirical conceptions of both nurse and intensive care nurse wellbeing, with the overwhelming focus on stress, fatigue and burnout (Borteyrou et al., 2014; Burgess et al., 2010; Choe et al., 2015; De Villers & DeVon, 2013; Dewe, 1987; O'Connell, 2014; Pereira et al., 2016; Sacco et al., 2015; Vévoda et al., 2016; Weigl et al., 2016; Zarei et al., 2016).

The feature of 'relationships' in two of the included studies (Galletta et al., 2016; Siffleet et al., 2015) reflects the wider wellbeing literature on healthcare system performance (Ray-Sannerud et al., 2015). The review of Ray-Sannerud et al. (2015) identified positive and negative determinants associated with healthcare workers' wellbeing

and their potential risk and contribution to system performance. Positive determinants such as empowerment, quality sleep and positive workplace relationships were associated with high performance, patient satisfaction, and lower turnover intentions. Negative determinants such as burnout, psychological distress, and poor social capital were associated with suboptimal patient care, unprofessional conduct, and medical leave. The importance of relationships also underpins strengths-based leadership, for example, magnet hospitals (Kramer et al., 2007).

Key components of strengths-based nursing leadership are proposed by Gottlieb, Gottlieb, and Shamian (2012), for example, recognising uniqueness of staff, nurse leaders and the organisation and creating work environments that promote nurses' health and facilitates development. The potential stressors of ICU nursing provide significant opportunity to draw from psychological capital (such as personal psychological strengths), and the strengthening evidence base of positive psychology and positive psychological interventions (Bolier et al., 2013; Hone, Jarden, & Schofield, 2014; Sin & Lyubomirsky, 2009; Weiss, Westerhof, & Bohlmeijer, 2016). An example of an initiative where the "positive" has been added to an organisation includes the Brilliance Project (Dadich et al., 2015). This project employed positive organisational scholarship in healthcare, appreciative inquiry and reflective practice to investigate what is 'brilliant' in a service. Also, using the positive organisational scholarship lens and a foundation of the humanistic work ideology, the Big Hospital study examined an organisation driven by humanitarian principles (Wooten & Crane, 2004).

Of the four studies included in the review, mindfulness, spirituality, emotional wellbeing, and team commitment were the key research areas (Azarsa et al., 2015; Galletta et al., 2016; Hee Kim et al., 2014; Siffleet et al., 2015). Both mindfulness and spirituality have recently been identified by critical care nurses as strengtheners of their work wellbeing (Jarden, Sandham, Siegert, & Koziol-McLain, 2018b), with mindfulness being linked to both improved wellbeing and productivity (Kersemaekers et al., 2018). Spirituality is also associated with enhanced wellbeing in relation to engagement and a sense of relationship with nature (Kamitsis & Francis, 2013), and for nurses has been

linked with reduced emotional exhaustion (Hylton Rushton, Batcheller, Schroeder, & Donohue, 2015). The role of positive emotions in promoting resilience and wellbeing has a strong evidence base underpinned by Fredrickson's broaden-and-build theory of positive emotions (Fredrickson, 2004). Finally, team commitment predicts collaboration between the interprofessional team, for example, nurses and physicians (Caricati et al., 2015), and is increasingly linked with transforming organisations and effectiveness (Paolucci, Dimas, Zappalà, Lourenço, & Rebelo, 2018).

Research investigating what is going well in people's lives is an evolving research area, propelled by researchers and theorists such as Peterson (2006a) who suggested "what is good about life is as genuine as what is bad and therefore deserves equal attention" (p. 4). Positive psychology is just one area where this is evident, promoting the exploration of what makes life worth living (Seligman, 2011). This review reflects an opportunity to balance the traditional model of disease (Seligman & Csikszentmihalyi, 2000), with a model of health promotion and prevention. For example, balancing recovery models with those driving strengths (Proyer et al., 2015), thriving (Kern et al., 2014), flourishing (Hone, Jarden, Schofield, et al., 2014; Seligman, 2011), resilience (Vanhove et al., 2015) and optimal functioning (Colman, 2010). Thus, this review's focus on wellbeing supports the development of research programmes investigating health promotion.

The present review is limited by not publishing the protocol, given this, the research has been guided by the Preferred Reporting Items for Systematic Review and Meta-Analysis (Moher et al., 2009) to support the reporting and rigour of the review. A second limitation was the broad search terms, e.g., [well*]. Whilst the intent was to ensure the variations in the spelling of wellbeing were captured, the impact was to obtain a much larger non-specific dataset than was likely necessary. Grey literature was not searched, nor were field experts approached, thus there is a possibility of an associated publication bias influencing this study's results.

4.7. Conclusions

In chapter four I have highlighted that ICU nurse wellbeing is both understudied and lacks conceptual clarity. Of the four heterogeneous studies identified, sample sizes were small and generalisability lacking. The complexity and unavoidable pressure of critical care nursing provides a unique opportunity to balance existing research focused largely on illbeing towards an equivalent emphasis on wellbeing. The iAnalysis (chapter three), and this systematic review (chapter four), have integrated mixed methods approaches to elucidate the empirical conceptions of ICU nurses' wellbeing and work wellbeing. The next stage, and the forthcoming chapter five, is to engage with key stakeholders, intensive care nurses, to explore their conceptions of work wellbeing.

Chapter 5. Intensive Care Nurse Conceptions of Wellbeing: A Prototype Analysis

In the previous chapter, study two, I systematically reviewed the intensive care nurse wellbeing literature. In this chapter I report the third study, intensive care nurses' conceptions of wellbeing[3]. This prototype analysis involves three sub-studies to investigate how wellbeing is conceived and defined by ICU nurses. Study three investigates the research question: *How do ICU nurses conceptualise work wellbeing? i.e., what are the key components of work wellbeing from their perspective?*

5.1. Abstract

Background: Accurately conceptualising intensive care nurse work wellbeing is an essential first step in the successful development of work wellbeing interventions. Little is currently known about intensive care nurse work wellbeing.

Aims and objectives: Identify intensive care nurses' conceptions of work wellbeing and ascertain whether 'work wellbeing' is prototypically organised.

Design: Prototype analysis.

Methods: Three linked sub-studies conceptualise intensive care nurse wellbeing. Eighty-Two New Zealand intensive care nurses responded to the study and were randomly allocated to the three sub-studies; 65 participated. For sub-study one, participants listed key features of work wellbeing as free text responses. Sub-study two ascertained if there was prototypical

---

[3] Study three, largely similar to the content documented here in chapter 5, has been published.

organisation of these responses. Sub-study three sought to confirm the prototypical organisation of 'work wellbeing' through narrative ratings.

Results: In sub-study one (n = 23), the most frequently endorsed elements relating to work wellbeing included: workload (n = 14), job satisfaction (n = 13), and support (n = 13). In sub-study two (n = 25), the highest rated elements related to work wellbeing included: feeling valued, respected, supported, work-life balance, and workplace culture. Elements of support, work-life balance, and workload were in the top five most frequently endorsed elements and rated in the top 12 most central. Overall, ratings of centrality and number of endorsements were positively correlated (r = .35, p < 0.05). In sub-study three (n = 17) the mean score for the central narrative was 7.88 and peripheral narrative was 7.38. Although confirmatory analyses did not reach statistical significance due to the small sample size, a prototypical structure was suggested.

Conclusions: Unique conceptions of work wellbeing were identified. Workload and work-life balance were central characteristics. Feeling valued, and experiencing respect and support were considered most important.

Key words: critical care nurse; employee wellbeing; ICU; work wellbeing; workplace wellbeing.

5.2. Background

The contemporary Intensive Care Unit (ICU) work environment poses well-known stressors from a wide range of circumstances. This stress may occur in a variety of ways, such as, psychological stress which occurs when the demands of the situation threaten to exceed the resources of the individual (Lazarus & Folkman, 1984). Given such stressors, nurses may be vulnerable to significant harms such as burnout (Epp, 2012; Pereira et al., 2016), compassion fatigue (Jenkins & Warren, 2012), moral distress (Choe et al., 2015) and bullying (Ganz et al., 2015). For professionals to engage with work wellbeing interventions and programmes, conceptual clarity of work wellbeing in ICU nurses is firstly required.

5.2.1. Work wellbeing.

Different occupational groups have unique features associated with wellbeing (Hamling, Jarden, & Schofield, 2015). For example, for professionals, the five elements of work-life balance, satisfied with education, being engaged, meaning and purpose, and autonomy explained the greatest amount of variance in their job satisfaction (Hamling et al., 2015). For labourers, the five elements were work-life balance, being absorbed, meaning and purpose, feeling respected, and having self-esteem (Hamling et al., 2015). Thus, ICU nurses may also have unique features associated with wellbeing and conceptualise work wellbeing differently to other population groups. For example, in a case study of United Kingdom nurses, wellbeing was related to eight workplace characteristics, including the ability to cope with changing demands and re-enforcing feedback loops (Brand, Fleming, & Wyatt, 2015). Further, across 97 United States hospitals, both job satisfaction and turnover were significantly influenced by the characteristics of the workplace and the work environment (Baernholdt & Mark, 2009).

Work wellbeing has varied, and predominantly Western, theoretical views (Dewe & Kompier, 2008; Grant et al., 2007; Page & Vella-Brodrick, 2009). Two more recent models include Fisher (2014) and Laine and Rinne (2015). Fisher (2014) suggested three major components. Firstly, 'subjective wellbeing' (SWB), including job satisfaction and similar positive attitudes, positive affect, and negative affect. Secondly, eudiamonic wellbeing (i.e.,

what makes a life worth living; Deci & Ryan, 2008), including engagement, meaning, growth, intrinsic motivation, and calling. Thirdly, social wellbeing, including quality connections, satisfaction with co-workers, high-quality exchange relationships with leaders, and social support.

The discursive definition of work wellbeing of Laine and Rinne (2015) proposed seven key areas relating to: healthy living/working, work/family roles, leadership/management styles, human relations/social factors, work-related factors, working life uncertainties, and personality/individual factors. No one specific feature was evident across these models, however, variations of the element 'relationships' or 'social connections' was apparent in most theoretical models. No model of ICU nurse wellbeing was identified in the literature, representing a significant gap for the present research.

5.2.2. Prototype analysis.

Rosch (1975) proposed that natural language concepts do not always lend themselves to being defined by an 'all or none' phenomenon where all members of the category are assumed to be equally representative. Rather, through a series of studies Rosch demonstrated natural language concepts can be categorised by identifying central features ordered by similarity to the prototypical cases, rather than by critical features (Rosch, 1975; Rosch & Mervis, 1975). According to Rosch (1975), when a concept is prototypically organised, some features are more closely associated with the concept than others. Thus, the concept has an internal structure. When asserting a concept is prototypically organised, two criteria need to be met. First, individuals must be able to both identify a feature and reliably rate the centrality of the feature to the concept. Secondly, ratings of the centrality of the features to the concept need to influence how individuals think about the concept.

It has been suggested that, for New Zealand workers, wellbeing is prototypically structured (Hone et al., 2015). That is, some elements of wellbeing are more typical than others for some groups of workers. For example, good mental health, good relationships, work-life balance, and good physical health were endorsed as more central to a NZ sample of teachers' and lawyers' conceptions of wellbeing than spirituality, accomplishments,

mindfulness, and engagement (Hone et al., 2015). Previous prototype analyses describe a series of studies extending from three studies (Hone et al., 2015) to seven studies (Lambert et al., 2009). The key characteristics of five prototype analyses (Fehr & Sprecher, 2009; Hone et al., 2015; Kearns & Fincham, 2004; Lambert et al., 2009; Weiser et al., 2014) are presented in Table 3.

Table 3. Summary of five prototype analyses.

Focus (Author)	Participants	Method
Flourishing/ Wellbeing (Hone et al., 2015)	S1: 130 teachers and lawyers. S2: 52 (independent sample of teachers). S3: 21 (independent sample of teachers).	S1: Written instructions to list key components; collected responses after 5 minutes. S2: Written instructions to read list of components and rate (8-point scale; 1-8) how important they are to the concept of wellbeing; collected responses after 5 minutes. S3: Central/important components separated from peripheral by conducting a median split (limitation of artificial nature of split acknowledged), participants presented with two hypothetical scenarios created by researchers – one using central words and the other using peripheral words, participants rated how closely each scenario matched their concept of wellbeing using a 10-point scale (1=not at all to 10=extremely).
Forgiveness (Kearns & Fincham, 2004)	S1: 208 students (independent sample) S2: 137 students (independent sample). S3: 47 students (independent sample).	S1: Participants asked to list all features of forgiveness, given 20 lines and asked to list one attribute per line, then rate features for positivity. S2: Participants asked to rate how closely features characterised forgiveness.

Focus (Author)	Participants	Method
	S4: 123 students (independent sample). S5: 93 students (independent sample).	S3: Participants shown slides with statements based on either peripheral or central features, then asked to complete an irrelevant task, then recall as many statements as possible in 3 minutes, then shown statements again and indicate whether they had seen it previously. S4: Participants asked to read a narrative with a mix of central and peripheral features, then recall events in the narrative. S5: Participants read three vignettes of hypothetical transgressions, one with central features, one with peripheral features, and one with a mix.
Gratitude (Lambert et al., 2009)	S1: 94 students (independent sample). S2: 91 students (independent sample). S3a: 107 students (independent sample). S3b: 211 students (independent sample). S4: 102 students (independent sample). S5a: 208 students from Studies 3a and 4. S5b: 55 students (independent sample).	S1: Participants asked to write characteristics of word gratitude and rate each on a positivity or negative scale S2: Participants asked to rate centrality of each feature to their concept of gratitude (1-8). S3a: Participants asked to read then rate (1-10) two scenarios, one using central words and another with peripheral words (identified by researchers using a median split of the centrality ratings to divide traits into central and peripheral traits). Participants were randomly assigned to condition to ensure centrality of words used rather than the content of scenario accounted for any potential variance between conditions. S3b: Participants read two scenarios one with only central and one only peripheral gratitude words using a median split on centrality ratings. Participants were asked to rate how well each scenario matched their

Focus (Author)	Participants	Method
		concept of gratitude (1=not at all to 15=perfectly).
		S4: Participants asked to read narrative with six central and six peripheral gratitude features, then complete recognition task including 12 gratitude features from narrative (6 central, 6 peripheral) and 12 that were not present in the narrative (6 central, 6 peripheral).
		S5a: Participants asked to write a narrative in response to three questions about gratitude and their thoughts and feelings
		S5b: Participants asked to write a paragraph related to their feeling of gratitude.
Infidelity (Weiser et al., 2014)	S1: 155 students (independent sample).	S1: Participants asked to list all features of infidelity in a 3-min period on a sheet of paper with 20 lines.
	S2: 286 students (independent sample).	S2: Participants were asked to rate how close each feature in a list was to their concept of infidelity (1=not at all central to 8=extremely central). Three versions of the survey were presented to participants to counterbalance the presentation of items.
	S3: 146 students (independent sample).	
	S4: 51 students (independent sample).	S3: Participants reviewed slides with infidelity characteristics displayed then completed unrelated task, then asked to recall characteristics that were presented to participants on slides.
		S4: Participants asked to write a paragraph about a situation of infidelity in a romantic relationship.
Compassionate love (Fehr & Sprecher, 2009)	S1: 180 students (independent sample).	S1: Participants asked to write a list of possible features of compassionate love.
		S2: Participants asked to rate how important/central features are to

Focus (Author)	Participants	Method
	S2: 72 students (independent sample).	compassionate love (1=extremely poor to 9=extremely good).
	S3: 143 students (independent sample).	S3: Participants were provided with the same instructions as S1, but the target/direction of the compassionate love was manipulated towards strangers /acquaintances vs close relationships.
	S4: 69 students (independent sample).	
	S5: 50 students (independent sample).	S4: Participants were presented statements based on a median split of S2 ratings on a computer screen and needed to type 1=Y or 2=N in response to the question 'Is X a characteristic of Y'. Response times were calculated.
	S6: 149 (independent sample).	
		S5: Participants were presented with sentences referring to "Pat" and "Chris", then completed an unrelated task, then asked to recall as many statements as they could by writing them down, then they were presented with statements and asked if they recognised them from the initial sentences they were presented with.
		S6: Participants asked to rate the extent to which statements do/do not portray compassionate love (1=not necessarily to 7=definitely). Four versions of statements were presented manipulating prototypicality and gender.

Note. 'S' = study.

Given the limited research investigating ICU nurse work wellbeing, this prototype analysis investigates how the concept is conceived and defined by ICU nurses. Firstly, the study identifies the characteristics of ICU nurse work wellbeing, which are coded into elements. Secondly, the relative importance of the elements is measured. Thirdly, the ability of ICU nurses to reliably differentiate between elements is evaluated. The findings provide

a conceptualisation of ICU nurse work wellbeing, and how this is like, or different from, common theoretical conceptions of work wellbeing. As such, this study investigated the research questions: *How do ICU nurses conceptualise work wellbeing? i.e., what are the key elements of work wellbeing from their perspective?*

5.3. Design and methods

This prototype analysis involves three connected sub-studies. Participants were randomised to one of the three sub-studies (i.e., independent samples), illustrated in Figure 10.
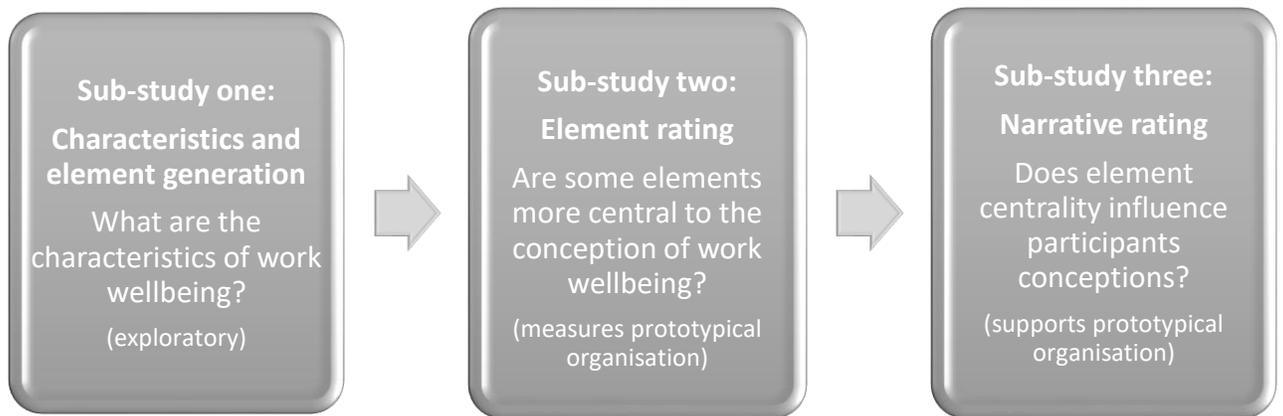
Figure 10. Three-study prototype analysis.

Sub-study one asked participants for their perceptions of the characteristics of work wellbeing. These characteristics were coded into elements (a group of common features). Sub-study two used a new sample of participants who rated how central (or important) these elements were to their concept of work wellbeing. In sub-study three the elements were separated into those that were rated central (most important) and those that were rated peripheral (least important). Drawing from the central and peripheral elements, two narratives were developed; one containing central elements and one containing peripheral elements. A new sample of participants rated how close the narratives were to their conception of work wellbeing.

5.3.1. Participant selection.

The 30 NZ ICUs differ in a variety of ways. For example, they differ in the number of RNs employed in the ICU, the demographics of the patient population the RNs are nursing, and the workplace and team structure. The NZ nursing workforce data for ICUs from the Nursing Council of NZ are confounded by the amalgamation of nurses who work in ICU and also cardiac care (Nursing Council of New Zealand, 2015). Nevertheless, this data provides significant insight into the workforce by gender and ethnicity. In the NZ ICU/Cardiac Care setting, of 2245 RNs, 1,989 (89%) identify as women. Further, the largest represented ethnicity were nurses who identified as NZ European/Pākehā (1314, 59%), followed by Other European (460, 20%), Indian (222, 10%), Filipino (151, 7%), NZ Māori (95, 4%), Chinese (56, 2%) (Nursing Council of New Zealand, 2015). Most ICU nurses (552, 25%) work on average the equivalent of full time (1.0 FTE) per week, followed by 0.9 FTE (416, 19%), 0.8 FTE (235, 10%), and 0.6 FTE (191, 9%). Notably, there is under-representation of Māori RNs and male RNs in comparison to the national representation. To enable evaluation of the representativeness of the sample collected, and to mitigate the risk of overlooking important ethnicity or gender-related findings, both ethnicity and gender data were collected. Other demographic data collected included: years of experience nursing, nursing in ICU, nursing in ICU in NZ, nursing in the current ICU; level of competence in ICU; role in ICU; age; marital status; number of dependents; part-time or full-time work; education; length of a work day; and shift work.

Purposeful sampling of registered nurses working in a NZ ICU (Nursing Council of New Zealand, 2015) was firstly conducted through national professional bodies (e.g., New Zealand College of Critical Care Nurses, and New Zealand Nurses' Organisation). This was followed up by invitations through NZ ICU research nurses and social media networks (e.g., Facebook[TM] groups, Twitter[TM], and LinkedIn[TM]). All RNs presently employed in a NZ ICU were eligible for selection.

5.3.2. Ethical considerations.

This research was conducted in accordance with the Auckland University of Technology Ethics Committee approval (17/180) (see Appendix A). Advertisements provided

potential participants with a URL to the study information webpage (see Appendix B). The study information webpage requested participants to indicate their consent by entering their name and e-mail address (see Appendix C).

5.3.3. Randomisation and allocation.

Consenting participants (N = 82) were randomised using the random number allocation procedure in Excel^{TM} and allocated to one of the three sub-studies of the Prototype Analysis. Sub-study one (n = 30) and sub-study two (n = 30) were allocated the most participants to seek a rich and diverse set of elements, and to provide strength in the ratings of centrality. Sub-study three was allocated the remaining participants (n = 22).

5.4. Sub-study one: Generation of prototype elements of 'work wellbeing'

5.4.1 Procedure.

The 30 participants randomised to sub-study one received an e-mail containing a link to the online questionnaire (adapted from Fehr, 1988). Participants were given the following instructions:

> "*We are interested in what people think of when they consider the words 'work wellbeing'. There are no right or wrong answers. Please feel free to think specifically and broadly about the words "work wellbeing". Imagine that you are explaining this term to someone who has no experience of 'work wellbeing' and answer the following question: What, in your opinion, are the key characteristics of 'work wellbeing'? Please take about five minutes to list as many characteristics as you can in the box below*."

5.4.2. Data analysis.

The coding procedure for analysis of these free-responses followed that of Fehr (1988). Firstly, monolexemic linguistic units (i.e., meaningful individual words) were identified and extracted, and responses with modifiers reduced to a single characteristic. Two researchers (RJ & MS) condensed and categorised characteristics into elements, first

independently, then compared and contrasted elements together. Previous prototype analyses have used this approach (Hone et al., 2015; Kearns & Fincham, 2004; Weiser et al., 2014). A pre-design, open card-sort technique was used (Paul, 2008; Rugg & McGeorge, 1997). A third researcher (JKM) reviewed and resolved any uncertainty in relation to condensing and categorising. Final elements were assessed by one nurse and two lay people using a "think aloud" cognitive interviewing process (see Cohen, Swerdlik, & Sturman, 2013). Unlike Hone et al.'s (2015) study, all elements were included in the final list.

5.4.3. Results.

Of the 30 participants allocated to sub-study one, 23 commenced in the sub-study. The remaining seven did not commence the sub-study after three e-mail reminders. One of the 23 participants partially completed the questionnaire; their partial data were included in the analysis.

5.4.3.1 Characteristics of participants.

Participants (n = 23) were primarily married (n = 12) women (n = 20), aged between 25 and 57 years, and identified as NZ European (n = 15) (followed by NZ Māori, n = 1; English, n = 3; South African, n = 1; American, n = 2), one participant identified as both NZ European and NZ Māori. These demographics were largely similar to the NZ ICU nurse population (Nursing Council of New Zealand, 2015).

5.4.3.2. Work wellbeing characteristics and generation of elements.

One hundred and four characteristics were reported by participants and of these, thirty-six elements were identified for work wellbeing and are presented in Table 4.

Table 4. Prototype analysis sub-study one characteristics and coding into elements for the term "work wellbeing".

Sub-study one characteristics (number of endorsements)	Coded elements
Able to problem solve (1)	Accomplishment
Productive (1)	Accomplishment
Sense of accomplishment (1)	Accomplishment
Sense of achievement (1)	Accomplishment
Work effectively & productively (1)	Accomplishment
Appreciated (1)	Appreciated
Able to advocate and care (1)	Caring
Able to provide excellent care (1)	Caring
Empathy (1)	Caring
Need good wellbeing to be able to care for patients (1)	Caring
Remain compassionate (1)	Caring
Sincere (1)	Caring
Challenged (3)	Challenge
Maintaining job interest (1)	Challenge
Feel safe and confident in practice (2)	Confidence in practice
Self-belief (1)	Confidence in practice
Debriefing (1)	Debriefing
Energy (1)	Energy
Not exhausted (1)	Energy
Passionate (1)	Energy
Refreshed (1)	Energy
Goals (1)	Goals
Happiness (1)	Happiness
Finding humour (1)	Humour
Fun (1)	Humour
Income security (1)	Income security
Able to tell others you enjoy work (1)	Job satisfaction
Content (1)	Job satisfaction
Don't feel negatively about going to work (2)	Job satisfaction
Enjoy job (1)	Job satisfaction
Enjoy time at work (2)	Job satisfaction
Feel like you did a good job (1)	Job satisfaction
Feel positive about work (1)	Job satisfaction
Job satisfaction (3)	Job satisfaction
Worthwhile (1)	Job satisfaction
Leadership (1)	Leadership
Management (1)	Management
Mentally well (1)	Mental health

Sub-study one characteristics (number of endorsements)	Coded elements
Motivation (1)	Motivated
Positive interactions with patients and family (1)	Nurse-patient relationships
Positivity (1)	Optimism
Paid fairly (1)	Paid fairly
Able to function more than adequately (1)	Physical health
Nutrition (1)	Physical health
Physical health (1)	Physical health
Sleeping well (2)	Physical health
Work wellbeing physically hard to achieve routine sleep nutrition (1)	Physical health
Confidential sounding board (1)	Professional communication
Conflict management strategies (1)	Professional communication
Constructive positive feedback (2)	Professional communication
Noticing praise (1)	Professional communication
Transparency (1)	Professional communication
Appropriate training (1)	Professional development
Fit for purpose (1)	Professional development
Opportunity to grow (2)	Professional development
Ready for work (1)	Professional development
Being professional (1)	Professional relationships
Bully free workplace (1)	Professional relationships
Enjoy working with colleagues (3)	Professional relationships
Fostering positive environment (1)	Professional relationships
Positive connections with colleagues (1)	Professional relationships
Relationships (1)	Professional relationships
Trust (1)	Professional relationships
Work friends (1)	Professional relationships
Coping (1)	Resilience
Not overwhelmed by work (1)	Resilience
Resilience (1)	Resilience
Respected (4)	Respect
Considerate rostering (1)	Rostering
Flexible & preference rostering (1)	Rostering
Flexible (1)	Rostering
Safe rostering (2)	Rostering
Managing stress (1)	Stress-free
Able to support colleagues (2)	Support
Empowered (1)	Support
Looking after each other (1)	Support
Support (1)	Support
Supported (3)	Support
Supported by colleagues (3)	Support

Sub-study one characteristics (number of endorsements)	Coded elements
Supportive workplace (2)	Support
No doctor-nurse gaming (1)	Teamwork
Teamwork (2)	Teamwork
Valued (5)	Valued
Variety (1)	Variety
Alike the Monro-Kellie hypothesis – balance (1)	Work-life balance
Leave work pressure behind (1)	Work-life balance
Separate home family work (1)	Work-life balance
Sufficient leave entitlements (1)	Work-life balance
Work life balance (7)	Work-life balance
Feel safe at work (1)	Work safety
Feeling safe at work (1)	Work safety
Safe work environment (1)	Work safety
Appropriate breaks (2)	Workload
Appropriate workload (8)	Workload
Micro-naps (1)	Workload
Not overworked (1)	Workload
Plan workday to meet outcomes desired (1)	Workload
Sufficient staffing (1)	Workload
Workplace culture (1)	Workplace culture
Access to parking (1)	Workplace resources
Appropriate resources (1)	Workplace resources
Wellbeing changes depending on circumstance (1)	Not coded
Wellbeing is individually defined (1)	Not coded
Work wellbeing characteristics of wellbeing in work environment (1)	Not coded

The 36 elements were above the threshold of 27 elements sought (based on earlier sample size considerations). Elements most frequently endorsed by participants included: workload (n=14), job satisfaction (n=13), support (n=13), work-life balance (n=11), professional relationships (n=10), professional communication (n=6), caring (n=6), physical health (n=6), and feeling valued (n=6).

5.4.4. Discussion.

No single characteristic was endorsed by all participants. This result suggests there was no one characteristic all NZ ICU nurses associated with work wellbeing. However, there

were clusters of characteristics evident in participant responses. For example, there were characteristics that described positive affect, such as "happiness" and "fun". There were also positively phrased negative characteristics such as "not overworked" and "not overwhelmed". The prototype for work wellbeing also included behaviours and cognitive activities. Examples of behaviours included "advocate and care" and "provide excellent care". Cognitive activities included "don't feel negatively about going to work". The role of the ICU nurse "caring" for patients was expressed in relation to their work wellbeing. This expression took a variety of forms, but primarily related to self-care enabling patient care. For example, one ICU nurse referred to work wellbeing as "able to meet the requirements of caring for patients with excellence". Another nurse highlighted the need for "a good state of wellbeing…to care for patients…[in]…the intensity of the ICU environment". A further nurse stated work wellbeing was being "able to sustain care for the whole shift week". Each of these examples highlights the centrality of work wellbeing to caring.

5.5. Sub-study two: Centrality rating of work wellbeing elements

The second sub-study evaluated whether 'work wellbeing' is prototypically organised. To achieve this, sub-study two measured whether participants associate some elements more closely with work wellbeing than others. This determines whether work wellbeing has an internal structure, i.e., certain elements are more strongly associated with work wellbeing than others (Kearns & Fincham, 2004). To achieve this, individuals must be able to reliably rate the centrality of the element to the concept under question.

5.5.1. Procedure.

The 30 participants randomly allocated to sub-study two received an e-mail containing a link to the online questionnaire (adapted from Fehr & Sprecher, 2009; Hone et al., 2015). Participants were given the following instructions:

> "*In a previous study we asked people to list what they thought of as the key*
> *characteristics of work wellbeing. The most frequent responses are listed below*
> *in random order. Please read through the entire list and then rate how central*

(or important) you think each of the characteristics is to the concept of work

wellbeing, selecting a number between 0 and 10 (where 0 = not at all central /

important and 10 = extremely central / important). We would like you to think

not only about your own experiences with wellbeing but the concept of work

wellbeing in general - what you think are its defining characteristics. Don't

worry about why you think something is or isn't central."

The questionnaire asked respondents to firstly review the list of possible characteristics (elements) of work wellbeing and, second, to rate how central each characteristic (element) is in terms of its importance to work wellbeing.

A potential order effect was mitigated firstly through the random assignment of the order of elements for presentation to each participant for rating (in previous prototype studies these elements have been presented in alphabetical order for example). Secondly, participants were asked to read all elements before commencing their rating. Thirdly, participants were asked to review and amend any ratings prior to moving on.

To measure reliability of the means, an intra-class correlation (ICC) was calculated. The ICC was calculated using a split-half model (two-way mixed, absolute agreement CI 95%). To test for reliability of the rating scale, Cronbach's alpha was calculated. Both methods of reliability analysis are consistent with those reported in previous prototype analyses (e.g., see Hone et al., 2015; Kearns & Fincham, 2004; Lambert et al., 2009) and were conducted according to the recommendations of Pallant (2016).

5.5.2. Results.

5.5.2.1. Characteristics of participants.

Twenty-five of the 30 participants randomised to sub-study two commenced the sub-study. The remaining five did not reply or make contact after three e-mail reminders. Participants (*n* = 25) were primarily married (*n* = 16) women (*n* = 21), aged between 25 and 60 years, and identified as NZ European (*n* = 17) (followed by English, *n* = 3; Chinese, *n* = 1; Japanese, *n* = 1). These participant demographics were similar to sub-study one participants

in terms of marital status, gender, age and ethnicity. Two of the 25 participants provided incomplete demographic data, their partial data were used in the analysis.

5.5.2.2. Centrality ratings.

For work wellbeing, the highest rated elements included feeling valued (M = 9.21, SD = 0.93), respect (M = 9.17, SD = 0.96), support (M = 8.92, SD = 1.14), work-life balance (M = 8.92, SD = 1.32) and workplace culture (M = 8.92, SD = 1.18) (see Table 5). The 36 elements had good inter-rater reliability (ICC = .846, p < .000) and reliability (α = .87).

Table 5. Work wellbeing elements with number of participant endorsement and mean centrality ratings.

Work wellbeing elements	Sub-study one		Sub-study two	
	Number of times endorsed	Fraction of total endorsements (n=142)	Mean centrality ratings (0-10 importance)	Standard Deviation (STDEVA)
Valued	5	0.04	9.21	0.93
Respect	4	0.03	9.17	0.96
Support	13	0.09	8.92	1.14
Work-life balance	11	0.08	8.92	1.32
Workplace culture	1	0.01	8.92	1.18
Mental health	1	0.01	8.83	0.87
Work safety	3	0.02	8.75	1.45
Physical health	6	0.04	8.71	1.23
Caring	6	0.04	8.63	1.24
Appreciated	1	0.01	8.54	1.18
Rostering	5	0.04	8.54	1.28
Workload	14	0.1	8.50	0.93
Paid fairly	1	0.01	8.46	1.61
Teamwork	3	0.02	8.46	1.02
Leadership	1	0.01	8.38	0.92
Humour	2	0.01	8.33	1.09
Job satisfaction	13	0.09	8.33	0.96
Professional communication	6	0.04	8.33	1.34
Energy	4	0.03	8.29	1.20

	Sub-study one		Sub-study two	
Happiness	1	0.01	8.17	1.37
Nurse-patient relationships	1	0.01	8.17	1.20
Resilience	3	0.02	8.17	1.66
Confidence in practice	3	0.02	8.13	0.90
Income security	1	0.01	8.04	1.33
Professional relationships	10	0.07	8.04	1.12
Accomplishment	5	0.04	8.00	1.18
Management	1	0.01	8.00	1.14
Optimism	1	0.01	7.92	0.93
Workplace resources	2	0.01	7.92	1.10
Motivated	1	0.01	7.79	0.93
Professional development	5	0.04	7.67	1.49
Variety	1	0.01	7.46	1.67
Challenge	4	0.03	7.42	1.32
Debriefing	1	0.01	7.13	2.07
Goals	1	0.01	6.79	1.41
Stress-free	1	0.01	6.50	1.74

Mean centrality ratings were then compared to the number of participant endorsements from sub-study one. Some elements were frequently endorsed by participants and rated central. Comparing the sub-study one and sub-study two data, support (13 endorsements; $M = 8.92$, $SD = 1.14$), work-life balance (11 endorsements; $M = 8.92$, $SD = 1.32$), and workload (14 endorsements; $M = 8.50$, $SD = .93$) were in the top five most frequently endorsed elements and were also rated in the top 12 most central. However, some elements were endorsed by very few participants yet rated highly in terms of centrality. For example, workplace culture (1 endorsement; $M = 8.92$, $SD = 1.18$) and mental health (1 endorsement; $M = 8.83$, $SD = .87$). Overall, ratings of centrality and the number of endorsements were positively correlated ($r = .35$, $p < 0.05$). The correlation of centrality rating (0 = not at all central / important, 10 = extremely central / important) and endorsements are illustrated in Figure 11.
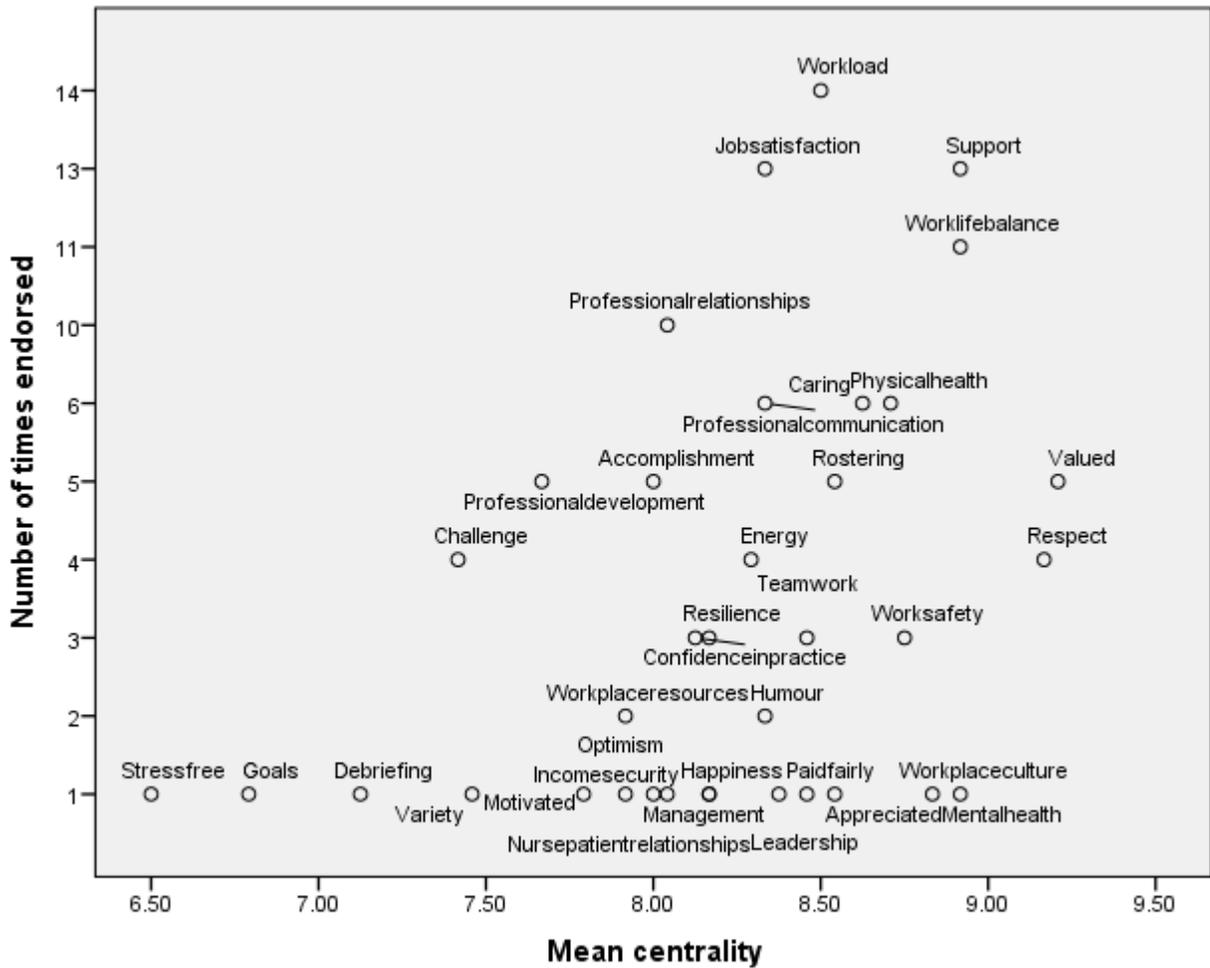
Figure 11. Correlation of centrality rating (sub-study two) and endorsements (sub-study one) for work wellbeing.

5.5.3. Discussion.

The ICU nurses rated some elements as more prototypical of work wellbeing than others. For example, feeling "valued", "respect", and "support" were considered more prototypical than "stress-free", "goals", and "debriefing". The differences between frequency of endorsements and centrality ratings are thought to reflect the measurement of different aspects of the constructs' internal structure, and were commonly found in previous prototype analyses (e.g., see Hone et al., 2015). Given the reliability between the nurses' ratings, this suggests a prototypical organisation of their conception of the construct

'work wellbeing'. The nurses' ratings of the importance of elements to their conceptions of work wellbeing enabled the development of an illustration depicting all elements (Figure 12). The larger size circles and darker colour shards demonstrating more central elements of 'work wellbeing'.

Figure 12. ICU nurse conceptions of the elements of work wellbeing.

Note. Larger size circles and darker colour shards demonstrate more central elements of 'work wellbeing'.

5.6. Sub-study three: The effect of component centrality on conceptions of work wellbeing

This final sub-study sought to confirm sub-study two's finding of prototypical organisation of 'work wellbeing'. To confirm prototypical organisation, ICU nurses' conceptions of work wellbeing would be influenced by the centrality of the elements. Sub-study three explored whether participants reliably rated a 'central' narrative higher than a 'peripheral' narrative (e.g., see Hone et al., 2015). Sub-study three drew from the centrality ratings of the elements in sub-study two to develop the narratives to then test whether ratings of the centrality of the elements influenced how individuals thought about work wellbeing.

5.6.1. Procedure.

The elements rated in study two were split into peripheral and central elements. This was achieved through conducting a median split of the mean centrality ratings (e.g., see Hone et al., 2015). The median for wellbeing was calculated as 8.31. Based on this median, the elements were split into groups: work wellbeing 'central', and work wellbeing 'peripheral'. The 'Central' narratives used elements with a mean centrality rating of 8.31 or higher. 'Peripheral' narratives used elements with a mean centrality rating of 8.30 or lower. The average mean for the central work wellbeing elements was 8.66, and peripheral work wellbeing elements 7.75. The median split of elements is presented in Table 6.

Table 6. Median split of work wellbeing elements.

Central elements	Mean	Peripheral elements	Mean
Valued	9.21	Energy	8.29
Respect	9.17	Happiness	8.17
Support	8.92	Nurse-patient relationships	8.17
Work-life balance	8.92	Resilience	8.17
Workplace culture	8.92	Confidence in practice	8.13
Mental health	8.83	Income security	8.04
Work safety	8.75	Professional relationships	8.04
Physical health	8.71	Accomplishment	8.00
Caring	8.63	Management	8.00
Appreciated	8.54	Optimism	7.92
Rostering	8.54	Workplace resources	7.92
Workload	8.50	Motivated	7.79
Teamwork	8.46	Professional development	7.67
Paid fairly	8.46	Variety	7.46
Leadership	8.38	Challenge	7.42
Humour	8.33	Debriefing	7.13
Job satisfaction	8.33	Goals	6.79
Professional communication	8.33	Stress-free	6.50

Drawing from the literature supporting vignette development (e.g., Finch, 1987; Miles, 1990; Spalding & Phillips, 2007), the central and peripheral narratives were 1) similar length, 2) similar adjective use (e.g., good, great, well) and 3) used minimal additional words to the elements. Based on the median split, 10 'central' or 'peripheral' elements were used in each respective narrative, similar to the number used in previous narratives (e.g., Kearns & Fincham, 2004). Gendered versions of each narrative enabled female participants to receive female central characters in their narrative, and for males, male central characters. The four narratives were:

1) Underline Female Narrative One 'Central' Work Wellbeing: *Julie feels respected, valued and supported in her ICU, which has a positive workplace culture. She has balance between her work and home life and is healthy, both mentally and physically. Julie is able to care for her patients and has a sense of being appreciated and safe in her nursing practice.*

2) <u>Male Narrative One 'Central' Work Wellbeing:</u> *John feels respected, valued and supported in his ICU, which has a positive workplace culture. He has balance between his work and home life and is healthy, both mentally and physically. John is able to care for his patients and has a sense of being appreciated and safe in his nursing practice.*

3) <u>Female Narrative Two 'Peripheral' Work Wellbeing:</u> *Jackie feels challenged and motivated, with good variety in her nursing practice. She has goals and there are opportunities for professional development. Shifts are managed well with appropriate resources and debriefing is a regular occurrence. Jackie's feeling stress-free and optimistic.*

4) <u>Male Narrative Two 'Peripheral' Work Wellbeing:</u> *Jack feels challenged and motivated, with good variety in his nursing practice. He has goals and there are opportunities for professional development. Shifts are managed well with appropriate resources and debriefing is a regular occurrence. Jack's feeling stress-free and optimistic.*

The 22 participants randomly allocated to sub-study three received an e-mail containing a link to the online questionnaire. The questionnaire asked respondents firstly to review two hypothetical narratives for work wellbeing developed by the researcher (one containing those elements rated 'central' and the other containing those elements rated 'peripheral'), and secondly to rate how close each narrative is to their concept of work wellbeing using a 0-10 (eleven-point) rating scale with two end anchors: 'not at all close' and 'extremely close'. Peripheral and central narratives were presented to participants in random order to be rated. Participants were blinded to narrative type (central or peripheral).

5.6.2. Data analysis.

Normality of narrative scores were tested for the sample using visual inspection of each narrative score's distribution, QQ plots, and the Shapiro-Wilk Test of normality. Central tendency descriptive statistics were calculated. Comparisons between narrative ratings were carried out using Paired Samples *t*-tests for parametric data and Wilcoxon Signed Ranks Test for non-parametric data.

5.6.3. Results.

5.6.3.1. Characteristics of participants.

Of the 22 participants randomised to sub-study three, 20 commenced the sub-study. Of these 20 participants, three discontinued the sub-study prior to responding to the rating questions, and their data was not included in the analysis. The final sample size available for analysis was 17. Participants (n = 17) were primarily married (n = 12) women (n = 16), aged between 25 and 63 years, and identified as NZ European (n = 13) (followed by English, n = 3; Irish, n = 1). The participant demographics were consistent with sub-study one and two participants.

5.6.3.2. Centrality analysis.

Narrative scores were not normally distributed. A Wilcoxon Signed Ranks Test indicated no difference between central (*Mdn* = 9, *R* = 4 - 10) and peripheral (*Mdn* = 9, *R* = 4 - 10) narratives, Z = -1.3, p = .19. Nine of the 17 participants selected the same rating across both narratives with no differentiation on the 11-point scale, for example, they rated both narratives at 10. To exclude a possible response bias similar to that of a leniency error (or generosity error; e.g., see Cohen et al., 2013), the data from the remaining eight participants who had not scored both variables the same were subjected to further analysis (i.e., the 9 'same rating' participants were excluded from the dataset). According to normality testing, scores were then normally distributed. The mean score for the central narrative was 7.88 and peripheral narrative was 7.38. A Paired Samples *t*-test revealed a mean difference in scores for the work wellbeing central and peripheral narratives of .38 with a 95% confidence interval (-.39 to 1.39). This mean difference was not significant (p = .23).

5.6.4. Discussion.

Of the 17 ICU nurses in this sample, there was no difference in median scores, with nine rating no difference between the central and peripheral narratives. This may have been due to the central and peripheral narratives being so similar in their closeness to their conceptions of work wellbeing that they could not differentiate between them. In the

additional analysis conducted for those participants who rated central and peripheral work wellbeing narratives as different ($n = 8$), the central work wellbeing narrative was half a point 'closer' to their conception of work wellbeing than the peripheral work wellbeing narrative (7.88 vs 7.38).

Although this was not a statistically significant difference, there were similarities between the results in this sub-study and that of previous prototype analyses. For example, Hone et al. (2015) used a 10-point rating scale and found a mean difference in scores between their central and peripheral wellbeing narratives of 1.29 (7.81 vs 6.52). Lambert et al. (2009) used a 15-point rating scale and found a mean difference of 0.65 (13.41 vs 12.76) for gratitude. Fehr and Sprecher (2009) used a 7-point rating scale and found a mean difference of .41 (5.30 vs 4.89) for compassionate love. Given the low participant numbers in the final analysis for this sub-study, the similarity in our findings to other prototype analyses suggests a degree of face validity in the mean differences in the central and peripheral narrative ratings. Alternatively, the results suggest limited sensitivity to the differences between the central and peripheral narratives. The small sample sizes meant cohort effects in conceptualisations of work wellbeing were not examined for possible demographic differences in responses, for example, age, gender, ethnicity, and nursing experience.

5.7. General discussion

This prototype analysis sought to conceptualise work wellbeing for a sample of NZ ICU nurses. Studies one and two demonstrated that ICU nurses' conceptions of work wellbeing are structured prototypically, however due to the small sample size of sub-study three, the central and peripheral narratives failed to reach statistical significance. The concept of 'relationships' was strongly evident in a variety of elements, including, personal relationships, professional relationships, teamwork, support, and professional communications. The importance of relationships in the workplace was reflected in all identified work wellbeing models. Peterson (2006a) suggests "other people matter" (p. 249),

and this statement appears true in this study. For workers in organisations, the dimensions of effective work relationships are dynamic and integrative (Ferris et al., 2009).

Of the theoretical perspectives and models of wellbeing (Durie, 1985; Palmer, 2004; Ryff, 1989; Seligman, 2011) and work wellbeing (Dewe & Kompier, 2008; Fisher, 2014; Grant et al., 2007; Laine & Rinne, 2015; Page & Vella-Brodrick, 2009), no one model sufficiently depicted this study's sample of ICU nurses' conceptions of work wellbeing. The work wellbeing model of Dewe and Kompier (2008) however, most comprehensively captured the ICU nurse conceptions of work wellbeing.

Rather than there being a definition of work wellbeing with specific elements that meet an 'all-or-none' criteria, this research suggests work wellbeing may be better described as a collection of elements; a rich and multifaceted construct. For the term work wellbeing, we found support for the assertion of Rosch (1975) that natural language concepts can be categorised by identifying central features ordered by similarity to the prototypical cases, rather than by critical features (Rosch, 1975; Rosch & Mervis, 1975).

This research found that, for some ICU nurses', the term work wellbeing was prototypically organised, but sub-study three's confirmatory analysis was not statistically significant due to the small sample size or lack of sensitivity for the differences between central and peripheral narratives. This differs from previous prototype analyses as they identified statistically significant evidence for prototypical organisation, however all had much larger samples. Notably, the results of just the eight nurses who differentiated between the central and peripheral narratives was comparable to the findings of (Hone et al., 2015) who found a mean difference in scores for wellbeing central and peripheral scenarios of 1.29 (95% CI from .198 to 2.37).

5.7.1. Limitations.

For this research, with the target number of elements, the sample size may have been insufficient. Previous prototype analyses show no evidence of calculating nor justifying sample sizes, likely due to the inductive approach of the prototype analysis. Personal

communication with two first authors of previous prototype analyses (Hone et al., 2015; Weiser et al., 2014) highlighted the focus more towards the number of features and elements generated rather than sample size, particularly necessary for sub-study one. Using this focus, statistically significant results were not obtained in the third sub-study. The closeness of the ratings of the central and peripheral narratives in sub-study two may have been due to the characteristics from sub-study one being categorised to elements that were too broad, resulting in participants rating them similarly in sub-study two. Both the 'characteristics' and 'elements' are provided for readers' own judgements of the allocation processes (as displayed in table 4).

5.7.2. Recommendations for future prototype analyses.

Firstly, providing participants of sub-study two with all characteristics identified in sub-study one (e.g., 104 for this sub-study) may be an option for small and unique samples in future research. However, this would be burdensome for participants. Secondly, drawing participants attention to the specific differences within the narratives (e.g., by highlighting the different elements), asking participants to rank the two narratives, or asking participants to choose one narrative over the other all may impact on the participants differentiation between narratives – although each would potentially introduce type one errors. Thirdly, adding a fourth sub-study, similar to Kearns and Fincham (2004), to test participant memory/recall of elements associated with work wellbeing may have increased participants differentiation between central and peripheral elements.

5.8. Conclusions

In this chapter I have explored NZ ICU intensive care nurses' conceptions of work wellbeing using a prototype analysis approach. Appropriate workload and work-life balance were key characteristics of work wellbeing, and feeling valued, respected, and supported were most important. These findings provide the foundation for rigorous measures and work wellbeing programmes to be identified or developed. The limitations associated with the sample size and closeness in narrative ratings inform recommendations for future prototype analyses. For ICU nurses, the next step is to identify their strengtheners of work

wellbeing. To this end, in addition to the prototype analysis, two open-ended free-text response questions were asked of participants after completion of the prototype questions. These open-ended questions sought to investigate ICU nurses' perceptions of the strengtheners of their work wellbeing. In the next chapter I explore these strengtheners of ICU nurses work wellbeing.

Chapter 6. Strengthening Work Wellbeing: Perceptions of Intensive Care Nurses

In the previous chapter I explored ICU nurses' conceptions of work wellbeing using a prototype analysis approach. In this chapter, study four, I build on the ICU nurses' conceptions of work wellbeing by exploring the nurses' perceptions of the strengtheners of their work wellbeing[4]. This study investigates the research questions: *What do ICU nurses think promotes work wellbeing; what strategies do ICU nurses personally use to promote their work wellbeing; and what work wellbeing strategies are currently used in the ICU nurses' workplace?*

6.1. Abstract

Background: Intensive care nursing is a professionally challenging role, elucidated in the body of research focusing on nurses' illbeing, including burnout, stress, moral distress, and compassion fatigue. Although scant, research is growing in relation to the elements contributing to intensive care nurses' work wellbeing. Little is currently known about how intensive care nurse wellbeing is strengthened in the workplace, particularly from the intensive care nurse perspective.

Aims and objectives: Identify intensive care nurses' perspectives of strategies that strengthen their work wellbeing.

Design: An inductive descriptive qualitative approach was used to explore intensive care nurses' perspectives of strengthening work wellbeing.

---

[4] Study four, largely similar to the content documented here in chapter six, has been published.

Method: New Zealand intensive care nurses were asked to report strategies strengthening their work wellbeing in two free text response items within a larger online survey of wellbeing.

Findings: Sixty-five intensive care nurses identified 69 unique strengtheners of work wellbeing. Personal strengtheners included nurses drawing from personal resources, such as mindfulness, and yoga. Both relational and organisational systems strengtheners were also evident, including peer supervision, formal debriefing, and working as a team to support each other.

Conclusions: Strengtheners of intensive care nurses' work wellbeing extended across individual, relational and organisational resources. Actions such as simplifying their lives, giving and receiving team support, and accessing employee assistance programmes were just a few of the intensive care nurse identified strengtheners. These findings inform future strategic work wellbeing programmes, creating opportunities for positive change.

Relevance to clinical practice: Intensive care nurses work wellbeing strengtheners extend from the personal to inter-professional to organisational. The extensive range of strengtheners the nurses have identified provide a rich source for the development of future work wellbeing programmes aligned with critical care nurses' conceptions of work wellbeing.

Key words: critical are nursing; ICU nursing; positive psychology intervention; workplace wellbeing.

6.2. Background

Research about intensive care unit (ICU) nurses has largely focused on illbeing and recovery from illbeing, rather than on preventing illbeing or promoting wellbeing (Jarden, Narayanan, Sandham, Siegert, & Koziol-McLain, 2019; Jarden, Sandham, Siegert, & Koziol-McLain, 2019). The research base is strongly skewed towards nurses' experiences of burnout (Pereira et al., 2016; Vévoda et al., 2016; Weigl et al., 2016; Zarei et al., 2016), compassion fatigue (Sacco et al., 2015), moral distress (Choe et al., 2015; De Villers & DeVon, 2013; O'Connell, 2014), and stress (Borteyrou et al., 2014; Burgess et al., 2010; Dewe, 1987) amongst other illbeing aspects. Until 2018, primary research of ICU nurse wellbeing was limited to four studies on spiritual wellbeing (Azarsa et al., 2015), team commitment (Galletta et al., 2016), effects of a mindfulness programme (Hee Kim et al., 2014), and emotional wellbeing (Siffleet et al., 2015) (see chapter 4). These four studies lacked a common definition of wellbeing and had limited generalisability (Jarden, Sandham et al., 2019). More recently, ICU nurse conceptions of work wellbeing were explored in a prototype analysis (Jarden, Sandham, Siegert, & Koziol-McLain, 2018a). Workload and work-life balance were identified as central characteristics of their wellbeing, alongside feeling valued, and experiencing respect and having workplace support. The current study extends the knowledge base of ICU nurse work wellbeing, exploring personal, relational and systems-based strength-building opportunities as identified by ICU nurses.

Identifying strength-building opportunities aligns with the developing area of research called positive organisational scholarship (POS; Cameron, Dutton, & Quinn, 2003b). Positive organisational scholarship studies what is positive, flourishing, and life-giving in organisations (Cameron et al., 2003b). Drawing from the heliotropic effect in which living systems have a tendency towards positive and life-giving forces, POS seeks out these in the organisational context (Cameron & McNaughtan, 2014). Positive organisational scholarship moves from the problem-focused and deficit-based inquiry towards new ways of understanding positive outcomes in organisations (Cameron et al., 2003b), for example, by using appreciative inquiry (Cooperrider, Godwin, Cameron, & Spreitzer, 2012). While both positive and negative events are thought necessary for creating positive change (Cameron,

2008), negative events strongly overshadow positive events; called a "negativity bias" (e.g., see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Given the strength of the negative, Cameron (2008) proposes more emphasis on the positive is required for positive change to occur. Whilst adversities and difficulties still occur, the challenges and obstacles are reframed as opportunities and strength-building experiences. Gittell, Cameron, Lim, and Rivas (2006) give the example of "accepting the short-term costs of excess staffing levels to maintain positive human relationships in the face of adversity" (p. 324), as opposed to redundancies and cost-savings in response to a financial crisis.

Work wellbeing interventions in nursing are largely focused towards recovery from illbeing, rather than promoting wellbeing. For example, 'quiet time' to reduce stress levels (Riemer, Mates, Ryan, & Schleder, 2015), yoga for stress and anxiety management (Bernstein et al., 2015), and mindfulness for stress management (Pipe et al., 2009). An exception is the investigation by Hee Kim et al. (2014) into the effects of mindfulness training on mindfulness and subjective happiness. Adopting this positive lens allows for exploration and an emphasis on resourcefulness in creating positive change (Cameron & McNaughtan, 2014) for ICU nurses.

6.3. Context

The ICU registered nurse provides specialised expertise managing complex and challenging situations with patients, patients' families, and inter-professional teams. In New Zealand, 2,245 registered nurses (4.5% of the local nursing workforce) identify as working in one of 30 ICUs (Australia and New Zealand Intensive Care Society, 2015; Nursing Council of New Zealand, 2015). These nurses are exposed to various psychological risks whilst working with patients experiencing life-threatening situations. These risks include personal or family health concerns or crises, high patient acuity, changes in technology, and working rotating night shifts or extended shift hours. Given such stressors, nurses may be vulnerable to significant psychological harms such as burnout (Epp, 2012; Pereira et al., 2016), compassion fatigue (Jenkins & Warren, 2012), moral distress (Choe et al., 2015) and bullying (Ganz et al., 2015). These stressors provide significant opportunity to draw from psychological capital

(such as personal psychological strengths), and the strengthening evidence base of positive psychology and positive psychological interventions (Bolier et al., 2013; Hone, Jarden, & Schofield, 2014; Sin & Lyubomirsky, 2009; Weiss et al., 2016). Realising this opportunity, one could draw from the strengths of other initiatives where the "positive" has been added to organisations. Examples include the Brilliance Project (Dadich et al., 2015) which has strong foundations in positive organisational scholarship (Cameron, Dutton, & Quinn, 2003a) and appreciative inquiry (Cooperrider & Whitney, 2005); and Magnet hospitals (Laschinger, Shamian, & Thomson, 2001; Scott, Sochalski, & Aiken, 1999). Using the positive organisational scholarship lens and a foundation of the humanistic work ideology, the Big Hospital study examined an organisation driven by humanitarian principles (Wooten & Crane, 2004). Examples of further "positive" interventions include the Reflected Best-Self Instrument (Spreitzer, Stephens, & Sweetman, 2009), Appreciative Inquiry Summits (Cooperrider & Whitney, 2005); Job Crafting (Berg, Wrzesniewski, & Dutton, 2010), and Everest goals (Cameron & Plews, 2012).

Applied positive psychology provides new opportunities to develop initiatives aligned with key national strategies. For example, the working vision of the New Zealand Ministry of Health (2015) seeks to achieve a health and disability system that focuses on wellbeing and prevention. With this aspirational policy in mind, and given the diversity in the ICU nursing workforce, innovative ways of working are necessary to meet the challenges of ICU nursing. Individuals involved in building these new ways of working in organisations have the potential to draw from the positive experiences of others in relation to principles, structures, practices and cultures (Laloux, 2014). Previous research has identified characteristics of ICU nurse work wellbeing (Jarden et al., 2018a). This study seeks to identify strategies to foster work wellbeing.

The research questions guiding this investigation included: 1) *What do ICU nurses think may enhance their work wellbeing (potential strengtheners)? 2) What strategies do ICU nurses currently use to enhance their work wellbeing (actual strengtheners)? 3) What work wellbeing strategies are currently used in the ICU nurses' workplace?* This research will identify New Zealand ICU RN's perspectives of strengtheners of work wellbeing in their

context. These perspectives will inform individuals, teams, organisations, policy makers, and programme developers of the potential strengtheners of work wellbeing. Hence, the opportunities for improved ICU nurse performance, engagement, retention, and patient satisfaction may be better enabled and realised.

6.4. Methods

This qualitative descriptive study reports the findings from a dataset of an online study that asked two free-text open-ended questions. Participants also took part in a prototype analysis (reported in Jarden et al., 2018a). After asking about conceptions of wellbeing, the questionnaire asked participants to list potential and actual strengtheners of their work wellbeing in two questions:

Question One: "What do you think would promote/enable/facilitate work wellbeing"

Question Two: *"What strategies, tools, initiatives, and/or programmes are currently used in your workplace to promote/enable/facilitate your work wellbeing. Please list things you do (individual level), things your team does (team level), and things your organisation does (organisation level)."*

6.4.1. Participant selection.

Purposeful sampling of registered nurses working in a New Zealand ICU (Nursing Council of New Zealand, 2015) was conducted through national professional bodies (e.g., New Zealand College of Critical Care Nurses and New Zealand Nurses' Organisation), New Zealand ICU research nurses, and social media networks (e.g., Facebook[TM] groups, Twitter[TM], and LinkedIn[TM]). All New Zealand RNs presently employed in an ICU were eligible for selection.

6.4.2. Ethical considerations.

This research was conducted in accordance with Auckland University of Technology Ethics Committee approval (17/180) (see Appendix A). Advertisements provided potential participants with a URL to the study information webpage. The study information webpage

requested participants to indicate their informed consent by entering their name and e-mail address for the study URL to then be emailed to them (see Appendix B and Appendix C).

6.4.3. Data analysis.

Using applied thematic analysis (Braun & Clarke, 2006, 2013; Guest, MacQueen, & Namey, 2012), the free-responses in this exploratory study were analysed using a six-phase content-driven, inductive approach to coding. After reviewing and becoming familiar with the data, initial codes were identified (RJ), drawing from explicit written statements by the participants. Two researchers (RJ & MS) categorised codes into three levels, consistent with the initial probe questions. The framework of 'me', 'we', and 'us' (Jarden & Jarden, 2016) was identified as an adaptable, user-friendly, flexible and highly applicable conceptual scheme to support the identification of levels for the strengtheners of ICU nurse workplace wellbeing. The framework was adapted for this study (with permission from the authors), applying the term 'me' to the personal or individual resources nurses bring to ICU, 'we' to the relational experiences of working in the ICU, and 'us' to the organisational systems the ICU nurses work within. For rigour in this process, researchers categorised the codes first independently, then compared and contrasted together. A third researcher (JKM) reviewed and resolved any uncertainty in relation to the categorising.

6.5. Findings

Eighty-Two New Zealand ICU nurses opted in to the study. Of these 82 nurses, 65 participated in the study by responding to the online questions. Three of the 65 provided incomplete data, their partial data were used in the analysis. Participants (n = 65) were primarily married (n = 40; 62%) women (n = 57; 88%), aged between 25 and 63 years, and identified as New Zealand European (n = 45; 69%). This was a largely representative sample of the New Zealand ICU nurse population (Nursing Council of New Zealand, 2015).

Firstly, monolexemic linguistic items (i.e., meaningful individual words) were identified, for example, "support", "supervision", and "respect". Items with modifiers were coded as single items, for example, "more support" was coded as "support". Where a phrase

was used, a coding decision was made. For example, "feeling supported when things don't go as planned", was coded as "support". A conservative approach to the coding preserved the integrity and richness of the data. For example, "regular feedback" was left as two items rather than coding to a single item, e.g., "feedback". A total of 153 words and phrases were reported for potential strengtheners of work wellbeing, and 213 for actual strengtheners of work wellbeing. Of these words and phrases, 69 unique linguistic items were identified.

Secondly, codes were categorised according to the "me, we, us" framework; 22 were applied to the 'me' level, 14 to 'we', and 33 to 'us'. The participants' explicit words were retrieved from the data to provide a richer description of each of the three categories in relation to either the actual or potential strengtheners of ICU nurse work wellbeing. Strengtheners are listed alphabetically according to the three levels of 'me', 'we' or 'us' in Table 7.

Table 7. Levels of actual and potential work wellbeing strengtheners.

Level	Actual work wellbeing strengtheners	Potential work wellbeing strengtheners	Both actual and potential work wellbeing strengtheners
Me	Breathing exercises [A]	Feeling fulfilled [P]	Compassion - towards selves and others [AP]
	Detachment from situation [A]		Mindfulness [AP]
	Exercise [A]		Part-time [AP]
	Hobbies & personal leisure activity [A]		Reduce night-shifts [AP]
	Journaling [A]		Self-care [AP]
	Keep healthy [A]		Work-life balance [AP]
	Meditation & imagery [A]		
	Outside visits [A]		
	Positive attitude [A]		
	Relationship outside work - support & communication [A]		
	Rest [A]		
	Social activities away from work & work colleagues [A]		
	Stay home when unwell [A]		
	Time out [A]		
	Yoga [A]		
We	Friendly & welcoming to others [A]	Colleagues - nice & friendly [P]	Communication - open & good [AP]
	Senior staff - approachable & supportive [A]	No mobile phone use during work [P]	Culture - positive & team & open [AP]
	Speak up when overwhelmed [A]	Relationships - positive & encouraging [P]	Show appreciation [AP]
		Respect [P]	Social activities with colleagues and or social club [AP]
		Teamwork [P]	Team communication [AP]

Level	Actual work wellbeing strengtheners	Potential work wellbeing strengtheners	Both actual and potential work wellbeing strengtheners
		Work variety & challenge [P]	
Us	Access nutritional food & drink at work [A]	Appreciation [P]	Autonomy [AP]
	Annual appraisals [A]	Courses to promote wellbeing [P]	Debriefing - formal & informal & work-based & non-work-based [AP]
	Ask staff what they want & need [A]	Environment - safe & nice & appropriate & comfortable [P]	Feedback - regular, encouraging, positive, receptive to [AP]
	Breaks - on-time & supported [A]	Pay - fair [P]	Leadership - good & respectful & trustworthy & approachable & regular catch-ups & supportive [AP]
	Counselling [A]		Leave - appropriate & accessible [AP]
	Employee Assistance Programme [A]		Management - approachable & supportive & good with integrity & fair & encouraging & resources well managed [AP]
	Health and safety team - active [A]		Mentoring [AP]
	Multi-Employer Collective Agreement - aligned with [A]		No extra or on-call shifts or education on days off or staying late [AP]
	Perks - cheap gym membership & discounts [A]		Peer support [AP]
	Vaccinations - free & accessible [A]		Professional development - time & opportunity & supporting [AP]
	Workplace wellbeing programme [A]		Psychologist [AP]
			Rostering - self, safe, fair, flexible, good [AP]
			Safe staffing [AP]
			Supervision - access & during work time [AP]
			Team building exercises [AP]
			Valuing & recognition of service [AP]

Level	Actual work wellbeing strengtheners	Potential work wellbeing strengtheners	Both actual and potential work wellbeing strengtheners
			Workload - safe & fair & achievable & realistic [AP]
			Zero tolerance of bullying [AP]

Note. Superscript 'A' denotes an actual strengthener, Superscript 'P' denotes a potential strengthener

6.5.1. Me (personal or individual resources nurses bring to ICU).

Across the "me" level descriptors, there were six strengtheners considered both actual and potential strengtheners, one potential-only strengthener, and 15 actual-only strengtheners. For potential strengtheners, participants suggested they would like the "ability to take sick leave without feeling guilty", and they would like to see an "ongoing attitudinal change that taking care of yourself - the clinician - is a priority before you are able to care for others". Other participants suggested they would like to see better work-life balance and have the ability to reflect on stressful events "in a positive manner for learning". Several of the potential strengtheners fit into both potential and actual strengtheners likely due to them being dependent on management and organisational support to enable them, such as, working part-time and reducing night shifts. In contrast, the actual strengtheners alone were largely enabled by the individual.

For actual strengtheners, participants highlighted the importance of work-life balance, for example, "I set boundaries for how many shifts I do each week, i.e., depending on how tired I feel as to whether I do extras". Others stated the benefits of engaging in activities outside of work time, for example, "sports outside work (swimming, snowboarding), leaving work behind completely after hrs or during my days off and I do not do on call". Spirituality was also identified as an actual strengthener, for example, "prayer for the workplace - both for my colleagues and patients". Reducing work hours was mentioned in a variety of ways, for example, "I work part time to suit the tiredness associated with shift work and aging". In sum, participants identified a broad range of personal resources, with a general theme of prioritising self-care. They drew from both a range of psychological strengtheners such as practicing mindfulness and meditation, and a range of actions such as exercising, resting, and spending time in the outdoors.

6.5.2. We (relational experiences of working in the ICU).

Across the "we" level descriptors, there were five strengtheners considered both actual and potential strengtheners, six potential-only strengtheners, and three actual-only strengtheners. For potential strengtheners, one participant captured the complexity of the relational experiences by suggesting:

I'm not a hundy [hundred] *percent on if there is one main solution - I'm not sure, but I think it might take a long time of continuous positive interventions and collaboration between all of the team...giving time to listen to one another, feeling confident in our work and our teammates (continued education and opportunities to develop), safe staffing levels, maybe having a 'diffuse room' where you could go to take some time out....*

Another participant felt the key could be:

…a supportive team environment. To me, the most important aspect of this is team. If I show up to work knowing that I'm not going to have to struggle to find someone to help me mobilise my patient or bounce ideas off of then I know that I will work hard but leave a shift feeling like I did my best for the patient. Being isolated in a nursing role is a recipe for disaster not only for the patient but for the wellbeing of the nurse.

and another suggested:

…regular encouragement and appreciation I find boosts confidence and morale in all staff, not just new staff. Respecting those we work with and taking time to listen and make people feel wanted and part of the team. Extra resources do help but I think if we are working with good people then even the busiest days are good.

Participants identified a large number of potential strengtheners in the "we" level. This was likely due to the interdependence with such a broad range of factors related to relationships such as teamwork and respect. The actual strengtheners often also presented

as potential strengtheners. This finding may have reflected participants positive perceptions of their personal actions within the team, as opposed to their more negative perceptions of others' contributions to the team. For actual strengtheners, participants stated a "mindfulness week, some peer supervision (not often enough yet), and formal debriefing when required". Others focused on working as a team to support each other and communicate effectively, for example, "the team ensure breaks are taken at appropriate times. Good support is given during crisis situations - work and home… regular team meetings occur, when anyone can raise issues". These actual strengtheners seemed to vary between participants as to whether they were actual or potential strengtheners which may reflect the influence of the workplace culture.

6.5.3. Us (the organisational systems nurses work within).

Across the "us" level descriptors, there were 18 strengtheners considered both actual and potential strengtheners, four potential-only strengtheners, and eleven actual-only strengtheners. For potential strengtheners, participants suggested activities to promote their work-life balance, such as "not being hassled via texts to work extra shifts", and "rosters to acknowledge some people do not do nights well and some do not do day shifts well". Clinical supervision was also identified, as one participant stated:

> …allied health must have clinical supervision to retain their practicing certificate yet we at the front-line have no resource for clinical supervision. We see a lot with no resource for debriefing or clinical supervision. More formal debriefing would allow a better understanding of medical decision making and allow a more multi-disciplinary approach to patient care. It also means staff do not end up taking things home with them or feeling perhaps they could have done better.

The 'us' perception of "good staffing" was perceived as a potential strengthener, such as "100% staffing at all times". However, another participant suggested that in times of "good staffing", protection from redeployment was seen as important, for example, "not being redeployed the moment there is a second of downtime especially when all study leave

is cancelled for 6 months of the year during the 'busy' period". Others highlighted the importance of "better pay - feeling valued in a monetary sense" and "adequate training and individualised plans for professional growth (that are followed through)".

For actual strengtheners, participants identified both internal and external psychological support structures such as both formal and informal debriefing, trained counsellors and a psychologist, and employee assistance programmes. Other participants stated their organisations arranged group activities such as "pilates, yoga, boot-camp and spinning classes" alongside subsidised gym memberships and meditation classes. One participant identified a strengthener was their roster which "takes into account preferences and requests, and also sticks to the MECA *[Multi-Employer Collective Agreement]*". In sum, there were a large number of strengtheners in the "us" level that were considered both actual and potential strengtheners, which likely reflected the interdependent relationship between the individual, team, and organisation. Those strengtheners that were more likely to be driven by individuals, such as seeking support, were more likely to be actual strengtheners, those that were dependent on the organisation were more likely to be potential, such as fair pay.

6.5.4. Intensive care nurse multi-level work wellbeing intervention programme.

The socio-ecological framework (Bronfenbrenner, 1977b) is purported to inspire multi-level interventions, yet frequently public health interventions have single-level targets and are focused on intrapersonal change (Schölmerich & Kawachi, 2016). Drawing from the ecological framework (Bronfenbrenner, 1977a), the eco-social approach (Krieger, 1994), the health promotion adaption of the socio-ecological framework (McLeroy, Bibeau, Steckler, & Glanz, 1988), and the "Me, We, Us" framework (Jarden & Jarden, 2016), an example of what a multi-level work wellbeing intervention programme might look like is depicted in Figure 13.

Us
(organisational)

We
(interprofessional team)

Me
(individual)

Working for wellness program (Page & Vella-Brodrick, 2013)

Job crafting (Wrzesniewski & Dutton, 2001)

Reflected best-self (Roberts, Dutton, Spreitzer, Heaphy, & Quinn, 2005)

Vaccinations – free & accessible; service recognition; zero tolerance of bullying; fair pay; discounted memberships; workplace wellbeing programme; peer support

Teamwork; relationships are positive & valuing; colleagues are friendly; senior staff are approachable & supportive

Journaling, mindfulness, rest, self-care, yoga, hobbies, meditation, social activities away from work, positive attitudes and feeling fulfilled

Examples of potential interventions from the literature   Examples of strengtheners from the ICU nurses

Figure 13. Intensive care nurse multi-level work wellbeing intervention targets.

Figure 13 integrates examples of the ICU nurses' strengtheners, potential interventions from the literature (Page & Vella-Brodrick, 2013; Roberts, Dutton, Spreitzer, Heaphy, & Quinn, 2005; Wrzesniewski & Dutton, 2001) and the "Me, We, Us" framework. There is a focus towards the prevention of illbeing in the ICU nurses strengtheners, evident in their examples of free and accessible vaccinations, peer support, teamwork, and self-care. These examples are reflected in this illustration of an ICU nurse wellbeing intervention.

6.6. Discussion

Intensive care nurses identified both potential and actual work wellbeing strengtheners at the individual, team and organisational levels. These findings are misaligned with many organisational initiatives to enhance work wellbeing which are limited to a focus on strengthening an individual's personal resources (Day & Penney, 2017). A striking finding is that this large list of individual strengtheners would suggest that ICU nurses have a highly developed understanding of personal work wellbeing strengtheners. The words "less" and "reduce" were evident throughout the data in relation to key terms such as "overtime" and "on-call" and "nights" and "extras". These words are consistent with the concept of simplicity and simplifying your life, which is an area gaining more attention in the literature in relation to personal wellbeing (Rich, Hanna, & Wright, 2017; Rich, Hanna, Wright, & Bennett, 2017). Most of the personal work wellbeing strengtheners were also actual (n = 15), rather than potential (n = 7), strengtheners. Thus, most are strengtheners currently being used by the ICU nurses. In contrast, the organisational strengtheners were predominantly reported as potential (n = 22) strengtheners of work wellbeing as opposed to actual (n = 11), meaning they are not consistently evident in the workplace. This suggests an opportunity to capitalise on these 'we' level potential strengtheners identified by the ICU nurses, such as "courses to promote wellbeing", "appreciation", and "fair pay". These strengtheners are aligned with the strategies for identification of unrealised strengths (Biswas-Diener, Kashdan, & Lyubchik, 2017).

Job and workplace design are proposed by Munir and McDermott (2013) as key areas where work wellbeing may be enhanced. Firstly, at a primary-organisational intervention

level strategies include job redesign (see Carlgren, Elmquist, & Rauth, 2014; Nielsen & Christensen, 2014; Roberts, Fisher, Trowbridge, & Bent, 2016; Sangiorgi & Junginger, 2015), job crafting (Berg et al., 2010; Bipp & Demerouti, 2015; Ghitulescu, 2015; Kulik, Oldham, & Hackman, 1987; Tims, Bakker, & Derks, 2015; van den Heuvel, Demerouti, & Peeters, 2015) and structural changes to processes and policies (see Guenole & Biggs, 2013). Examples of strengtheners identified by the ICU nurses in relation to this primary-organisational intervention level included workplace wellbeing programmes to promote wellbeing and supporting safe staffing levels. Secondly, at a secondary individual intervention level, strategies include stress management, cognitive behavioural therapy or mindfulness education (see Furlan et al., 2012; Geaney et al., 2013; Houdmont, Randall, Kerr, & Addley, 2013; Hyland, Lee, & Mills, 2015; Malik, Blake, & Suggs, 2014; Rongen, Robroek, van Lenthe, & Burdorf, 2013; Tan et al., 2014). Examples of strengtheners identified by the ICU nurses at this secondary individual intervention level included mindfulness and yoga. Mindfulness as a strengthener resonates with previous literature such as (Hee Kim et al., 2014). Thirdly, at a tertiary individual intervention level, strategies include counselling, employee assistance programmes, rehabilitation and organisationally supported wellness (e.g., physical health) programmes to support those with identified problems (e.g., Colquitt, Lepine, & Wesson, 2013; Robbins & Judge, 2013). Examples of strengtheners identified by the ICU nurses at this tertiary individual intervention level included "counsellors" and "employee assistance programmes". Alternative ICU nurse identified strengtheners such as "pilates, yoga, boot-camp and spinning classes", "courses to promote wellbeing", subsidised gym memberships and meditation classes are opportunities yet to be empirically tested in the ICU nurse workplace.

There is strong evidence to support the important place of negative events in generating positive outcomes (e.g., see Baumeister et al., 2001). However, positive practices such as compassionate support for employees, and expressions of gratitude, predict organisational performance (Cameron, Mora, Leutscher, & Calarco, 2011). Since the positive psychology movement began in 1998 (Seligman & Csikszentmihalyi, 2000), key research areas that have developed in relation to work wellbeing include Positive Organisational Behaviour (Luthans, 2002a), Positive Organisational Scholarship (Cameron et al., 2003a), and

Positive Organisational Change (Cameron & McNaughtan, 2014). Within these research areas is a focus towards strengths and psychological capacities (Luthans, 2002b), examining the best of the human condition (Cameron et al., 2003a; Spreitzer & Sonenshein, 2003) and tapping into collective intelligence (Lewis, 2016). The potential strengtheners reported by the ICU nurses demonstrates the benefits of seeking out the collective intelligence. Disseminating this wisdom supports the co-creation of change to foster environments where ICU nurses flourish.

This dataset was obtained during the online collection of data for a prototype analysis exploring ICU nurse conceptions of work wellbeing; thus, the participants were primed to think about wellbeing first which is a strength. Use of the participants' quotes throughout the findings demonstrates the authors' appreciation of the value of their voice. Support of the professional nursing organisations of New Zealand, alongside the social media networks to recruit participants was invaluable and enabled a 'bottom-up' approach in the recruitment processes, preventing potential workplace and organisational barriers (e.g., time pressures) influencing participation. Given the findings are based on a single New Zealand sample, generalisability to other nations is limited. Greater depth and insight into the strengtheners of work wellbeing may have been obtained had we used a triangulated approach to data collection by incorporating both focus groups and interviews.

6.7. Conclusions

In this chapter, study four, I built on the empirical base identified in studies one and two, and study three's prototype analysis, by exploring ICU nurses' perceptions of the potential and actual strengtheners of their work wellbeing. Study four has identified that New Zealand ICU nurses have a robust complement of personal resources they draw from to strengthen their work wellbeing, including actions to simplify their lives, mindfulness and yoga. Nurses are also cognisant of a wide range of both relational and organisational systems strengtheners, including peer supervision, formal debriefing, and working as a team to support each other. These actions may be incorporated in strategic and empirically-informed work wellbeing programmes, drawing from these ICU nurses' collective intelligence to co-

create change. In the next chapter I synthesise the findings from the four studies specifically

considering the research objectives.

Chapter 7: Synthesis

In this research programme I set out to identify ICU nurse's conceptions of work wellbeing, and the strengtheners of ICU nurse work wellbeing. The challenging and complex role of the ICU nurse places these nurses, and their patients, teams and organisations, in a strong position to benefit either personally or professionally from a work wellbeing intervention or programme of activities. It is essential to identify how ICU nurse work wellbeing is conceptualised to establish its core features before implementing a health promotion and illbeing prevention strategy, such as a positive psychological intervention.

The current collection of mixed methods studies has conceptualised ICU nurse work wellbeing from both the extant literature and original empirical evidence of ICU nurse perspectives and identified strengtheners of nurses' work wellbeing. The principally quantitative designs of the iAnalysis, systematic review, and prototype analysis in studies one, two, and three, also included to a lesser degree a qualitative exploration of the semantics. In contrast, the exploration of the strengtheners of ICU nurse work wellbeing was qualitative by design. The impact of this mixed methods design was to obtain a rich and comprehensive view of ICU nurse work wellbeing from both existing research and current ICU nurse perspectives. This chapter synthesises the findings from the four individual studies answering their research questions and explores the synergistic effect in creating job crafting and redesign opportunities for individuals, teams, organisations and policy makers.[5]

---

[5] The content of this synthesis, Chapter 7, is largely similar to a manuscript submitted for publication.

7.1. Abstract

Background: There had been little focus on the wellbeing of intensive care nurses until a recent program of research found work wellbeing to be best described as a collection of elements; a multifaceted construct. Strengtheners of intensive care nurses' work wellbeing were found to extend across individual, relational, and organisational resources. Actions such as simplifying their lives, giving and receiving team support, and accessing employee assistance programmes were just a few of the intensive care nurses' identified strengtheners.

Objectives: The objective of this qualitative research synthesis was to translate the findings from the studies in this program of research into clinically applicable knowledge.

Methods: The ICU nurse work wellbeing characteristics and their strengtheners were analysed together using applied thematic analysis and pre-design, open card-sort technique. Findings were synthesised into a proposed conceptual model for job crafting and redesign.

Findings: Five facets were identified: 1) healthy, 2) authentic, 3) meaningful, 4) connected, and 5) innovative.

Conclusions: The proposed conceptual model contributes new knowledge to now be explored in meaningful discussions about intensive care nurse work wellbeing, and empirically investigated in terms of construct validity and theory development. Further, the model provides practical opportunities to explore individual and collaborative ways to enhance intensive care nurse work wellbeing at each level of the ICU healthcare system.

7.2. Background

Five research questions have now been answered across four studies in this programme of research. These four studies provide the background and context for chapter seven's synthesis. Firstly, I revisit the studies in light of the research questions.

7.2.1. Research question one: How is ICU nurse work wellbeing conceptualised in the literature? (Studies one & two).

The complementary approaches of iAnalysis (study one; chapter 3) and systematic review (study two; chapter 4) have had a synergistic effect in identifying existing empirical knowledge and guiding future research where lacking. For example, the iAnalysis provides a tool for obtaining a broad overview of a topic, then identifying co-terms. The iAnalysis informed a subsequent systematic review in identifying key authors, words, and disciplines, for journal and grey literature searches. In comparison, the systematic review, with the addition of the qualitative exploratory aspect, adds depth and specificity, building on the iAnalysis.

The iAnalysis and the systematic review identified that ICU nurse wellbeing is both largely understudied and undefined. Research exploring ICU nurse wellbeing was mostly absent in the existing published primary studies. High quality research design was even less visible. We identified only a few studies with considerable methodological limitations. The semantics analysis identified several key elements thought to be indicative of wellbeing, such as meaning, engagement, motivation, purpose, positive emotions (e.g., happiness) and achievement. Whilst these elements were evident in the iAnalysis, they were under-represented in the results in comparison to terms such as stress, depression, anxiety and burnout.

Having extolled the opportunities afforded by the iAnalysis model, there were also limitations in the application of this text analytics model. One such limitation relates to the ever-evolving nature of technology. The iAnalysis is dependent on specific programmes, and when new versions are produced (e.g., new version of Endnote^{TM}) new problems may occur, for example, the new version of Endnote^{TM} did not have the same

size capacity to transfer citations. Regardless of this limitation, newer technologies generally enhance usability, and relatively good solutions were readily available. In addition, the iAnalysis supported text mapping of research published in a source that supported extraction of the required data. What the iAnalysis did not support was the mapping of other sources of data, for example business or organisational documents that are not published in databases. Adding this dimension to the iAnalysis would enhance further breadth to the mapping.

7.2.2. Research question two: How do ICU nurses conceptualise work wellbeing? (Study three).

The complexity and unavoidable pressures of ICU nursing provide a unique opportunity to balance existing research focused largely on illbeing towards an equivalent emphasis on wellbeing for ICU nurses. The next stage was to seek the perceptions of ICU nurses themselves. Study three (chapter 5; ICU nurse conceptions of wellbeing prototype analysis) found 'appropriate workload' and 'work-life balance' were key characteristics to conceptions of work wellbeing, and 'being valued', 'respect', and 'support' were of most importance to them. The concept of 'relationships' was strongly evident in a variety of elements, such as, 'personal relationships', 'professional relationships', 'teamwork', 'support', and 'professional communications'.

Rather than there being a definition of work wellbeing with specific elements that meet an 'all-or-none' criteria, this research suggests work wellbeing may be better described as a collection of elements, a rich and multifaceted construct, with some elements more central and important than others. The findings may be relevant to many nurses, not just ICU nurses, working in large organisations, for example, feeling respected, valued and supported. The importance of feeling supported in the work environment is increasingly being identified in other research. For example, Van der Heijden, Mulder, König, and Anselmann (2017) found leadership quality and supervisor support reduced nurses' psychological distress and improved job satisfaction and positive affect.

7.2.3. Research questions three, four and five: What do ICU nurses think promotes work wellbeing? (Study four).

Study four (chapter 6; strengtheners of ICU nurse work wellbeing) demonstrated that New Zealand ICU nurses have a robust complement of personal resources they draw from to strengthen their work wellbeing, including mindfulness, yoga, and actions to simplify their lives. Nurses are also cognisant of a wide range of both relational and organisational systems strengtheners, including peer supervision, formal debriefing, and working as a team to support each other. Given the strong presence and importance of 'relationships' identified by ICU nurses in study three (ICU nurse conceptions of work wellbeing), evidence of relationship strengtheners as predominantly potential, rather than actual strengtheners, demonstrates an unrealised opportunity to enhance workplace relationships.

Predominantly, the personal work wellbeing strengtheners of study four were actual, rather than potential, strengtheners. Thus, most strengtheners were being used by the ICU nurses. In contrast, the organisational strengtheners were mainly reported as potential strengtheners of wellbeing. This means these strengtheners were not being used, which presents an opportunity for organisations to capitalise on these potential strengtheners.

In study three (chapter 5; ICU nurse conceptions of wellbeing) we found work wellbeing to have varied theoretical views and definitions (Dewe & Kompier, 2008; Fisher, 2014; Grant et al., 2007; Laine & Rinne, 2015; Page & Vella-Brodrick, 2009). Whilst no one specific feature was evident across all models, variations of the element 'relationships' or 'social connections' were apparent in most theoretical models. No models specifically for 'nurse wellbeing' nor 'nurse work wellbeing' were identified in the literature. This research programme has illustrated the elements ICU nurses feel are important to their conception of work wellbeing (Figure 12) and inspired an example of a multi-level work wellbeing programme (Figure 13). Whilst each of the four studies in this research programme have individual strengths to influence ICU nurse work wellbeing, in the next section I will explore their synergistic contribution to enhancing wellbeing.

7.3. Methods

The empirical underpinnings of ICU nurse work wellbeing and the ICU nurses' conceptions and strengtheners are now extrapolated and explored from both a 'job crafting' (changing task or relational boundaries of work; Wrzesniewski & Dutton, 2001) and redesign (job redesign to improve working conditions; Demerouti, 2014) perspective. Previously in chapter one the potential benefits of both job and physical workplace design on work wellbeing were highlighted (Munir & McDermott, 2013). Having now explored the empirical underpinnings of ICU nurse work wellbeing, ICU nurse conceptions of work wellbeing, and their perspectives of the strengtheners of their work wellbeing, the extensive combined datasets are now analysed.

The ICU nurse work wellbeing characteristics (identified in Study 3, chapter 5) and their strengtheners (identified in Study 4, chapter 6) were analysed together using the same applied thematic analysis (Braun & Clarke, 2006, 2013; Guest et al., 2012) and pre-design, open card-sort technique (Paul, 2008; Rugg & McGeorge, 1997) employed in study three. One researcher (RJ) categorised and coded the data independently, then three researchers (MR, JKM, & RS) reviewed and resolved any uncertainty in relation to the categorising into 'facets'. The term 'facets' was not selected lightly, with its definition stemming from many faces or sides, and being a part of something bigger such as a gem (*Macquarie Dictionary and Thesaurus Online*, 2018). Again, the framework of 'me', 'we', and 'us' (Jarden & Jarden, 2016) was employed as a conceptual scheme.

7.4. Findings

Moving beyond explicit meanings within the data, this analysis identified the five facets of ICU nurse work wellbeing as being: *healthy, authentic, meaningful, connected and innovative*. The facets were named using adjectives to support them becoming ICU mission statements, such as, 'our ICU is *healthy, authentic, meaningful, connected and innovative*'. These facets scaffold the integration of the empirical and ICU nurse perspectives from the findings of this programme of research. The ICU nurse work wellbeing characteristics (identified in Study 3, chapter 5) and their strengtheners

(identified in Study 4, chapter 6) are applied (alphabetically) to the five facets and are presented in Table 8.

Table 8. Facets of ICU nurse work wellbeing based on characteristics and strengtheners.

Facets	ICU nurse identified work wellbeing characteristics	ICU nurse identified work wellbeing strengtheners
Healthy	Energy	Work-life balance [AP]
	Physical health	Exercise [A]
	Work-life balance	Hobbies & personal leisure activity [A]
	Mental health	Keep healthy [A]
	Rostering	Outside visits [A]
	Paid fairly	Part-time [AP]
	Income security	Reduce night-shifts [AP]
	Resilience	Relationship outside work - support & communication [A]
		Rest [A]
		Self-care [AP]
		Journaling [A]
		Yoga [A]
		Social activities away from work & work colleagues [A]
		Stay home when unwell [A]
		Access nutritional food & drink at work [A]
		Ask staff what they want & need [A]
		Breaks - on-time & supported [A]
		Counselling [A]
		Courses to promote wellbeing [P]
		Employee Assistance Programme [A]
		Leave - appropriate & accessible [AP]
		Multi-Employer Collective Agreement - aligned with [A]
		Pay - fair [P]
		No extra or on-call shifts or education on days off or staying late [AP]
		Perks - cheap gym membership & discounts [A]
		Rostering - self, safe, fair, flexible, good [AP]
		Vaccinations - free & accessible [A]

Facets	ICU nurse identified work wellbeing characteristics	ICU nurse identified work wellbeing strengtheners
Authentic	Energy Humour Work-life balance Workplace culture	Mindfulness [AP] Breathing exercises [A] Compassion - towards selves and others [AP] Meditation & imagery [A] Time out [A] Detachment from situation [A] Communication - open & good [AP] No mobile phone use during work [P] Respect [P] Speak up when overwhelmed [A] Leadership - good & respectful & trustworthy & approachable & regular catch-ups & supportive [AP] Zero tolerance of bullying [AP]
Meaningful	Work safety Caring Appreciated Workload Leadership Job satisfaction Happiness Nurse-patient relationships Confidence in practice	Feeling fulfilled [P] Show appreciation [AP] Teamwork [P] Annual appraisals [A] Appreciation [P] Debriefing - formal & informal & work-based & non-work-based [AP] Environment - safe & nice & appropriate & comfortable [P] Feedback - regular, encouraging, positive, receptive to [AP] Health and safety team - active [A] Management - approachable & supportive & good with integrity & fair & encouraging & resources well managed [AP]
Connected	Teamwork Professional communication Professional relationships	Colleagues - nice & friendly [P] Culture - positive & team & open [AP] Friendly & welcoming to others [A] Relationships - positive & encouraging [P]

Facets	ICU nurse identified work wellbeing characteristics	ICU nurse identified work wellbeing strengtheners
		Social activities with colleagues and or social club [AP]
		Mentoring [AP]
		Peer support [AP]
		Psychologist [AP]
		Valuing & recognition of service [AP]
		Supervision - access & during work time [AP]
		Team building exercises [AP]
Innovative	Support	Positive attitude [A]
	Workplace culture	Senior staff - approachable & supportive [A]
		Team communication [AP]
		Work variety & challenge [P]
		Autonomy [AP]
		Professional development - time & opportunity & supporting [AP]
		Safe staffing [AP]
		Workload - safe & fair & achievable & realistic [AP]

Note. Superscript 'A' denotes an actual strengthener, Superscript 'P' denotes a potential strengthener.

Within each of the five facets, all three levels of strengtheners ('me', 'we' & 'us') identified in study four (chapter 6) were evident, reflecting the opportunity for innovation from individual's building and drawing on personal resources, strengths and power, through to those of the teams and organisations.

7.5. Discussion

These five facets draw from the theoretical foundations of wellbeing (see chapter one) such as Maslow's Hierarchy of Needs (Maslow, 1958), Person-Environment Fit Theory (Caplan, 1987), Self-Determination Theory (Deci & Ryan, 2000) and Flow Theory (Csikszentmihalyi, 1990). For example, for Self-Determination Theory (Deci & Ryan, 2000), employees with satisfied basic needs demonstrate autonomous motivation, and for Flow Theory (Csikszentmihalyi, 1990), being in a state of flow results in individuals being happier when engaged in an activity and seeking it out. Both theories are associated with the facet *authentic,* which broadly encompasses being in the moment, genuine, real, and true to oneself. This facet is aligned with the ICU nurse work wellbeing characteristics of workplace culture, humour and energy, and the strengtheners of mindfulness, compassion and detachment from the situation. Proposed job crafting opportunities, yet to be empirically validated, might include design features for rest or re-energising in break-out rooms that have both high and low stimulus options. The five facets of ICU nurse work wellbeing: 1) healthy, 2) authentic, 3) meaningful, 4) connected and 5) innovative, afford the opportunity to build on the ICU nurses identified work wellbeing characteristics and strengtheners to propose potential job crafting and redesign strategies. Empirically testing these strategies afford a future research opportunity. These five facets are now discussed in further detail.

7.5.1. Healthy.

Facet one, *healthy* broadly encompasses being physically and psychologically energised and experiencing balance. The ICU nurses' proposed work wellbeing characteristics for the facet of *healthy* ranged from physical and mental health, to rostering and resilience. The nurses' identified strengtheners included access to nutrition and hydration; an environment well suited for working requirements; appropriate attire;

financial security; emotional, psychological, physical safety; accessible support systems and personal relationships such as friendships, partners and family. Integrating the ICU nurses' conceptions of work wellbeing characteristics and strengtheners with this theme suggests for ICU nurses, *healthy,* could include workplaces enhancing support for active healthy lifestyles, accessible nutritious and healthy food options, easily adjustable furniture to fit sizes, needs, and preferences and incorporation of nature; whether this is bringing nature in or heading outside. The characteristics and strengtheners underpinning the *healthy* facet are presented in Table 8.

This facet's theoretical underpinnings include Maslow's Theory of Motivation (Maslow, 1948, 1958) and Self-Determination Theory (Deci, Olafsen, & Ryan, 2017). For *healthy,* the focus is towards meeting the basic needs highlighted in Maslow's Theory of Motivation as physiological, safety, love, esteem, and self-actualisation (Maslow, 1958). When an individual's needs and values are satisfied, predictors of life satisfaction move from safety needs, to satisfaction with love and esteem, with some cross-cultural variation in values (Oishi, Diener, Lucas, & Suh, 1999). In addition, Self-Determination Theory suggests supporting employees to satisfy these basic physiological needs facilitates autonomous motivation (Deci et al., 2017).

Family caregiving responsibilities impact nurses in many ways, whether they chose or need to work (Clendon & Walker, 2017). Whilst family came first, implications of family caregiving responsibilities included causing nurses considerable guilt, and physical, emotional and financial hardship. In New Zealand, 36% nurses are responsible for dependent children, and 12% for dependent adults (Walker, 2015). The work wellbeing job crafting and redesign innovations related to this facet include access to nutrition and hydration; an environment well suited for working requirements; appropriate attire; financial security; emotional, psychological, physical safety; accessible support systems; personal relationships such as friendships, partners and family; workplace relationships such as friendship and mentoring; feeling part of a group; engagement in activities that aligned with their strengths and contribute to a feeling of fulfilment.

7.5.2. Authentic.

Facet two, *authentic* broadly encompasses being in the moment, genuine, real, and true to oneself. The ICU nurses' proposed work wellbeing characteristics for the facet of *authentic* ranged from experiencing energy and humour to workplace culture. Examples of the nurses' identified strengtheners included mindfulness and meditation, communication and experiencing respect. Integrating the ICU nurses' conceptions of work wellbeing characteristics and strengtheners with this theme suggests that for ICU nurses, *authentic*, could mean 1) workplaces including design features for rest or re-energising in break-out rooms that have both high and low stimulus options for aspects such as lighting, technology and music, 2) opportunities for keeping active at work, and 3) workforce and staffing designed for safe and effective work which might include clear goal setting, freely accessible professional development, support for role variation and opportunities to seek immediate feedback. Leaders and managers might consider authentic strengths-based strategies to support nurses' competence, autonomy, choice and variety. The characteristics and strengtheners underpinning the *authentic* facet are presented in Table 8.

The *authentic* facet's theoretical underpinnings include Authentic Leadership Theory (Avolio & Gardner, 2005), Flow Theory (Csikszentmihalyi, 1975), Self-Determination Theory (Deci et al., 2017; Deci & Ryan, 2000), and Person-Environment Fit Theory (Caplan, 1987). Avolio and Gardner (2005) propose authentic leadership influences organisations by supporting people to find meaning in work, building optimism and commitment and transparent trusting relationships. From this state of meaningful work, an individual may become so involved in an activity that they experience a state of flow in which nothing else is noticed. This state of flow results in individuals being happier when engaged in this activity and seeking it out (Csikszentmihalyi, 1990). Flow was created with clear goals, intense concentration, a sense of control, perceived balance of skills and challenge, and clear feedback. Flow experiences at work, such as in situations of skill variety and autonomy, positively influence employee wellbeing (Fullagar & Kelloway, 2009; Ilies et al., 2017). The sense of variety and autonomy may support

individuals to feel more comfortable and authentic whilst working, with associated enhanced wellbeing and work outcomes (van den Bosch & Taris, 2014). This authenticity can occur at an individual-level, where there are positive correlations between authenticity and wellbeing (Ménard & Brunet, 2011), and also at a team-level where an authentic climate mitigates emotional exhaustion (Grandey, Foo, Groth, & Goodwin, 2012). Self-Determination Theory (Deci et al., 2017; Deci & Ryan, 2000) suggests both autonomy and competence cultivate authenticity. Heppner et al. (2008) identified positive correlations between satisfaction of autonomy, competence and relatedness needs and authenticity. Given that acting authentically may at times go against what others see as the best way forward, according to Peterson and Seligman (2004), authenticity also sits within the character strength of courage. As such, the work wellbeing job crafting and redesign innovations related to this facet include, for leaders and at a team-level, 1) adopting authentic leadership strategies such as supporting workers choice, variety, autonomy and job challenge, 2) supporting basic needs to be met, 3) giving clear feedback, and 4) listening to and being open to being challenged by employees who are being authentic to their true self. At an individual level being authentic may include 1) self-advocating for your basic needs, 2) challenging oneself by setting goals, 3) seeking variety, and 4) identifying and having courage to stand by your values to support the development of meaning and authenticity in work.

7.5.3. Meaningful.

Facet three, *meaningful* broadly encompasses meaning, purpose and values. The ICU nurses' proposed work wellbeing characteristics for the facet of *meaningful* ranged from feeling appreciated, being able to care, and having confidence in practice. Examples of the nurses' identified strengtheners included showing appreciation, experiencing teamwork, debriefing, and supportive and encouraging management. Integrating the ICU nurses' conceptions of work wellbeing characteristics and strengtheners with this theme suggests for ICU nurses, *meaningful,* could mean identifying organisational activities to proactively engage, build and share common organisational and specialist purpose, and collaborative approaches to identifying purpose drawing from online forums and team-

based activities. Supporting professional development activities through shared identification of professional development needs drawing from strength-based approaches, then support to attend a range of professional development activities using various modalities. Learning and adopting positive organisational scholarship approaches (Cameron et al., 2003b) to enhancing performance during team meetings, handovers, appraisals, debriefing and feedback in which challenges and obstacles are reframed as opportunities and as strength-building experiences that are meaningful. The characteristics and strengtheners underpinning the *meaningful* facet are presented in Table 8.

The *meaningful* facet is underpinned by Social Information Processing Theory, which suggests coworkers influence job attitudes through cues they give about thoughts and feelings (Salancik & Pfeffer, 1978). Meaning in life is thought to involve one making sense of and integrating experiences to create understanding of ourselves and how we understand and fit within the world around us, and then purpose, or the motivation to actively pursue goals that reflect one's identity (Steger, 2013). Meaningfulness and happiness are positively correlated (Baumeister, Vohs, Aaker, & Garbinsky, 2013) and are both considered core components of a good life and overlap in a number of ways, although at times there are trade-offs between the two (Abe, 2016). Meaningfulness is thought to be both a cognitive and an emotional assessment of the purpose and value in one's life (Baumeister et al., 2013). Many factors contribute similarly to both, such as feeling connected to others and feeling productive, although meaningfulness independently relates to expressing oneself and considering the past, present and future (Baumeister et al., 2013).

Perceiving one's work as meaningful, or finding one's 'why', contributes to engagement, organisational commitment and satisfaction (Geldenhuys, Łaba, & Venter, 2014). Workers are consistently exposed to the influence of how others appraise their work role, through the cues the convey (Wrzesniewski, McCauley, Rozin, & Schwartz, 1997). Price, McGillis Hall, Angus, and Peter (2013) identified 'making a difference' as a core sub-theme for nurses in making their career choice. As such, the work wellbeing job

crafting and redesign innovations related to this facet include creating environmental spaces and creative opportunities to reinforce meaning, purpose, information sharing and strength-based development.

7.5.4. Connected.

Facet four, *connected* broadly encompasses having important connections with others. The ICU nurses' proposed work wellbeing characteristics for the facet of *connected* ranged from professional communication, to relationships, and to teamwork. Examples of the nurses' identified strengtheners included a positive and team-oriented culture, peer support and mentoring, team building exercises and social activities. Integrating the ICU nurses' conceptions of work wellbeing characteristics and strengtheners with this theme suggests for ICU nurses, *connected*, could mean supporting and facilitating online social group connections, accessible team communication strategies. These might include the use of online and social media-based tools, and accessible and varied formal and informal regular and frequent social activities for engagement, networking and collaboration. Identifying creative opportunities to proactively engage colleagues in collaborative problem identification and problem-solving strategies could include the use of online forums, teams and competitions. The characteristics and strengtheners underpinning the *connected* facet are presented in Table 8.

The *connected* facet's theoretical underpinnings include Attachment Theory (Bowlby, 1969), Social Exchange Theory (e.g., see Cropanzano & Mitchell, 2005) and Self-Determination Theory (Deci et al., 2017; Deci & Ryan, 2000). Attachment Theory relates to the human tendency to seek and develop relationships with others (Bowlby, 1969). Similar attachment dynamics have been identified in organisational relationships as sources of social support and membership (Hazan & Shaver, 1990). For example, attachment dynamics are related to follower proactivity (Wu & Parker, 2017) and creative problem solving (Mikulincer, Shaver, & Rom, 2011). Relatedness is a core element of needs satisfaction within Self-Determination Theory, facilitating autonomous motivation, wellbeing and enhanced performance (Deci et al., 2017). Social Exchange Theory (for a

detailed review see Cropanzano & Mitchell, 2005) suggests a series of interdependent social exchanges generate obligations which have the potential to generate high quality relationships in particular circumstances. This theory suggests different workplace exchange relationships benefit multiple stakeholders such as employees who benefit from the exchange of resources, knowledge, and support and thus engage in organisational citizenship-type behaviours (Li & Hung, 2009). Furthermore, satisfaction with coworker relationships positively correlates with both job and life satisfaction (Simon, Judge, & Halvorsen-Ganepola, 2010).

Opportunities to enhance connections include social media for networking, organising, and bridging social capital (Huang & Liu, 2017). Colleagues are also a key source of help and information, which reduces a peer's role ambiguity, conflict and overload and enhances organisational climate (Chiaburu & Harrison, 2008). As such, the work wellbeing job crafting and redesign innovations related to this facet incorporate the three levels of 'me', 'we' and 'us' in the creation of spaces and opportunities for informal collaboration and socialisation during work breaks, personal expression and sharing ideas ('me' & 'we'), and informal zones to enhance connection with personal and organisational values ('me', 'we' & 'us').

7.5.5. Innovative.

Facet five, *innovative* broadly encompasses innovation, flexibility, adaptability, creativity, motivation and curiosity. The ICU nurses' proposed work wellbeing characteristics for the facet of *innovative* included support and workplace culture. Examples of the nurses' identified strengtheners included work variety and challenge, autonomy, professional development opportunities and safe fair workloads. Integrating the ICU nurses' conceptions of work wellbeing characteristics and strengtheners with this theme suggests for ICU nurses, *innovative*, could mean being proactive, embracing change, and focusing towards the future, the adoption of self-rostering and self-allocation, designing ICU's and systems to facilitate collegial support whether this is enhanced visibility or using technological innovations such as social media and online forums to

improve change and communication. The characteristics and strengtheners of the *innovative* facet are presented in Table 8.

The *innovative* facet's theoretical underpinnings include Self-Determination Theory (Deci et al., 2017; Deci & Ryan, 2000), Strength Theory (Peterson, Ruch, Beermann, Park, & Seligman, 2007) and Sen's (2005) Capability Approach. Self-Determination Theory relates to motivation, and suggests both performance and wellbeing are affected by motivation for job activities (Deci et al., 2017). This motivation can be intrinsically or extrinsically controlled. Individuals are more likely to be intrinsically motivated when they have a sense of ownership, choice, autonomy (culture-dependent), have clear feedback and support (Deci et al., 2017). Strength Theory builds on the Greek philosophers exploration of 'what is the good of a person', examining character and virtue (Peterson & Seligman, 2004). Sen's Capability Approach considers the balance between freedoms and equality, centralising the importance of equalising human capability. Capability is considered the potential to achieve outcomes, described by Sen (2005) as "functionings" (p. 53), which have close links to subjective wellbeing (Graham & Nikolova, 2015). This Capability Approach, as an evaluative framework for wellbeing, has been considered in the development of NZ government policy. For example, Treasury's economic development strategy (Treasury, 2001) and also the collaborative and integrated organisational quality improvement strategies for Auckland District Health Boards (Ministry of Health, Treasury, & Health Quality and Safety Commission, 2016).

Key components of the *innovative* facet include innovation, creativity and curiosity. Creativity is correlated with subjective wellbeing (Dolan & Metcalfe, 2012), and trait and daily curiosity support the development and persistence of wellbeing (Kashdan & Steger, 2007; Sheldon, Jose, Kashdan, & Jarden, 2015). As such, the work wellbeing job crafting and redesign innovations related to this facet include the promotion of choice, control and space for curiosity, creativity and innovation, and environmental design for personalisation, support and transparency.

7.6. Proposed model of ICU nurse work wellbeing

With these five facets in mind, a tentative conceptual model of ICU nurse work wellbeing is depicted in Figure 14. This model is yet to be tested.
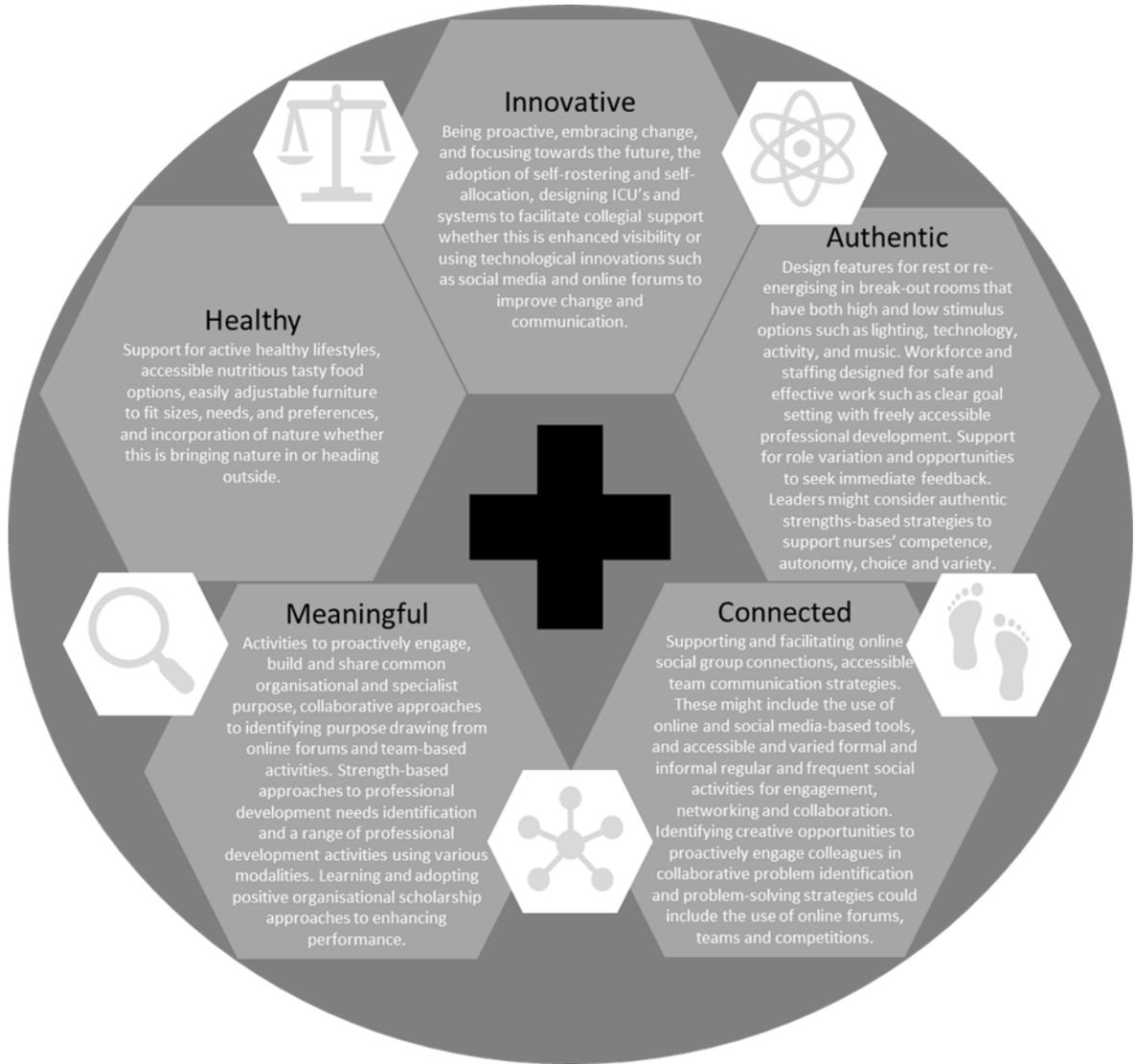
Figure 14. Proposed conceptual model of five facets of ICU nurse work wellbeing.

The facets of the model reflect the findings from the prototype analysis which highlighted work wellbeing might be best described as a collection of elements, as opposed to meeting an 'all-or-none' criteria. Future testing of this model may determine whether this finding is also true for these facets. The tentative ICU nurse work wellbeing model is also illustrated in a variety of formats based on the 'me, we, us' framework in Figure 15.
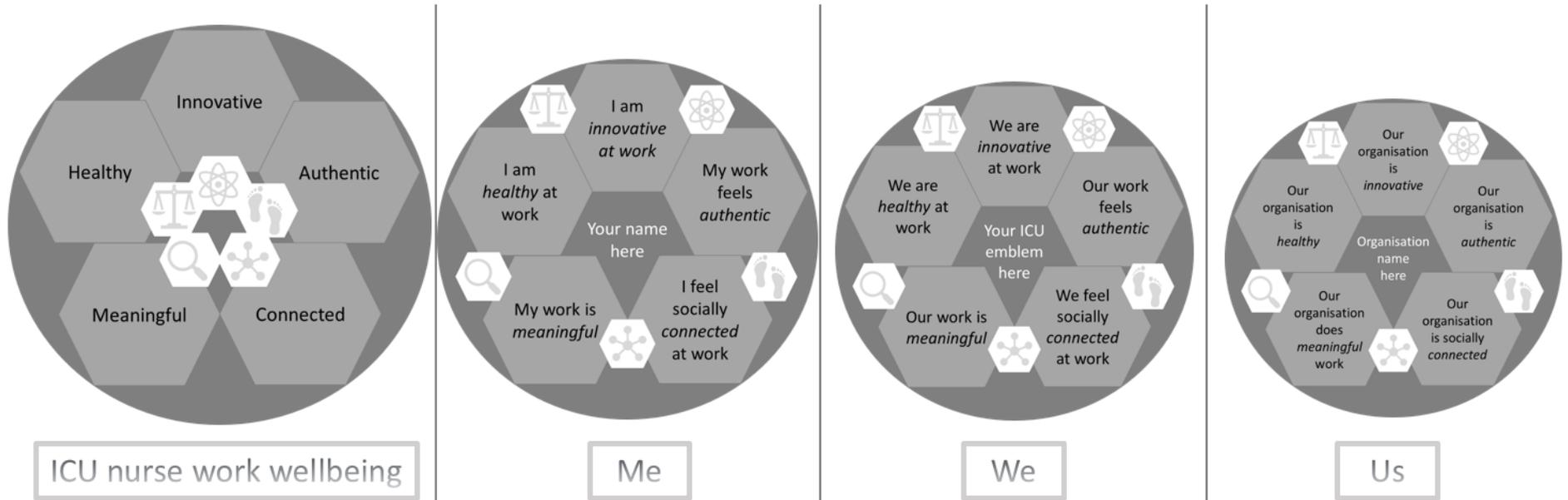
Figure 15. Proposed 'me', 'we' and 'us' variations of the conceptual model of five facets of ICU nurse work wellbeing.

The three different formats (me, we, us) presented in Figure 15 support the future use and testing of the model. For example, building and evaluating new ways of approaching appraisals, preceptoring and mentoring at the individual ('me') level; or team meetings, debriefings and educational activities at the team ('we') level; or at wider organisational, professional body and state level meetings at the 'us' level.

Future exploration of this tentatively proposed conceptual model might include a range of investigations. One opportunity is participatory action research with groups of potential users of future interpretations of the conceptual model, to determine data and insights from the potentially synergistic interaction of participants. This might include investigation of different cultural group's perceptions and interpretations of the model. For example, in New Zealand there are two influential models of Māori wellbeing. These models include 1) Te Whare Tapa Wha (Durie, 2001) and Te Wheke (Pere, 1995). Each model explores interdependent dimensions of wellbeing, using two metaphors, the four-sided house (Durie, 2001) and the octopus (Pere, 1995). Invaluable cultural consultation occurred at the outset of this research programme. Despite amendments to the research methods, there was little Māori engagement. To explore the perceptions of this model further, particularly with Māori ICU nurses, I would recommend co-creation of research design (e.g., Māori representation on the research team), more targeted methods of recruitment (e.g., early engagement of Māori advisors) and different modes of data collection (e.g., interview or focus groups).

Investigating perceptions and interpretations of the proposed conceptual model in the broader nursing community and amongst wider health professions provides another strong avenue for future research, particularly with the important professional relationships between ICU colleagues, both nursing and the interprofessional team. An important question to explore is whether there is a need for a different conceptual model of work wellbeing in every different nursing role and area of practice. Given the diversity in nurses, nursing roles and clinical environments, I propose that it is entirely possible each will have unique conceptions and strengtheners of work wellbeing. This proposition is yet to be tested.

Further exploration of the model may include 1) generating hypotheses regarding how it may be operationalised, 2) exploring measurement, and then 3) testing the model empirically to determine how 'facets' might work together within and across levels through methods such as multi-level factor analysis or structural equation modelling, thereby 4) enabling further theory development. The conceptual model illustrated in Figure 14 provides a basis for ICU nurses and their workplaces to begin, or continue, to explore their potential for the heliotropic opportunities for enhancing their working life, both independently and collaboratively.

7.7. Conclusions

In this chapter I have synthesised the findings from the four individual studies, given their research questions. I also illustrated the synergistic effect of the studies in creating job crafting and redesign opportunities for individuals, teams, organisations and policy makers. In chapter eight I will discuss the research programme's strengths, contributions and limitations. Future research directions will be recommended and, finally, I reflect on my personal insights as both a nurse and researcher.

Chapter 8: Discussion

In chapter seven I synthesised the four studies of the research programme and developed a tentative conceptual model for ICU nurse wellbeing. In this final chapter I discuss the research programme's strengths and contributions, address the limitations of the research programme, outline future research directions and lastly, proffer some personal reflections.

8.1. Strengths and contributions of the research programme

This research has identified that few studies have been conducted on ICU nursing wellbeing. The current thesis used novel approaches to elucidate valuable insights into the work wellbeing of ICU nurses, their environments, and the strengtheners of work wellbeing. As such, this research contributes to developing a balanced approach to work wellbeing. These insights provide a solid foundation for empirically-driven and co-created work wellbeing programmes.

8.1.1. iAnalysis.

The iAnalysis provided four key contributions to the literature. Firstly, it demonstrated that conceptions of illbeing were strongly represented in wellbeing and intensive care nurse wellbeing literature, highlighting the opportunity for further research to balance these conceptions. Secondly, the map of ICU nurse wellbeing enhanced our understanding of the construct and supports the development of programmes to improve the work wellbeing of ICU nurses. Thirdly, the iAnalysis provides a practice-friendly tool (Figure 3) to explore a large source of online published literature. Given the prolific and exponential growth of publications in peer-reviewed journals, this tool provides new ways to investigate these publications on a broader scale. Finally, the iAnalysis is a valuable model for text mapping that could be applied to a range of clinical questions, exploring these questions in new and unique ways. Given these findings, in particular the first two above, a

more in-depth analysis of the ICU nurse wellbeing literature was warranted. Thus, a systematic review of the primary research was conducted.

8.1.2. Systematic review.

The systematic review explored the ICU nurse wellbeing primary research, adding depth and a critical appraisal to the iAnalysis. The review provided three key contributions to the literature. Firstly, the review illuminated the paucity of the primary research reporting wellbeing of intensive care nurses, as only four studies were identified. These four studies focused on spiritual wellbeing, team commitment, emotional wellbeing, and the effects of a mindfulness programme. Secondly, the review identified that studies reporting intensive care nurse wellbeing were heterogeneous and of variable quality and generalisability. Finally, the review supported the iAnalysis findings of ICU nurse wellbeing being largely both understudied and undefined. Given this established gap in the research, the research programme then sought the perceptions of the New Zealand ICU nurses.

8.1.3. Prototype analysis.

The prototype analysis provided four key contributions to the literature. Firstly, the analysis found no single element was identified as a characteristic of work wellbeing by all ICU nurses. This suggests that, secondly, rather than there being a definition of work wellbeing with specific elements that meet an 'all-or-none' criteria, work wellbeing may be better described as a collection of elements; a rich and multifaceted concept. Thirdly, "appropriate workload" and "work-life balance" were the two *most frequently reported* characteristics of work wellbeing. Finally, the analysis found that feeling "valued", "respect", and "support" were considered *most important* to the nurses' concept of work wellbeing. Knowing these unique conceptions provides new insights for the development of future interventions and programmes to enhance ICU nurses work wellbeing, such as in job crafting and redesign. In addition to identifying the characteristics of work wellbeing, this research programme also sought the ICU nurses' perceptions of the strengtheners of ICU nurse wellbeing.

8.1.4. Strengtheners.

The study of the strengtheners of ICU nurse wellbeing provided three key contributions to the literature. Firstly, a rich and unique foundation of work wellbeing strengtheners was identified by New Zealand intensive care nurses, such as mindfulness, yoga, peer supervision, formal debriefing, and working as a team to support each other. Secondly, personal, inter-professional, and organisational systems level opportunities to strengthen work wellbeing were presented in relation to the literature. Thirdly, an example of a multi-level work wellbeing intervention programme was offered which demonstrates how the intensive care nurses' collective intelligence may inspire the co-creation of positive change.

8.1.5. Synthesis.

The synthesis of the thesis then drew together the key findings of the studies to highlight the five facets of: 1) healthy, 2) authentic, 3) meaningful, 4) connected and 5) innovative. Opportunities for job crafting and redesign were identified and proposed in a tentative conceptual model of ICU nurse work wellbeing (Figure 14). This model contributes new knowledge to now be explored and empirically investigated in terms of construct validity and theory development. Further, the model provides individual nurses, ICU teams, healthcare organisations, and workers' wellbeing programme and policy developers practical opportunities to explore individual and collaborative ways to enhance ICU nurse work wellbeing. One example is the recently proposed the New Zealand Treasury's Wellbeing Budget (2019) which affords us the unique opportunity to use the conceptual model to engage in meaningful conversations with policy developers; asking important questions about each of the proposed facets and how this and future budgets might be an enabler or barrier to ICU nurse work wellbeing.

8.2. Limitations of the research programme

Limitations of the four studies have been presented within their individual discussion sections. However, there are also limitations to this programme of research more broadly.

Firstly, the external validity for the prototype analysis (study three) and strengtheners (study four) is limited. The small sample of New Zealand ICU nurses, whilst largely representative of the New Zealand ICU nursing population in terms of demographics, means there needs to be caution generalising the findings from the prototype analysis and strengtheners to other nations and nursing specialties due to the potential cultural and country differences in relation to wellbeing (Delle Fave et al., 2016). Secondly, the design of this research programme did not lend to exploring the influence of values, roles, culture, work experiences and life experiences on ICU nurse conceptions of work wellbeing. It is likely these aspects influence conceptions of work wellbeing similarly to the influence of culture on nurses choosing to enter the profession (Pool, 2012). These aspects offer an opportunity for future research. Given the qualitative aspects of this research programme were largely descriptive, it is possible other qualitative methodologies (e.g., grounded theory or discourse analysis) may provide more in-depth examination of work wellbeing for ICU nurses, such as investigating organisational discourses and dynamics. Thirdly, in NZ, during the period of data collection, nurses were involved in pay and safe staffing union negotiations. Aspects in relation to this political situation may have impacted on some of the collected data in relation to fairness, equity, and justice (e.g., see New Zealand Nurses' Organisation, 2018). Findings of this research such as feeling respected and valued, although likely reflecting a more general humanistic standpoint, may also have reflected the political climate.

8.3. Future research directions

Cumulatively the results from these studies are just the beginning of a transition that moves from the traditional focus on illbeing towards a balanced approach that gives rise to wellbeing. Intensive care nurse work wellbeing has been delineated, identifying the core facets of work wellbeing needed to inform future research. The ICU nurses' conceptions of work wellbeing and its strengtheners can now be incorporated in strategic and evidence-informed work wellbeing measures and programmes. The proposed starting point is a systematic review to identify and appraise the existing measures of work wellbeing.

The aim of psychological assessment is to answer the right questions to enable "clear, specific, and reasonable recommendations" to be made (Groth-Marnat & Wright, 2016). With the rapidly growing list of wellbeing measures (e.g., see Carlson, Geisinger, & Jonson, 2017), it would be beneficial to identify, critique, and integrate the most appropriate of the existing available and validated measures in a population specific instrument to measure ICU nurse wellbeing. This may consist of both general measures (e.g., WHO-5) and more specific wellbeing (e.g., Flourishing Scale) and nursing (e.g., Nurses' Well-Being Index) measures identified in the research process. The debate of whether to use general versus specific measures is not new (see Judge & Kammeyer-Mueller, 2012). Given the unique concept of ICU nurse work wellbeing that has been elucidated (Jarden et al., 2018a, 2018b), existing measures of wellbeing may, or may not be sufficient to capture the richness of this concept nor the balance of the importance of the components deemed more central. Of the existing measures of wellbeing, only one single measure specifically stated it was a nurses' wellbeing index (Nurses' Well-Being Index; Meng, Luo, Liu, Hu, & Yu, 2015) and was based on the unpublished Multiple Happiness Questionnaire (MHQ) of Miao (2003, cited by Meng et al., 2015). This index included the nine dimensions of life satisfaction, positive emotions, negative emotions, life vitality, health concern, altruism behaviour, self-worth, friendly relationships and personal growth. However, specific questions for each of these nine dimensions were not reported (Meng et al., 2015), nor do these dimensions align well with the proposed model generated in this programme of research.

In sum, this research programme firstly established a gap in the research exploring ICU nurse wellbeing, developing and using a new model to support the analysis of large bodies of online literature (Figure 3). Secondly, conceptions of ICU nurse work wellbeing were generated by ICU nurses, developing an illustration of ICU nurse work wellbeing (Figure 12). Thirdly, these same nurses then provided an inventory of strengtheners of ICU nurse wellbeing, inspiring an example of a multi-level ICU nurse work wellbeing intervention programme (Figure 13). Fourthly, in drawing together all four studies in this research programme, a tentative conceptual framework for ICU nurse wellbeing was proposed (Figure 14). Notably, this research is the first to investigate how the work wellbeing of ICU nurses is conceptualised and its potential and actual strengtheners. The application of novel

research methods explored the empirical foundations and nurses' perceptions. Unlike previous research that has focused largely on illbeing, this research provides a unique wellbeing perspective, offering new insights to support the future development of ICU nurse work wellbeing measures, programmes, and policy. We now know that ICU nurses have unique conceptions of work wellbeing. Whilst it may be possible to identify an instrument from the existing measures of work wellbeing, it may eventuate that a unique measure of ICU nurse work wellbeing is required. With appropriate measures we can test for construct validity. With this future research agenda set, I now bring this programme of research to a close with some personal reflections.

8.4. Personal reflections

8.4.1. Me, the researcher.

My position as a "researcher" within this programme of research was influenced by several contributing factors. Firstly, as an ICU nurse for over a decade, preparation, attention to detail, and mitigating risk are essential clinical attributes and shaped this research from the beginning. This research began as a programme of research that sought to implement an intervention and improve the working lives of ICU nurses. When I was unable to define ICU nurse work wellbeing, nor say how it may be different from other worker's wellbeing, nor identify whether ICU nurse work wellbeing needed to be improved, I recognised the urgent need to focus this research programme towards conceptualising ICU nurse work wellbeing as a starting point.

The design of the research was informed and led by the research questions. However, my personal experience as an ICU nurse suggests that in the ICU setting, research informing practice and practice change is largely from a positivist theoretical framework requiring evidence and a degree of certainty driven from a predominantly medical model (e.g., see Charlesworth & Foëx, 2016). The mixed methods approach, drawing from a series of logical steps, has ascertained a degree of 'truth' about ICU nurses work wellbeing. My "objective empiricist" self was drawn to the text analytics and quantitative aspects of the prototype analysis in which the researcher was largely removed from the research to minimise any

influence on the research. However, the prototype analysis required many decisions throughout the process that could have, and were, influenced by the researcher. Both approaches, with the appearance of empirical foundations, were not purely positivist, and thus resonated most strongly with the post-positivist paradigm. With the reality of ICU nurse work wellbeing situated within a context, although this programme of research has determined a possible 'truth', there are many ways in which this 'truth' may have been realised. Given the multiple realities that are ICU nurse work wellbeing, further depth to this research's conception may be ascertained through alternative qualitative methods, such as interviews, to explore the concept of work wellbeing even further.

8.4.2. Me, the ICU nurse.

Hindsight now affords me the opportunity to reflect on how the findings of this research programme may relate to my own perceptions as a nurse who's worked in ICU for over a decade. Communication and professional relationships with ICU colleagues, both nursing and the interprofessional team, were strong sources of support and afforded me a sense of both being respected and valued. This was principally whilst I was in a role as a senior nurse and manager, working within a large team who had grown together across several years. There were periods of time where I had a different experience, particularly during the first few years in a new workplace, and at transitional times throughout the ensuing years. I also became aware during my time as a senior nurse and manager that different ICU nurses had their own unique experiences.

During transitional times, such as workplace, work-role and work-life changes, recognising and acknowledging the potential impact on these key drivers of work wellbeing may encourage consideration of the additional support strategies needed during these times. One such strategy is adopting a strength-based approach (Biswas-Diener et al., 2017). Identifying and leveraging one's strengths is beneficial at an individual level (van Woerkom & Meyers, 2015), and also at a management and leadership level (MacKie, 2014). Increasingly, online platforms support the identification of an individual's strengths such as *Strengths Profile*[TM] (Linley & Stoker, 2012), Values In Action (VIA) classification of strengths (Peterson, 2006b) and Gallup's Strengths Finder 2.0 (Rath, 2007). Awareness of strengths is

thought to enable the conscious application of strengths (Biswas-Diener, Kashdan, & Minhas, 2011). One method of achieving this is through creating a "strengths context" and integrating strengths approaches to recruitment, performance review, and succession planning (Biswas-Diener et al., 2017).

One of the many opportunities this research highlights is taking ownership of the culture within the workplace. There is an opportunity for all nurses to influence the most valued elements of work wellbeing, namely, respecting and feeling respected, valuing and feeling valued, and supporting and feeling supported. Nurses reported these elements as key drivers of their work wellbeing. These drivers of work wellbeing transcend all levels of work wellbeing, from the individual, to the team, organisation, society and profession. Importantly, individual nurses have a great opportunity to transform their workplaces and lead change in nursing practice. Individually, nurses can share visions, foster positive working environments, encourage and contribute to creativity and innovation, and afford change. Recognising this potential nursing power to shape their workplace, drawing from strengths-based approaches affords new opportunities in how we think about, and work with others, whether this is in everyday or challenging situations, alone, with peers, managers or leaders.

8.5. Conclusion

This research programme was the first to be conducted on the work wellbeing of ICU nurses. From a methodological innovation perspective, the new iAnalysis model provided an opportunity to extend this initial exploration of online bodies of literature to new questions. The text analysis found conceptions of illbeing were strongly represented in the literature investigating both wellbeing and intensive care nurse wellbeing. Intensive care nurse wellbeing was virtually absent. This finding was supported by the systematic review, which added further depth of understanding of the scant evidence base for ICU nurse wellbeing.

Both the iAnalysis and systematic review highlighted both the gaps and limitations in the existing empirical base for ICU nurse wellbeing, and the opportunity to create new knowledge in this space. With this gap identified, unique conceptions of intensive care nurse

work wellbeing were then identified in the prototype analysis, with workload and work-life balance being central characteristics. Feeling valued, and experiencing respect and support were considered most important. Work wellbeing was found to be best described as a collection of elements; a rich and multifaceted concept.

Intensive care nurse work wellbeing was then explored in greater depth, seeking these nurses' perspectives on key strengtheners of their work wellbeing. Strengtheners identified by the intensive care nurses extended across individual, relational and organisational resources. Actions such as simplifying their lives, giving and receiving team support, and accessing employee assistance programmes were just a few of the intensive care nurses identified strengtheners. The findings of this programme of research were synthesised into a conceptual model, leading to a suggestion that job crafting and redesign approaches may inform future strategic work wellbeing programmes, creating opportunities for positive change. Importantly, this research establishes the foundations to promote the work wellbeing of nurses, to prevent ICU nurse illbeing and to enable these nurses to care optimally for the critically ill.

References

Abbott, A. (2004). *Methods of discovery: Heuristics for the social sciences*. New York: Norton.

Abe, J. (2016). A longitudinal follow-up study of happiness and meaning-making. *The Journal of Positive Psychology, 11*(5), 489-498. doi:10.1080/17439760.2015.1117129

Abramo, G. (2018). Revisiting the scientometric conceptualization of impact and its measurement. *Journal of informetrics, 12*(3), 590-597. doi:10.1016/j.joi.2018.05.001

Aria, M., & Curccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of informetrics, 11*(4), 959-975.

Aspinwall, L., & Tedeschi, R. (2010). Of babies and bathwater: A reply to Coyne and Tennen's views on positive psychology and health. *Annals of Behavioral Medicine, 39*(1), 27-34. doi:10.1007/s12160-010-9155-y

Australia and New Zealand Intensive Care Society. (2015). *Annual Report*. Victoria, Australia: ANZICS.

Avolio, B., & Gardner, W. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The Leadership Quarterly, 16*(3), 315-338.

Avram, S., Caragea, D., & Dumitrache, I. (2012). A new approach to bibliometrics based on semantic similarity of scientific papers. *Journal of Control Engineering and Applied Informatics, 14*(3), 35-42.

Azarsa, T., Davoodi, A., Markani, A., Gahramanian, A., & Vargaeei, A. (2015). Spiritual wellbeing: Attitude toward spiritual care and its relationship with spiritual care competence among critical care nurses. *Journal of Caring Science, 4*(4), 309-320. doi:10.15171/jcs.2015.031

Baernholdt, M., & Mark, B. (2009). The nurse work environment, job satisfaction and turnover rates in rural and urban nursing units. *Journal of Nursing Management, 17*(8), 994-1001.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Bandura, A., & Adams, N. (1977). Analysis of self-efficacy theory of behavioral change. *Cognitive Therapy and Research, 1*(4), 287-310.

Baronov, D. (2015). *Conceptual foundations of social research methods*. Colorado, USA: Routledge.

Baumeister, R., Bratslavsky, E., Finkenauer, C., & Vohs, K. (2001). Bad is stronger than good. *Review of General Psychology, 5*(4), 323-370. doi:10.1037//1089-2680.5.4.323

Baumeister, R., Vohs, K., Aaker, J., & Garbinsky, E. (2013). Some key differences between a happy life and a meaningful life. *The Journal of Positive Psychology, 8*(6), 505-516. doi:10.1080/17439760.2013.830764

Bazeley, P., & Jackson, K. (2013). *Qualitative data analysis with NVivo* (2nd ed.). Thousand Oaks, California: SAGE Publications.

Bell, E., Campbell, S., & Goldberg, L. (2015). Nursing identity and patient-centredness in scholarly health services research: A computational text analysis of PubMed

abstracts 1986–2013. *BMC Health Services Research, 15*(3), 1-16. doi:10.1186/s12913-014-0660-8

Berg, J., Wrzesniewski, A., & Dutton, J. (2010). Perceiving and responding to challenges in job crafting at different ranks: When proactivity requires adaptivity. *Journal of Organizational Behavior, 31*(2‐3), 158-186.

Bergman, M. (2008). *Advances in mixed methods research: Theories and applications*. London: Sage.

Bernstein, A., Kobs, A., Bar, J., Fay, S., Doyle, J., Golubic, M., & Roizen, M. (2015). Yoga for stress management among intensive care unit staff: A pilot study. *Alternative & Complementary Therapies, 21*(3), 111-115. doi:10.1089/act.2015.28999.amb

Bipp, T., & Demerouti, E. (2015). Which employees craft their jobs and how? Basic dimensions of personality and employees' job crafting behaviour. *Journal of Occupational and Organizational Psychology, 88*(4), 631-655. doi:10.1111/joop.12089

Biswas-Diener, R., Kashdan, T., & Lyubchik, N. (2017). Psychological strengths at work. In L. Oades, M. Steger, A. Delle Fave, & J. Passmore (Eds.), *The Wiley Blackwell handbook of the psychology of positivity and strengths-based approaches at work* (pp. 34-47). West Sussex, UK: Wiley Blackwell.

Biswas-Diener, R., Kashdan, T. B., & Minhas, G. (2011). A dynamic approach to psychological strength development and intervention. *Journal of Positive Psychology, 6*(2), 106-118. doi:10.1080/17439760.2010.545429

Blustein, D. (2006). *The psychology of working: A new perspective for career development, counseling, and public policy*. New Jersey: Lawrence Erlbaum Associates.

Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health, 13*(1), 1-20. doi:10.1186/1471-2458-13-119

Borteyrou, X., Truchot, D., & Rascle, N. (2014). Development and validation of the Work Stressor Inventory for nurses in oncology: Preliminary findings. *Journal of Advanced Nursing, 70*(2), 443-453. doi:10.1111/jan.12231

Bowlby, J. (1969). *Attachment and loss*. London: Institute of Psycho-Analysis.

Bradshaw, C., Atkinson, S., & Doody, O. (2017). Employing a qualitative description approach in health care research. *Global Qualitative Nursing Research, 4*, 1-8. doi:10.1177/2333393617742282

Brand, S., Fleming, L., & Wyatt, K. (2015). Tailoring healthy workplace interventions to local healthcare settings: A complexity theory-informed workplace of well-being framework. *The Scientific World Journal, 2015*, 340820. doi:10.1155/2015/340820

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77-101.

Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. London: Sage.

Bretherton, I. (1985). Attachment theory: Retrospect and prospect. *Monographs of the Society for Research in Child Development, 50*(1/2), 3-35.

Bretherton, I. (1992). The origins of attachment theory: John Bowlby and Mary Ainsworth. *Developmental Psychology, 28*(5), 759.

Bronfenbrenner, U. (1977a). Lewinian space and ecological substance. *Journal of Social Issues, 33*(4), 199-212.

Bronfenbrenner, U. (1977b). Toward an experimental ecology of human development. *American Psychologist, 32*(7), 513-531.

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. *Examining lives in context: Perspectives on the ecology of human development, 619-647*, 647.

Brunetto, Y., Xerri, M., Shriberg, A., Farr-Wharton, R., Shacklock, K., Newman, S., & Dienger, J. (2013). The impact of workplace relationships on engagement, well-being, commitment and turnover for nurses in Australia and the USA. *Journal of Advanced Nursing, 69*(12), 2786-2799. doi:10.1111/jan.12165

Burgess, L., Irvine, F., & Wallymahmed, A. (2010). Personality, stress and coping in intensive care nurses: A descriptive exploratory study. *Nursing in Critical Care, 15*(3), 129-140. doi:10.1111/j.1478-5153.2009.00384.x

Cameron, K. (2008). Paradox in positive organizational change. *The Journal of Applied Behavioral Science, 44*(1), 7-24.

Cameron, K. (2013). *Practicing positive leadership: Tools and techniques that create extraordinary results*. San Francisco: Berrett-Koehler Publishers.

Cameron, K., Dutton, J., & Quinn, R. (2003a). Organizational virtuousness and performance. In K. Cameron, J. Dutton, & R. Quinn (Eds.), *Positive Organizational Scholarship* (pp. 48-65). San Francisco, CA: Berrett-Koehler.

Cameron, K., Dutton, J., & Quinn, R. (2003b). *Positive organizational scholarship: Foundations of a new discipline*. San Francisco, CA: Berrett-Koehler.

Cameron, K., & McNaughtan, J. (2014). Positive organizational change. *The Journal of Applied Behavioral Science, 50*(4), 445-462. doi:10.1177/0021886314549922

Cameron, K., Mora, C., Leutscher, T., & Calarco, M. (2011). Effects of positive practices on organizational effectiveness. *The Journal of Applied Behavioral Science, 47*(3), 266-308.

Cameron, K., & Plews, E. (2012). Positive leadership in action: Applications of POS by Jim Mallozzi, CEO, Prudential Real Estate and Relocation. *Organizational Dynamics, 41*(2), 99-105.

Caplan, R. (1987). Person-environment fit theory and organizations: Commensurate dimensions, time perspectives, and mechanisms. *Journal of Vocational Behavior, 31*(3), 248-267.

Caricati, L., Guberti, M., Borgognoni, P., Prandi, C., Spaggiari, I., Vezzani, E., & Iemmi, M. (2015). The role of professional and team commitment in nurse–physician collaboration: A dual identity model perspective. *Journal of Interprofessional Care, 29*(5), 464-468. doi:10.3109/13561820.2015.1016603

Carlgren, L., Elmquist, M., & Rauth, I. (2014). Design thinking: Exploring values and effects from an innovation capability perspective. *The Design Journal, 17*(3), 403-423. doi:10.2752/175630614X13982745783000

Carlson, J., Geisinger, K., & Jonson, J. (Eds.). (2017). *Twentieth mental measurements yearbook*. Nebraska: University of Nebraska Press.

Carolan, S., Harris, P., & Cavanagh, K. (2017). Improving employee well-being and effectiveness: Systematic review and meta-analysis of web-based psychological

interventions delivered in the workplace. *Journal of Medical Internet Research, 19*(7), e271-e271. doi:10.2196/jmir.7583

Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin, 92*(1), 111-135.

Center for Evidence Based Management (CEBMa). (2014). Critical Appraisal Checklist for Cross-Sectional Study. Retrieved from www.cebma.org/wp-content/uploads/Critical-Appraisal-Questions-for-a-Cross-Sectional-Study-july-2014.pdf

Charlesworth, M., & Foëx, B. (2016). Qualitative research in critical care: Has its time finally come? *Journal of the Intensive Care Society, 17*(2), 146-153.

Chen, C., Ibekwe-SanJuan, F., & Hou, J. (2010). The structure and dynamics of cocitation clusters: A multiple-perspective cocitation analysis. *Journal of the American Society for Information Science and Technology, 61*(7), 1386-1409. doi:10.1002/asi.21309

Chiaburu, D., & Harrison, D. (2008). Do peers make the place? Conceptual synthesis and meta-analysis of coworker effects on perceptions, attitudes, OCBs, and performance. *Journal of Applied Psychology, 93*(5), 1082-1103. doi:10.1037/0021-9010.93.5.1082

Choe, K., Kang, Y., & Park, Y. (2015). Moral distress in critical care nurses: A phenomenological study. *Journal of Advanced Nursing, 71*(7), 1684-1693. doi:10.1111/jan.12638

Clarke, M. (2007). Overview of methods. In C. Webb & B. Roe (Eds.), *Reviewing Research Evidence for Nursing Practice*. Oxford: Blackwell.

Clendon, J., & Walker, L. (2017). Nurses as family caregivers: Barriers and enablers facing nurses caring for children, parents or both. *Journal of Nursing Management, 25*(2), 93-101. doi:10.1111/jonm.12445

Cohen, A., & Hersh, W. (2005). A survey of current work in biomedical text mining. *Briefings in Bioinformatics, 6*(1), 57-71. doi:10.1093/bib/6.1.57

Cohen, R., Swerdlik, M., & Sturman, E. (2013). *Psychological testing and assessment: An introduction to tests and measurement* (8th ed.). New York, NY: McGraw-Hill.

Colman, J. (2010). *Optimal functioning: A positive psychology handbook*. Booknook.biz: Jessica D. Coleman.

Colquitt, J., Lepine, J., & Wesson, M. (2013). *Organizational behaviour: Improving performance and commitment in the workplace*. New York: McGraw-Hill/Irwin.

Cooperrider, D., Godwin, L., Cameron, K., & Spreitzer, G. (2012). *The Oxford handbook of positive organizational scholarship*. New York: Oxford University Press.

Cooperrider, D., & Whitney, D. (2005). *Appreciative inquiry: A positive revolution in change*. San Francisco: Berrett-Koehler.

Coyne, J., & Tennen, H. (2010). Positive psychology in cancer care: Bad science, exaggerated claims, and unproven medicine. *Annals of Behavioral Medicine, 39*(1), 16-26. doi:10.1007/s12160-009-9154-z

Creswell, J. D., & Plano Clark, V. (2007). *Designing and conducting mixed methods research*. California: Sage.

Critical Appraisal Skills Programme (CASP). (2006). CASP Qualitative Checklist. Retrieved from www.casp-uk.net/checklists

Cropanzano, R., & Mitchell, M. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management, 31*(6), 874-900. doi:10.1177/0149206305279602

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. London: Sage Publications.

Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety*. San Francisco, CA: Jossey-Bass.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: HarperCollins.

Dadich, A., Fulop, L., Ditton, M., Campbell, S., Curry, J., Eljiz, K., . . . Smyth, A. (2015). Finding brilliance using positive organizational scholarship in healthcare. *Journal of Health Organization and Management, 29*(6), 750-777. doi:10.1108/JHOM-11-2013-0256

Davidson, P., Newton, P., Ferguson, C., Daly, J., Elliott, D., Homer, C., . . . Jackson, D. (2014). Rating and ranking the role of bibliometrics and webometrics in nursing and midwifery. *The Scientific World Journal*, 1-6. doi:10.1155/2014/135812

Day, A., & Penney, S. (2017). Essential elements of organizational initiatives to improve workplace wellbeing. In C. Cooper & M. Leiter (Eds.), *The Routledge Companion to Wellbeing at Work*. New York: Routledge.

De Villers, M., & DeVon, H. (2013). Moral distress and avoidance behavior in nurses working in critical care and noncritical care units. *Nursing Ethics, 20*(5), 589-603. doi:10.1177/0969733012452882

Deci, E., Olafsen, A., & Ryan, R. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior, 4*, 19-43. doi:10.1146/annurev-orgpsych-032516-113108

Deci, E., & Ryan, R. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268. doi:10.1207/s15327965pli1104_01

Deci, E., & Ryan, R. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies, 9*(1), 1-11. doi:10.1007/s10902-006-9018-1

Delle Fave, A., Brdar, I., Wissing, M., Araujo, U., Solano, A., Freire, T., . . . Nafstad, H. (2016). Lay definitions of happiness across nations: The primacy of inner harmony and relational connectedness. *Frontiers in Psychology, 7*(30), 1-23. doi:10.3389/fpsyg.2016.00030

Demerouti, E. (2014). Design your own job through job crafting. *European Psychologist, 19*(4), 237-247.

Dewe, P. (1987). Identifying the causes of nurses' stress: A survey of New Zealand nurses. *Work and Stress, 1*(1), 15-24. doi:10.1080/02678378708258477

Dewe, P., & Kompier, M. (2008). *Wellbeing at Work: Future Challenges. Foresight mental capital and wellbeing project*. London, UK: The Government Office for Science.

Diener, E., Suh, E., Lucas, R., & Smith, H. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276-302.

Dodge, R., Daly, A., Huyton, J., & Sanders, L. (2012). The challenge of defining wellbeing. *International Journal of Wellbeing, 2*(3), 222-235. doi:10.5502/ijw.v2i3.

Dolan, P., & Metcalfe, R. (2012). The relationship between innovation and subjective wellbeing. *Research Policy, 41*(8), 1489-1498.

Donkin, A., Allen, M., Allen, J., Bell, R., & Marmot, M. (2014). Social determinants of health and the working-age population: Global challenges and priorities for action. In S. Leka & R. Sinclair (Eds.), *Contemporary Occupational Health Psychology: Global Perspectives on Research and Practice* (Vol. 3, pp. 1-17). Chichester: Wiley & Sons.

DuBois, C., Lopez, O., Beale, E., Healy, B., Boehm, J., & Huffman, J. (2015). Relationships between positive psychological constructs and health outcomes in patients with cardiovascular disease: A systematic review. *International Journal of Cardiology, 195*, 265-280. doi:10.1016/j.ijcard.2015.05.121

Duffield, C., Roche, M., Homer, C., Buchan, J., & Dimitrelis, S. (2014). A comparative review of nurse turnover rates and costs across countries. *Journal of Advanced Nursing, 70*(12), 2703-2712. doi:10.1111/jan.12483

Durie, M. (1985). A Māori perspective of health. *Social Science and Medicine, 20*(5), 483-486. doi:10.1016/0277-9536(85)90363-6

Elpern, E. H., Covert, B., & Kleinpell, R. (2005). Moral Distress of Staff Nurses in a Medical Intensive Care Unit. *American Journal of Critical Care, 14*(6), 523-530.

Epp, K. (2012). Burnout in critical care nurses: A literature review. *Dynamics: The Official Journal of the Canadian Association of Nurses, 23*(4), 25-31. doi:10.1111/ J.1365-2648.2005.03494.X

Fayyad, U. (1996). Data mining and knowledge discovery: Making sense out of data. *IEEE Expert: Intelligent Systems and Their Applications, 11*(5), 20-25.

Fehr, B. (1988). Prototype analysis of the concepts of love and commitment. *Journal of Personality and Social Psychology, 55*, 557-579.

Fehr, B., & Sprecher, S. (2009). Prototype analysis of the concept of compassionate love. *Personal Relationships, 16*(3), 343-364. doi:10.1111/j.1475-6811.2009.01227.x

Ferris, G., Liden, R., Munyon, T., Summers, J., Basik, K., & Buckley, M. (2009). Relationships at work: Toward a multidimensional conceptualization of dyadic work relationships. *Journal of Management, 35*(6), 1379-1403. doi:10.1177/0149206309344741

Feyerabend, P. (1987). *Farewell to reason*. London: Verso.

Feyerabend, P., & Preston, J. (1999). *Knowledge, science and relativism* (Vol. 3). Cambridge, UK: Cambridge University Press.

Finch, J. (1987). The vignette technique in survey research. *Sociology, 21*(1), 105-114. doi:10.1177/0038038587021001008

Fisher, C. (2014). Conceptualizing and measuring wellbeing at work. In C. L. Cooper (Ed.), *Wellbeing: A complete reference guide*. Hoboken, NJ: Wiley.

Fodor, J. A., Garrett, M. F., Walker, E. C. T., & Parkes, C. H. (1980). Against definitions. *Cognition, 8*(3), 263-367. doi:10.1016/0010-0277(80)90008-6

Forgeard, M., Jayawickreme, E., Kern, M., & Seligman, M. (2011). Doing the right thing: Measuring wellbeing for public policy. *International Journal of Wellbeing, 1*(1), 79-106. doi:10.5502/ijw.v1i1.15

Fredrickson, B. (2004). The broaden-and-build theory of positive emotions. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 359*(1449), 1367-1377. doi:10.1098/rstb.2004.1512

Fullagar, C., & Kelloway, E. (2009). 'Flow' at work: An experience sampling approach. *Journal of Occupational and Organizational Psychology, 82*(3), 595-615.

Furlan, A., Gnam, W., Carnide, N., Irvin, E., Amick, B., DeRango, K., . . . Bültmann, U. (2012). Systematic Review of Intervention Practices for Depression in the Workplace. *Journal of Occupational Rehabilitation, 22*(3), 312-321. doi:10.1007/s10926-011-9340-2

Galletta, M., Portoghese, I., Coppola, R., Finco, G., & Campagna, M. (2016). Nurses well ‐ being in intensive care units: Study of factors promoting team commitment. *Nursing in Critical Care, 21*(3), 146-156.

Gana, K., Saada, Y., Broc, G., Quintard, B., Amieva, H., & Dartigues, J. (2016). As long as you've got your health: Longitudinal relationships between positive affect and functional health in old age. *Social Science and Medicine, 150*, 231-238. doi:10.1016/j.socscimed.2015.11.038

Ganz, F., Levy, H., Khalaila, R., Arad, D., Bennaroch, K., Kolpak, O., . . . Raanan, O. (2015). Bullying and its prevention among intensive care nurses. *Journal of Nursing Scholarship, 47*(6), 505-511. doi:10.1111/jnu.12167

Geaney, F., Kelly, C., Greiner, B. A., Harrington, J. M., Perry, I. J., & Beirne, P. (2013). The effectiveness of workplace dietary modification interventions: A systematic review. *Preventive Medicine, 57*(5), 438-447. doi:10.1016/j.ypmed.2013.06.032

Geldenhuys, M., Łaba, K., & Venter, C. (2014). Meaningful work, work engagement and organisational commitment. *SA Journal of Industrial Psychology, 40*(1), e1-e10. doi:10.4102/sajip.v40i1.1098

Ghitulescu, B. (2015). Job crafting. In C. Cooper, D. Guest, & D. Needle (Eds.), Wiley Encyclopedia of Management Human Resouorce Management (Vol. 5): John Wiley & Sons. doi:10.1002/9781118785317.weom050043

Giddings, L. S., & Grant, B. M. (2007). A Trojan Horse for positivism? A critique of mixed methods research. *Advances in Nursing Science, 30*(1), 52-60 59p.

Gittell, J., Cameron, K., Lim, S., & Rivas, V. (2006). Relationships, layoffs, and organizational resilience: Airline industry responses to September 11. *The Journal of Applied Behavioral Science, 42*(3), 300-329.

Global Health Workforce Alliance & World Health Organization (Producer). (2013, 13 June 2018). A universal truth: No health without a workforce. Retrieved from http://www.who.int/workforcealliance/knowledge/resources/hrhreport2013/en/

Goodwin, L., VanDyne, M., Lin, S., & Talbert, S. (2003). Data mining issues and opportunities for building nursing knowledge. *Journal of Biomedical Informatics, 36*(4), 379-388. doi:10.1016/j.jbi.2003.09.020

Gordon, H., Demerouti, E., Bipp, T., & Le Blanc, P. M. (2015). The Job Demands and Resources Decision Making (JD-R-DM) Model. *European Journal of Work and Organizational Psychology, 24*(1), 44-58. doi:10.1080/1359432X.2013.842901

Gottlieb, L., Gottlieb, B., & Shamian, J. (2012). Principles of strengths-based nursing leadership for strengths-based nursing care: A new paradigm for nursing and healthcare for the 21st century. *Nursing Leadership, 25*(2), 38-50.

Graham, C., & Nikolova, M. (2015). Bentham or Aristotle in the development process? An empirical investigation of capabilities and subjective well-being. *World Development, 68*, 163-179. doi:10.1016/j.worlddev.2014.11.018

Grandey, A., Foo, S., Groth, M., & Goodwin, R. (2012). Free to be you and me: A climate of authenticity alleviates burnout from emotional labor. *Journal of Occupational Health Psychology, 17*(1), 1-14.

Grant, A., Christianson, M., & Price, R. (2007). Happiness, health, or relationships? Managerial practices and employee well-being tradeoffs. *Academy of Management Perspectives, 21*(3), 51-63. doi:10.5465/AMP.2007.26421238

Greenhalgh, T., Robert, G., Bate, P., Macfarlane, F., & Donaldson, L. (2005). *Diffusion of innovations in health service organisations: A systematic literature review*. Chichester: John Wiley & Sons, Incorporated.

Groth-Marnat, G., & Wright, A. (2016). *Handbook of psychological assessment*. In. Retrieved from http://ebookcentral.proquest.com

Guenole, N., & Biggs, D. (2013). Organisational development and change. In R. Lewis & L. Zibarras (Eds.), *Work and occupational psychology: Integrating theory and practice* (pp. 2570294). London: Sage.

Guest, G., MacQueen, K., & Namey, E. (2012). Applied thematic analysis. In. Thousand Oaks, California: SAGE Publications, Inc. Retrieved from http://methods.sagepub.com/book/applied-thematic-analysis. doi:10.4135/9781483384436

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

Häggman-Laitila, A., & Romppanen, J. (2018). Outcomes of interventions for nurse leaders' wellbeing at work: A quantitative systematic review. *Journal of Advanced Nursing, 74*(1), 34-44. doi:10.1111/jan.13406

Hamling, K., Jarden, A., & Schofield, G. (2015). Recipes for occupational wellbeing: An investigation of the associations with wellbeing in New Zealand workers. *New Zealand Journal of Human Resource Management, 15*(2), 151-173.

Harden, A. (2006). *Extending the boundaries of systematic reviews to integrate different types of study: Examples of methods developed within reviews on young people's health*. London: National Institute for Health and Clinical Excellence.

Hazan, C., & Shaver, P. (1990). Love and work: An attachment-theoretical perspective. *Journal of Personality and Social Psychology, 59*(2), 270-280.

Hee Kim, L., Subramanian, P., Rahmat, N., & Phang Cheng, K. (2014). The effects of mindfulness training program on reducing stress and promoting well-being among nurses in critical care units. *Australian Journal of Advanced Nursing, 31*(3), 22-31.

Heppner, W., Kernis, M., Nezlek, J., Foster, J., Lakey, C., & Goldman, B. (2008). Within-person relationships among daily self-esteem, need satisfaction, and authenticity. *Psychological Science, 19*(11), 1140-1145.

Hewson, C. (2008). Internet-mediated research as an emergent method and its potential role in facilitating mexed methods research. In S. Hesse-Biber & P. Leavy (Eds.), *Handbook of emergent methods* (pp. 543-570). New York: Guilford Press.

Hirsch, J. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences of the United States of America, 102*(46), 16569-16572. doi:10.1073/pnas.0507655102

Hjørland, B. (2013). Citation analysis: A social and dynamic approach to knowledge organization. *Information Processing & Management, 49*(6), 1313-1325. doi:10.1016/j.ipm.2013.07.001

Hone, L., Jarden, A., & Schofield, G. (2014). An evaluation of positive psychology intervention effectiveness trials using the RE-AIM framework: A practice-friendly review. *The Journal of Positive Psychology, 10*(4), 303-322. doi:10.1080/17439760.2014.965267

Hone, L., 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, 4*(1), 62-90. Retrieved from doi:10.5502/ijw.v4i1.4

Hone, L., Schofield, G., & Jarden, A. (2015). Conceptualizations of wellbeing: Insights from a prototype analysis on New Zealand workers. *New Zealand Journal of Human Resource Management, 15*(2), 97-118.

Houdmont, J., Randall, R., Kerr, R., & Addley, K. (2013). Psychosocial risk assessment in organizations: Concurrent validity of the brief version of the Management Standards Indicator Tool. *Work and Stress, 27*(4), 403-412. doi:10.1080/02678373.2013.843607

Huang, L., & Liu, P. (2017). Ties that work: Investigating the relationships among coworker connections, work-related Facebook utility, online social capital, and employee outcomes. *Computers in Human Behavior, 72*, 512-524. doi:10.1016/j.chb.2017.02.054

Hung, J., & Zhang, K. (2012). Examining mobile learning trends 2003–2008: A categorical meta-trend analysis using text mining techniques. *Journal of Computing in Higher education, 24*(1), 1-17.

Huppert, F. (2009a). A new approach to reducing disorder and improving well-being. *Perspectives on Psychological Science, 4*(1), 108-111. doi:10.1111/j.1745-6924.2009.01100.x

Huppert, F. (2009b). Psychological well-being: Evidence regarding its causes and consequences. *Applied Psychology: Health and Well-Being, 1*(2), 137-164.

Huppert, F., & So, T. (2013). Flourishing across Europe: Application of a new conceptual framework for defining well-being. *Social Indicators Research, 110*, 837-861. doi:10.1007/s11205-011-9966-7

Huta, V., & Ryan, R. (2010). Pursuing pleasure or virtue: The differential and overlapping well-being benefits of hedonic and eudaimonic motives. *Journal of Happiness Studies, 11*, 735-762.

Hyland, P., Lee, R., & Mills, M. (2015). Mindfulness at work: A new approach to improving individual and organizational performance. *Industrial and Organizational Psychology, 8*(4), 576-602. doi:10.1017/iop.2015.41

Hylton Rushton, C., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care, 24*(5), 412-421. doi:10.4037/ajcc2015291

Ilies, R., Wagner, D., Wilson, K., Ceja, L., Johnson, M., DeRue, S., & Ilgen, D. (2017). Flow at work and basic psychological needs: Effects on well-being. *Applied Psychology: An International Review, 66*(1), 3-24. doi:10.1111/apps.12075

Ivandic, I., Freeman, A., Birner, U., Nowak, D., & Sabariego, C. (2017). A systematic review of brief mental health and well-being interventions in organizational settings. *Scandinavian Journal of Work, Environment and Health, 43*(2), 99-108. doi:10.5271/sjweh.3616

Jahoda, M. (1958). *Current concepts of positive mental health*. New York: Basic Books.

Jarden, A., & Jarden, R. (2016). Positive psychological assessment for the workplace. In L. Oades, M. Steger, A. Della-Fave, & J. Passmore (Eds.), *The Wiley Blackwell Handbook of the psychology of positivity and strengths-based approaches at work* (pp. 415-437). New York, NY: Wiley.

Jarden, R., Narayanan, A., Sandham, M., Siegert, R., & Koziol-McLain, J. (2019). Bibliometric mapping of intensive care nurses' wellbeing: Development and application of the new iAnalysis model. *BMC Nursing, 18*(21), 1-11. doi:10.1186/s12912-019-0343-1

Jarden, R., Sandham, M., Siegert, R., & Koziol-McLain, J. (2018a). Intensive care nurse conceptions of wellbeing: A prototype analysis. *Nursing in Critical Care, 23*(6), 324-331. doi:10.1111/nicc.12379

Jarden, R., Sandham, M., Siegert, R., & Koziol-McLain, J. (2018b). Strengthening workplace wellbeing: Perceptions of intensive care nurses. *Nursing in Critical Care, 24*(1), 15-23. doi:10.1111/nicc.12386

Jarden, R., Sandham, M., Siegert, R., & Koziol-McLain, J. (2019). Intensive care nurses' wellbeing: A systematic review. *Australian Critical Care*. doi:10.1016/j.aucc.2018.11.068

Jenkins, B., & Warren, N. (2012). Concept analysis: Compassion fatigue and effects upon critical care nurses. *Critical Care Nursing Quarterly, 35*(4), 388-395.

Judge, T. A., & Kammeyer-Mueller, J. D. (2012). General and specific measures in organizational behavior research: Considerations, examples, and recommendations for researchers. *Journal of Organizational Behavior, 33*(2), 161-174. doi:10.1002/job.764

Kadam, P., & Bhalerao, S. (2010). Sample size calculation. *International Journal of Ayurveda Research, 1*(1), 55-57. doi:10.4103/0974-7788.59946

Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-being: The foundations of hedonic psychology*. New York: Russell Sage Foundation.

Kamitsis, I., & Francis, A. (2013). Spirituality mediates the relationship between engagement with nature and psychological wellbeing. *Journal of Environmental Psychology, 36*, 136-143. doi:10.1016/j.jenvp.2013.07.013

Kashdan, T., & Steger, M. (2007). Curiosity and pathways to well-being and meaning in life: Traits, states, and everyday behaviors. *Motivation and Emotion, 31*(3), 159-173. doi:10.1007/s11031-007-9068-7

Kearns, J., & Fincham, F. (2004). A prototype analysis of forgiveness. *Personality and Social Psychology Bulletin, 30*(7), 838-855. doi:10.1177/0146167204264237

Kern, M., Waters, L., Adler, A., & White, M. (2014). Assessing employee wellbeing in schools using a multifaceted approach: associations with physical health, life satisfaction, and professional thriving. *Psychology (Savannah, Ga.), 6*. doi:10.4236/psych.2014.56060

Kersemaekers, W., Rupprecht, S., Wittmann, M., Tamdjidi, C., Falke, P., Donders, R., . . . Kohls, N. (2018). A workplace mindfulness intervention may be associated with improved psychological well-being and productivity. A preliminary field study in a company setting. *Frontiers in Psychology, 9*, 195-195. doi:10.3389/fpsyg.2018.00195

Keyes, C. (1998). Social well-being. *Social Psychology Quarterly, 61*(2), 121-140.

Keyes, C. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior, 43*(2), 207-222.

Keyes, C., Shmotkin, D., & Ryff, C. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology, 82*(6), 1007-1022. doi:10.1037//0022-3514.82.6.1007

Kramer, M., Maguire, P., Schmalenberg, C., Brewer, B., Burke, R., Chmielewski, L., . . . Waldo, M. (2007). Nurse manager support: What is it? Structures and practices that promote it. *Nursing Administration Quarterly, 31*(4), 325-340. doi:10.1097/01.Naq.0000290430.34066.43

Krieger, N. (1994). Epidemiology and the web of causation: Has anyone seen the spider? *Social Science and Medicine, 39*(7), 887-903.

Kuhn, T. (1970). The structure of scientific revolutions. In *International Encyclopedia of Unified Science* (Vol. 2). Chicago: The University of Chicago Press.

Kulik, C., Oldham, G., & Hackman, J. (1987). Work design as an approach to person-environment fit. *Journal of Vocational Behavior, 31*(3), 278-296. doi:10.1016/0001-8791(87)90044-3

Laine, P., & Rinne, R. (2015). Developing wellbeing at work: Emerging dilemmas. *International Journal of Wellbeing, 5*(2), 91-108.

Laloux, F. (2014). *Reinventing organizations: A guide to creating organizations inspired by the next stage of human consciousness.* Brussels: Nelson Praker.

Lambert, N., Graham, S., & Fincham, F. (2009). A prototype analysis of gratitude: Varieties of gratitude experiences. *Personality and Social Psychology Bulletin, 35*(9), 1193-1207.

Larsen, P., & von Ins, M. (2010). The rate of growth in scientific publication and the decline in coverage provided by Science Citation Index. *Scientometrics, 84*(3), 575-603. doi:10.1007/s11192-010-0202-z

Laschinger, H., Shamian, J., & Thomson, D. (2001). Impact of magnet hospital characteristics on nurses' perceptions of trust, burnout, quality of care, and work satisfaction. *Nursing Economics, 19*(5), 209-219.

Lazarus, R., & Folkman, S. (1984). *Stress, Appraisal and Coping*. New York: Springer.

Levitt, J., & Thelwall, M. (2011). A combined bibliometric indicator to predict article impact. *Information Processing & Management, 47*(2), 300-308. doi:10.1016/j.ipm.2010.09.005

Lewis, S. (2011). *Positive psychology at work: How positive leadership and appreciative inquiry create inspiring organisations*. Chichester, UK: Wiley-Blackwell.

Lewis, S. (2016). *Positive psychology and change: How leadership, collaboration and appreciative inquiry create transformational results*. Hoboken: Wiley.

Li, C., & Hung, C. (2009). The influence of transformational leadership on workplace relationships and job performance. *Social Behavior & Personality: an international journal, 37*(8), 1129-1142. doi:10.2224/sbp.2009.37.8.1129

Lin, J. (2009). Is searching full text more effective than searching abstracts? *BMC Bioinformatics, 10*, 12. doi:10.1186/1471-2105-10-46

Linley, A., & Stoker, H. (2012). *Technical manual and statistical properties for Realise2*. Coventry: Centre.

Locke, E. (1969). What is job satisfaction? *Organizational Behavior and Human Performance, 4*(4), 309-336.

Luthans, F. (2002a). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior, 23*(6), 695-706. doi:10.1002/job.165

Luthans, F. (2002b). Positive organizational behavior: Developing and managing psychological strengths. *Academy of Management Executive, 16*(1), 57-72.

MacKie, D. (2014). The effectiveness of strength-based executive coaching in enhancing full range leadership development: A controlled study. *Consulting Psychology Journal: Practice and Research, 66*(2), 118.

Macquarie Dictionary and Thesaurus Online. (2018). In. Retrieved from www.macquariedictionary.com.au

Mäkikangas, A., Kinnunen, U., Feldt, T., & Schaufeli, W. (2016). The longitudinal development of employee well-being: A systematic review. *Work and Stress, 30*(1), 46-70.

Malik, S., Blake, H., & Suggs, L. (2014). A systematic review of workplace health promotion interventions for increasing physical activity. *British Journal of Health Psychology, 19*(1), 149-180. doi:10.1111/bjhp.12052

Maslow, A. (1948). "Higher" and "Lower" needs. *The Journal of Psychology, 25*(2), 433-436. doi:10.1080/00223980.1948.9917386

Maslow, A. (1958). A dynamic theory of human motivation. In C. Stacey & M. DeMartino (Eds.), *Understanding human motivation* (pp. 26-47). Cleveland, OH: Howard Allen Publishers.

McLeroy, K., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education and Behavior, 15*(4), 351-377.

Ménard, J., & Brunet, L. (2011). Authenticity and well-being in the workplace: A mediation model. *Journal of Managerial Psychology, 26*(4), 331-346. doi:10.1108/02683941111124854

Meng, R., Luo, Y., Liu, B., Hu, Y., & Yu, C. (2015). The Nurses' Well-Being Index and factors influencing this index among nurses in Central China: A cross-sectional study. *PloS One, 10*(12), e0144414. doi:10.1371/journal.pone.0144414

Mental Health Foundation of New Zealand (Producer). (29 August 2016). Five Ways to Wellbeing. Retrieved from www.mentalhealth.org.nz/home/ways-to-wellbeing/

Mikulincer, M., Shaver, P. R., & Rom, E. (2011). The effects of implicit and explicit security priming on creative problem solving. *Cognition & Emotion, 25*(3), 519-531. doi:10.1080/02699931.2010.540110

Miles, M. S. (1990). New methods for qualitative data collection and analysis: vignettes and pre‐structured cases. *International Journal of Qualitative Studies in Education, 3*(1), 37-51. doi:10.1080/0951839900030104

Milojević, S., & Leydesdorff, L. (2013). Information metrics (iMetrics): A research specialty with a socio-cognitive identity? *Scientometrics, 95*(1), 141-157. doi:10.1007/s11192-012-0861-z

Ministry of Health. (2003). Health Practitioners Competence Assurance Act 2003. Retrieved 24 August 2016, from New Zealand Ministry of Health http://www.legislation.govt.nz/act/public/2003/0048/latest/DLM203312.html

Ministry of Health (Producer). (2015, 20 June 2016). Updating the New Zealand health strategy: Progress to date. Retrieved from www.rgpn.org.nz/Network/media/documents/Health%20workforce%20strategy%202015/Health-strategy-20-June-2015-Sector-Workshop.pdf

Ministry of Health, Treasury, & Health Quality and Safety Commission. (2016). Exploring the links between quality improvement strategies and organisational outcomes in four New Zealand District Health Boards. Retrieved 09 September 2017 www.health.govt.nz/publication/exploring-links-between-quality-improvement-strategies-and-organisational-outcomes-four-new-zealand

Moghimi, D., Zacher, H., Scheibe, S., & Van Yperen, N. (2016). The selection, optimization, and compensation model in the work context: A systematic review and meta-analysis of two decades of research. *Journal of Organizational Behavior, 38*(2), 247-275. doi:10.1002/job.2108

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., Altman, D., Antes, G., . . . Tugwell, P. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine, 6*(7). doi:10.1371/journal.pmed.1000097

Money, K., Hillenbrand, C., & da Camara, N. (2009). Putting positive psychology to work in organisations. *Journal of General Management, 34*(3), 21-36.

Morgeson, F., & Hofmann, D. (1999). The structure and function of collective constructs: Implications for multilevel research and theory development. *The Academy of Management Review, 24*(2), 249-265.

Munir, F., & McDermott, H. (2013). Design of environments and work: Health, safety and well-being. In R. Lewis & L. Zibarras (Eds.), *Work and occupational psychology: Integrating theory and practice* (pp. 217-256). London: Sage.

New Zealand Nurses' Organisation. (2010). *Code of ethics*. Wellington: New Zealand Nurses' Organisation.

New Zealand Nurses' Organisation (Producer). (2018, 9 December 2018). Members vote online and reject DHB offer. *NZNO media release*. [Media release] Retrieved from www.nzno.org.nz/about_us/media_releases/articletype/articleview/articleid/2798/members-vote-online-and-reject-dhb-offer

New Zealand Treasury (Producer). (2019). Wellbeing Budget. Retrieved from https://treasury.govt.nz/publications/wellbeing-budget/wellbeing-budget-2019

Nielsen, S. L., & Christensen, P. R. (2014). The wicked problem of design management: Perspectives from the field of entrepreneurship. *The Design Journal, 17*(4), 560-582. doi:10.2752/175630614X14056185480113

North, N., Leung, W., Ashton, T., Rasmussen, E., Hughes, F., & Finlayson, M. (2013). Nurse turnover in New Zealand: costs and relationships with staffing practises and patient outcomes. *Journal of Nursing Management, 21*(3), 419-428. doi:10.1111/j.1365-2834.2012.01371.x

Nursing Council of New Zealand. (2011). *Guidelines for cultural safety, the Treaty of Waitangi and Maori health in nursing education and practice*. Wellington: Nursing Council of New Zealand.

Nursing Council of New Zealand. (2012). *Code of conduct for nurses*. Wellington: Nursing Council of New Zealand.

Nursing Council of New Zealand. (2015). *The New Zealand nursing workforce: A profile of nurse practitioners, registered nurses and enrolled nurses*. Wellington, NZ: NCNZ.

O'Connell, C. (2014). Gender and the experience of moral distress in critical care nurses. *Nursing Ethics, 22*(1). doi:10.1177/0969733013513216

Oishi, S., Diener, E., Lucas, R., & Suh, E. (1999). Cross-cultural variations in predictors of life satisfaction: Perspectives from needs and values. *Personality and Social Psychology Bulletin, 25*(8), 980-990. doi:10.1177/01461672992511006

Organization of Economic Cooperation and Development. (2018). Employment rate. Retrieved from https://data.oecd.org/emp/employment-rate.htm

Page, K., & Vella-Brodrick, D. (2009). The "what," "why" and "how" of employee wellbeing: A new model. *Social Indicators Research, 90*, 441-458.

Page, K., & Vella-Brodrick, D. (2013). The working for wellness program: RCT of an employee well-being intervention. *Journal of Happiness Studies, 14*(3), 1007-1031. doi:10.1007/s10902-012-9366-y

Pallant, J. (2016). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (6th ed.). Sydney, Australia: Allen & Unwin.

Palmer, S. (2004). Homai te Waiora ki Ahau: A tool for the measurement of wellbeing among Maori-the evidence of construct validity. *New Zealand Journal of Psychology, 33*(2), 50-58.

Paloutzian, R., & Ellison, C. (1982). Loneliness, spiritual well-being, and quality of life. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy*. New York: Wiley.

Paolucci, N., Dimas, I., Zappalà, S., Lourenço, P., & Rebelo, T. (2018). Transformational leadership and team effectiveness: The mediating role of affective team commitment. *Journal of Work and Organizational Psychology*. doi:10.5093/jwop2018a16

Patrick, D., Guyatt, G., & Acquadro, C. (2011). Patient-reported outcomes. In J. Higgins & S. Green (Eds.), Cochrane handbook for systematic reviews of interventions 5.1.0. [updated March 2011]. http://handbook-5-1.cochrane.org/: The Cochrane Collaboration. Retrieved from http://handbook-5-1.cochrane.org/.

Paul, C. (2008). A modified delphi approach to a new card sorting methodology. *Journal of Usability Studies, 4*(1), 7-30.

Pereira, S., Teixeira, C., Carvalho, A., & Hernández-Marrero, P. (2016). Compared to palliative care, working in intensive care more than doubles the chances of burnout: Results from a nationwide comparative study. *PloS One, 11*(9), e0162340. doi:10.1371/journal.pone.0162340

Perry, L., Nicholls, R., Duffield, C., & Gallagher, R. (2017). Building expert agreement on the importance and feasibility of workplace health promotion interventions for nurses and midwives: A modified Delphi consultation. *Journal of Advanced Nursing, 73*(11), 2587-2599. doi:10.1111/jan.13345

Peterson, C. (2006a). *A primer in positive psychology*. New York: Oxford University Press.

Peterson, C. (2006b). The values in action (VIA) classification of strengths. In M. Csikszentmihalyi & I. Csikszentmihalyi (Eds.), A life worth living: Contributions to positive psychology (pp. 29-48). Oxford, UK: Oxford University Press.

Peterson, C., Park, N., & Seligman, M. (2005). Orientations to happiness and life satisfaction: The full life versus the empty life. *Journal of Happiness Studies, 6*(1), 25-41. doi:10.1007/s10902-004-1278-z

Peterson, C., Ruch, W., Beermann, U., Park, N., & Seligman, M. (2007). Strengths of character, orientations to happiness, and life satisfaction. *The Journal of Positive Psychology, 2*(3), 149-156. doi:10.1080/17439760701228938

Peterson, C., & Seligman, M. (2004). *Character strengths and virtues: A handbook and classification*. New York: Oxford University Press.

Peyrot, M., Rubin, R. R., Lauritzen, T., Snoek, F. J., Matthews, D. R., & Skovlund, S. E. (2005). Psychosocial problems and barriers to improved diabetes management: Results of the Cross-National Diabetes Attitudes, Wishes and Needs (DAWN) Study. *Diabetic Medicine, 22*(10), 1379-1385. doi:10.1111/j.1464-5491.2005.01644.x

Pipe, T. B., Bortz, J. J., Dueck, A., Pendergast, D., Buchda, V., & Summers, J. (2009). Nurse leader mindfulness meditation program for stress management: A randomized controlled trial. *Journal of Nursing Administration, 39*(3), 130-137. doi:10.1097/NNA.0b013e31819894a0

Piryani, R., Madhavi, D., & Singh, V. K. (2017). Analytical mapping of opinion mining and sentiment analysis research during 2000–2015. *Information Processing & Management, 53*(1), 122-150. doi:10.1016/j.ipm.2016.07.001

Polkinghorne, D. (1983). *Methodology for the human sciences: Systems of inquiry*. Albany, New York: State University of New York Press.

Pool, L. (2012). How culture influences choosing nursing as a career. *Whitireia Nursing Journal*(19), 27-42.

Popper, K. (1959). *The logic of scientific discovery*. London: Hutchinson.

Powell, K., & Peterson, S. (2017). Coverage and quality: A comparison of Web of Science and Scopus databases for reporting faculty nursing publication metrics. *Nursing Outlook, 65*(5), 572-578. doi:10.1016/j.outlook.2017.03.004

Pressman, S., & Cohen, S. (2005). Does positive affect influence health? *Psychological Bulletin, 131*(6), 925-971. doi:10.1037/0033-2909.131.6.925

Price, S., McGillis Hall, L., Angus, J., & Peter, E. (2013). Choosing nursing as a career: A narrative analysis of millennial nurses' career choice of virtue. *Nursing Inquiry, 20*(4), 305-316. doi:10.1111/nin.12027

Proyer, R. T., Gander, F., Wellenzohn, S., & Ruch, W. (2015). Strengths-based positive psychology interventions: A randomized placebo-controlled online trial on long-term effects for a signature strengths- vs. A lesser strengths-intervention. *Frontiers in Psychology, 6*(MAR). doi:10.3389/fpsyg.2015.00456

Rath, T. (2007). *StrengthsFinder 2.0*. New York: Gallup Press.

Ray-Sannerud, B., Leyshon, S., & Vallevik, V. (2015). Introducing routine measurement of healthcare worker's well-being as a leading indicator for proactive safety management systems based on resilience engineering. *Procedia Manufacturing, 3*, 319-326. doi:10.1016/j.promfg.2015.07.163

Rich, S., Hanna, S., & Wright, B. (2017). Simply satisfied: The role of psychological need satisfaction in the life satisfaction of voluntary simplifiers. *Journal of Happiness Studies, 18*(1), 89-105. doi:10.1007/s10902-016-9718-0

Rich, S., Hanna, S., Wright, B., & Bennett, P. (2017). Fact or fable: Increased wellbeing in voluntary simplicity. *International Journal of Wellbeing, 7*(2), 64-77. doi:10.5502/ijw.v7i2.589

Riemer, H., Mates, J., Ryan, L., & Schleder, B. (2015). Decreased stress levels in nurses: A benefit of quiet time. *American Journal of Critical Care, 24*(5), 396-402. doi:10.4037/ajcc2015706

Robbins, S., & Judge, T. (2013). *Organizational behaviour*. New Jersey: Prentice Hall.

Roberts, J., Fisher, T., Trowbridge, M., & Bent, C. (2016). A design thinking framework for healthcare management and innovation. *Healthcare, 4*(1). doi:10.1016/j.hjdsi.2015.12.002

Roberts, L., Dutton, J., Spreitzer, G., Heaphy, E., & Quinn, R. (2005). Composing the reflected best-self portrait: Building pathways for becoming extraordinary in work organizations. *Academy of Management Review, 30*(4), 712-736. doi:10.5465/AMR.2005.18378874

Romppanen, J., & Häggman‐Laitila, A. (2016). Interventions for nurses' well‐being at work: A quantitative systematic review. *Journal of Advanced Nursing, 73*(7), 1555-1569. doi:10.1111/jan.13210

Rongen, A., Robroek, S., van Lenthe, F., & Burdorf, A. (2013). Workplace health promotion: A meta-analysis of effectiveness. *American Journal of Preventive Medicine, 44*(4), 406-415. doi:10.1016/j.amepre.2012.12.007

Rosch, E. (1975). Cognitive representations of semantic categories. *Journal of Experimental Psychology, 104*(3), 192-233.

Rosch, E., & Mervis, C. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology, 7*(4), 573-605. doi:10.1016/0010-0285(75)90024-9

Rousseau, R., Egghe, L., & Guns, R. (2018). *Becoming metric-wise: A bibliometric guide for researchers*. Kidlington, UK: Chandos, Elsevier.

Rugg, G., & McGeorge, P. (1997). The sorting techniques: A tutorial paper on card sorts, picture sorts and item sorts. *Expert Systems, 14*(2), 80-93. doi:10.1111/1468-0394.00045

Ryan, R., & Deci, E. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Ryan, R., & Deci, E. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141-166. doi:10.1146/annurev.psych.52.1.141

Ryff, C. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*(6), 1069-1081.

Ryff, C., Singer, B., Keyes, C., & Haidt, J. (2003). *Flourishing: Positive psychology and the life well-lived*. Washington D.C.: American Psychological Association.

Sacco, T., Ciurzynski, S., Harvey, M., & Ingersoll, G. (2015). Compassion satisfaction and compassion fatigue among critical care nurses. *Critical Care Nurse, 35*(4), 32-44. doi:10.4037/ccn2015392

Salancik, G., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly, 23*(2), 224-253.

Sale, J., Lohfeld, L., & Brazil, K. (2002). Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality and quantity, 36*(1), 43-53.

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing and Health, 23*(4), 334-340. doi:10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G

Sangiorgi, D., & Junginger, S. (2015). Emerging issues in service design. *The Design Journal, 18*(2), 165-170. doi:10.2752/175630615X14212498964150

Schieman, S., & Glavin, P. (2016). The pressure-status nexus and blurred work–family boundaries. *Work and Occupations, 43*(1), 3-37. doi:10.1177/0730888415596051

Schölmerich, V., & Kawachi, I. (2016). Translating the socio-ecological perspective into multilevel interventions: Gaps between theory and practice. *Health Education and Behavior, 43*(1), 17-20. doi:10.1177/1090198115605309

Schotanus-Dijkstra, M., Pieterse, M., Drossaert, C., Westerhof, G., de Graaf, R., Ten Have, M., . . . Bohlmeijer, E. (2016). What factors are associated with flourishing? Results from a large representative national sample. *Journal of Happiness Studies, 17*(4), 1351-1370. doi:10.1007/s10902-015-9647-3

Schueller, S., Kashdan, T., & Parks, A. (2014). Synthesizing positive psychological interventions: Suggestions for conducting and interpreting meta-analyses. *International Journal of Wellbeing, 4*(1).

Scott, J., Sochalski, J., & Aiken, L. (1999). Review of magnet hospital research: Findings and implications for professional nursing practice. *Journal of Nursing Administration, 29*(1), 9-19.

Seligman, M. (2011). *Flourish: A visionary new understanding of happiness and well-being*. Sydney, Australia: William Heinemann.

Seligman, M., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *American Psychologist, 55*(1), 5-14. doi:10.1037/0003-066X.55.1.5

Sen, A. (2005). Human rights and capabilities. *Journal of Human Development, 6*(2), 151-166. doi:10.1080/14649880500120491

Sharma, P., Kong, T., Kingshott, R., Kandampully, J., & Subramony, M. (2016). Internal service quality as a driver of employee satisfaction, commitment and performance–exploring the focal role of employee well-being. *Journal of Service Management, 27*(5), 773-797.

Sheldon, K., Jose, P., Kashdan, T., & Jarden, A. (2015). Personality, effective goal-striving, and enhanced well-being: Comparing 10 candidate personality strengths. *Personality and Social Psychology Bulletin, 41*(4), 575-585. doi:10.1177/0146167215573211

Shum, D., O'Gorman, J., Myors, B., & Creed, P. (2013). *Psychological testing and assessment*. Melbourne, Australia: Oxford University Press.

Siffleet, J., Williams, A., Rapley, P., & Slatyer, S. (2015). Delivering best care and maintaining emotional wellbeing in the intensive care unit: The perspective of experienced nurses. *Applied Nursing Research, 28*(4), 305-310. doi:10.1016/j.apnr.2015.02.008

Simon, L., Judge, T., & Halvorsen-Ganepola, M. (2010). In good company? A multi-study, multi-level investigation of the effects of coworker relationships on employee well-being. *Journal of Vocational Behavior, 76*(3), 534-546. doi:10.1016/j.jvb.2010.01.006

Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology, 65*(5), 467-487. doi:10.1002/jclp.20593

Soane, E., Shantz, A., Alfes, K., Truss, C., Rees, C., & Gatenby, M. (2013). The association of meaningfulness, well-being, and engagement with absenteeism: A moderated mediation model. *Human Resource Management, 52*(3), 441-456. doi:10.1002/hrm.21534

Spalding, N., & Phillips, T. (2007). Exploring the use of vignettes: From validity to trustworthiness. *Qualitative Health Research, 17*(7), 954-962. doi:10.1177/1049732307306187

Spreitzer, G., & Sonenshein, S. (2003). Positive deviance and extraordinary organizing. In K. Cameron, J. Dutton, & R. Quinn (Eds.), *Positive Organizational Scholarship* (pp. 207-224). San Francisco: Berrett-Kohler.

Spreitzer, G., Stephens, J., & Sweetman, D. (2009). The Reflected Best Self field experiment with adolescent leaders: Exploring the psychological resources associated with feedback source and valence. *The Journal of Positive Psychology, 4*(5), 331-348. doi:10.1080/17439760902992340

Statistics New Zealand. (2018). Labour market statistics: September 2018 quarter. Retrieved from https://www.stats.govt.nz/information-releases/labour-market-statistics-september-2018-quarter

Steckler, A., McLeroy, K., Goodman, R., Bird, S., & McCormick, L. (1992). Toward integrating qualitative and quantitative methods: An introduction. *Health Education Quarterly, 19*(1), 1-8.

Steger, M. (2013). Experiencing meaning in life: Optimal functioning at the nexus of well-being, psychopathology, and spirituality. In P. Wong (Ed.), *The human quest for meaning* (pp. 211-230). New York: Routledge.

Steptoe, A., Deaton, A., & Stone, A. A. (2015). Subjective wellbeing, health, and ageing. *The Lancet, 385*(9968), 640-648. doi:10.1016/S0140-6736(13)61489-0

Tan, L., Wang, M., Modini, M., Joyce, S., Mykletun, A., Christensen, H., & Harvey, S. (2014). Preventing the development of depression at work: A systematic review and meta-analysis of universal interventions in the workplace. *BMC Medicine, 12*(1), 1-11. doi:10.1186/1741-7015-12-74

Tashakkori, A., & Teddlie, C. (2010). *Sage handbook of mixed methods in social & behavioral research* (2nd ed.). Los Angeles, CA: SAGE Publications.

Tims, M., Bakker, A., & Derks, D. (2015). Examining job crafting from an interpersonal perspective: Is employee job crafting related to the well-being of colleagues? *Applied Psychology, 64*(4), 727-753. doi:10.1111/apps.12043

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence‐informed management knowledge by means of systematic review. *British Journal of Management, 14*(3), 207-222.

Treasury. (2001). *Towards an inclusive economy*. Wellington, NZ: The Treasury.

van den Bosch, R., & Taris, T. (2014). The authentic worker's well-being and performance: The relationship between authenticity at work, well-being, and work outcomes. *The Journal of Psychology, 148*(6), 659-681. doi:10.1080/00223980.2013.820684

van den Heuvel, M., Demerouti, E., & Peeters, M. C. W. (2015). The job crafting intervention: Effects on job resources, self-efficacy, and affective well-being. *Journal of Occupational and Organizational Psychology, 88*(3), 511-532. doi:10.1111/joop.12128

Van der Heijden, B., Mulder, R., König, C., & Anselmann, V. (2017). Toward a mediation model for nurses' well-being and psychological distress effects of quality of leadership and social support at work. *Medicine, 96*(15), e6505.

van Woerkom, M., & Meyers, M. (2015). My strengths count! *Human Resource Management, 54*(1), 81-103. doi:10.1002/hrm.21623

Vanhove, A., Herian, M., Perez, A., Harms, P., & Lester, P. (2015). Can resilience be developed at work? A meta-analytic review of resilience-building programme effectiveness. *Journal of Occupational and Organizational Psychology, 89*(2), 278-307. doi:10.1111/joop.12123

Verquer, M., Beehr, T., & Wagner, S. (2003). A meta-analysis of relations between person–organization fit and work attitudes. *Journal of Vocational Behavior, 63*(3), 473-489. doi:10.1016/S0001-8791(02)00036-2

Vévoda, J., Vévodová, Š., Nakládalová, M., Grygová, B., Kisvetrová, H., Grochowska Niedworok, E., . . . Merz, L. (2016). The relationship between psychological safety and burnout among nurses. *Pracovni Lekarstvi, 68*(1-2), 40-46.

Vijayarani, S., Ilamathi, J., & Nithya, N. (2015). Preprocessing techniques for text mining: An overview. *International Journal of Computer Science & Communication Networks, 5*(1), 7-16.

Waitemata District Health Board (Producer). (2016, 29 August 2016). Our health in mind. Growing wellbeing for our community. A five-year strategic action plan 2016-21. Retrieved from http://www.waitematadhb.govt.nz/dhb-planning/action-plans/

Walker, L. (2015). *NZNO employment survey 2015: Our nursing workforce: Condition deteriorating*. Wellington, New Zealand: New Zealand Nurses Organisation.

Waltman, L., & Van Eck, N. (2012). The inconsistency of the h‐index. *Journal of the Association for Information Science and Technology, 63*(2), 406-415.

Warr, P. (2006). Differential activation of judgments in employee well-being. *Journal of Occupational and Organizational Psychology, 79*(2), 225-244.

Weigl, M., Stab, N., Herms, I., Angerer, P., Hacker, W., & Glaser, J. (2016). The associations of supervisor support and work overload with burnout and depression: A cross-sectional study in two nursing settings. *Journal of Advanced Nursing, 72*(8), 1774-1788. doi:10.1111/jan.12948

Weiser, D., Lalasz, C., Weigel, D., & Evans, W. (2014). A prototype analysis of infidelity. *Personal Relationships, 21*(4), 655-675.

Weiss, L., Westerhof, G., & Bohlmeijer, E. (2016). Can we increase psychological well-being? The effects of interventions on psychological well-being: A meta-analysis of randomized controlled trials. *PloS One, 11*(6), e0158092. doi:10.1371/journal.pone.0158092

White, M. (2014). An evidence-based whole school strategy to positive education. In H. Street & N. Porter (Eds.), *Better than OK: Helping young people to flourish at school and beyond*. Perth: Fremantle Press.

Winkler, K. (Ed.) (1996). *John Locke: An essay concerning human understanding*. Cambridge, MA: Hackett Publishing Company.

Wooten, L., & Crane, P. (2004). Generating dynamic capabilities through a humanistic work ideology: The case of a certified-nurse midwife practice in a professional bureaucracy. *American Behavioral Scientist, 47*(6), 848-866. doi:10.1177/0002764203260213

World Health Organisation. (2013). WHO Global Plan of Action on Workers' Health (2008-2017): Baseline for Implementation. Retrieved from http://www.who.int/occupational_health/publications/global_plan/en/

World Health Organization. (1946). *Constitution of the World Health Organization*. Geneva: World Health Organization.

World Health Organization. (1998). *Wellbeing measures in primary health care/the DEPCARE project: Report on a WHO meeting, Stockholm, Sweden 12-13 February 1998*.

World Health Organization. (2013). *Mental health action plan 2013-2020*. Geneva: World Health Organization.

Wrzesniewski, A., & Dutton, J. (2001). Crafting a job: Revisioning employees as active crafters of their work. *The Academy of Management Review, 26*(2), 179-201. doi:10.2307/259118

Wrzesniewski, A., McCauley, C., Rozin, P., & Schwartz, B. (1997). Jobs, careers, and callings: People's relations to their work. *Journal of Research in Personality, 31*(1), 21-33. doi:10.1006/jrpe.1997.2162

Wu, C., & Parker, S. (2017). The role of leader support in facilitating proactive work behavior: A perspective from attachment theory. *Journal of Management, 43*(4), 1025-1049. doi:10.1177/0149206314544745

Zarei, E., Khakzad, N., Reniers, G., & Akbari, R. (2016). On the relationship between safety climate and occupational burnout in healthcare organizations. *Safety Science, 89*, 1-10. doi:10.1016/j.ssci.2016.05.011

Zibarras, L., & Lewis, R. (2013). What is occupational psychology. In L. R & L. Zibarras (Eds.), *Work and occupational psychology: Integrating theory and practice* (pp. 3-24). London: Sage.

Zunker, V. (2016). *Career counseling: A holistic approach*. Boston, MA: Cengage Learning.

Appendices

Appendix A. Ethics approval.

AUTEC Secretariat

Auckland University of Technology
D-88, WU406 Level 4 WU Building City Campus
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

8 July 2017

Jane Koziol-McLain
Faculty of Health and Environmental Sciences

Dear Jane

Re Ethics Application: 17/180 Conceptualising and measuring critical care nurse wellbeing.

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 in stages for three years until 3 July 2020.

Standard Conditions of Approval

1. A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through http://www.aut.ac.nz/researchethics.
2. A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through http://www.aut.ac.nz/researchethics.
3. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form: http://www.aut.ac.nz/researchethics.
4. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.

Non-Standard Conditions of Approval

1. This approval is for the Prototype analysis survey and interviews only, and that all components of the measurement survey, including, including recruitment protocols will need to be subject to a further application.

Please quote the application number and title on all future correspondence related to this project.

AUTEC grants ethical approval only. If you require management approval for access for your research from another institution or organisation then you are responsible for obtaining it. You are reminded that it is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

For any enquiries, please contact ethics@aut.ac.nz

Yours sincerely,

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

Appendix B. Study advertisement.

What does being a critical care nurse mean for your wellbeing?

<u>What:</u>   Opportunity to participate in a study to identify what wellbeing means to critical care nurses who work

in an adult and/or paediatric ICU in NZ

<u>Where:</u>   Anywhere you can access and respond to online questions

<u>Why:</u>   To understand what wellbeing means to critical care nurses and see how we are doing

<u>When:</u>   Between August 2017 and April 2018

<u>How:</u>   For further information please click on the link:

ICU nurse wellbeing survey info and consent

or paste the following address into your browser:

https://aut.au1.qualtrics.com/jfe/form/SV_2mfbxZLNA8Fn7O5

Many thanks for your consideration, Rebecca Jarden (AUT University PhD candidate): rjarden@aut.ac.nz
Approved by the Auckland University of Technology Ethics Committee on 03 July 2017 AUTEC Reference number 17/180

Appendix C. Participant information and consent page.

Study consent and e-mail (copied from Qualtrics^{TM} so formatting lost)

Q1 Thank you for showing interest in participating in the advertised ICU nurse wellbeing study. Below is detailed information regarding this research project. I hope you will enjoy the study should you choose to participate.

Project Title: Conceptualising and measuring critical care nurse wellbeing.

An Invitation - I am Rebecca Jarden, currently a registered nurse, university lecturer, and researcher with a passion for critical care nursing. I would like to invite you to participate in my research study. This information sheet will help you decide to take part. I am conducting this study as part of my PhD research.

What is the purpose of this research? My study seeks to contribute to the promotion of critical care nurse wellbeing. Through three separate phases, this study will explore your ideas about wellbeing and what you think improves or reduces your wellbeing (Phases one & two) and then measure your wellbeing (Phase three). The findings of this study will be presented to the critical care nursing community in several forums, for example, a report to participants and participating organisations, and publication in peer-reviewed nursing journals to disseminate findings and inform future workplace wellbeing programmes tailored for critical care nurses.

How was I identified and why am I being invited to participate in this research? I have invited you to be involved because I believe you are a critical care nurse currently working in an ICU in NZ.

How do I agree to participate in this research? Should you agree to participate in this research, please provide your e-mail address below. I will contact you within approximately eight weeks by e-mail to commence Phase One of the study. Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. All information will be treated

maintaining privacy and confidentiality. No personal details will be shared related to your participation either during or after the research project. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice of having any data that is identifiable as belonging to you removed <u>or</u> allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen if I choose to participate in this research? There are three phases of this study. Each of the phases are completed online. If you indicate below you would like to participate in this study, you will be asked to provide your name and e-mail address. Next: 1) I (Rebecca Jarden) will then randomly allocate you to participate in one of three groups for Phase One. Each of these three groups start Phase One at a slightly different time, all within approximately 8 weeks. After completing Phase One, all participants will then be invited to indicate if they would like to participate in an online interview with me (Rebecca Jarden). 2) I (Rebecca Jarden) will use the locality demographic data obtained in Phase One to purposefully select a range of participants throughout NZ for interview. I will contact all participants who indicate they would like to participate in the online interview and notify you whether you have been selected for interview. 3) All participants involved in Phase One will then be invited by e-mail to participate in Phase Three's online survey.

Each Phase is now outlined in more detail: **Phase one:** This phase involves you responding to online questions related to your general thoughts about wellbeing. The survey will take approximately 15 minutes to complete. **Phase two:** At the completion of phase one you will be asked to indicate your interest in participating in an online one-to-one interview related to your general thoughts about wellbeing. The interview will take approximately one hour. I will contact you and provide you with further information if you indicate an interest in participating in an interview. Stages one and two will help inform my development of a critical care nurse wellbeing survey. **Phase three:** Involves you responding

to an online survey to enable me to measure wellbeing of critical care nurses in Aotearoa New Zealand. The survey will take approximately 15 minutes to complete.

What are the discomforts and risks? If reflecting on these questions brings up anything you feel worried about, you may want to talk to someone close to you, your GP, or other health service professional. Alternatively, there are a wide range of telephone counselling and support agencies that you can contact confidentially, listed at this website: Telephone Support Lines, (https://www.mentalhealth.org.nz/get-help/in-crisis/helplines/); and 24 hour telephone support is available for you to talk to someone: 0800 543 354.

What are the benefits? Firstly, you will be contributing to increasing our knowledge of critical care nurses' wellbeing. Secondly, my research also seeks to inform individuals, teams, organisations and policy makers of the enablers and inhibitors of workplace wellbeing. This information will be useful to inform workplace wellbeing programmes tailored for critical care nurses. Finally, this research will assist me in obtaining my PhD.

What compensation is available for injury or negligence? In the unlikely event of a physical injury because of your participation in this study, rehabilitation and compensation for injury by accident may be available from the Accident Compensation Corporation, providing the incident details satisfy the requirements of the law and the Corporation's regulations.

How will my privacy be protected? No individuals will be identified in the final report or publications. Group level data will only be reported where there were more than 5 participants within the group. Data will be maintained on a secure online server and confidentiality will be maintained at all times where anonymity is not possible, for example, pseudonyms will be used for all interview data and unique ID codes for all survey data.

What are the costs of participating in this research? Time to complete a study is the primary cost of participating in this research. Specifically, the time costs are: Phase one: approximately 15 minutes of online questions. Phase two: If you are selected for a one-to-

one interview, this will involve an approximately 1-hour skype or zoom interview. Phase three: approximately 15 minutes of online questions.

What opportunity do I have to consider this invitation? I anticipate that the three Phases will commence on 1st August 2017 and all three Phases will be completed by 24th April 2018.

Will I receive feedback on the results of this research? Yes, if you choose to you will receive a research report of the findings.

What do I do if I have concerns about this research? Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Jane Koziol-Mclain, jane.koziol-mclain@aut.ac.nz, (09) 921 9670.   Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz , (09) 921 9999 ext 6038.

Whom do I contact for further information about this research? Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows: Rebecca Jarden, rjarden@aut.ac.nz, 021 409 244 or (09) 921 9999 ext 8173, AUT University, 90 Akoranga Drive, Northcote, Auckland, 0627.   Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEC Reference number type the AUTEC reference number

❑ I have provided my name in the next text box as an agreement to participate in this
   research project (1) _____
❑ My e-mail address to enable allocation to the phases of the study is (2)
   _____

Appendix D. Table of full-text 100 most frequent words and co-occurring terms across sub-studies 1 and 2.

Wellbeing	Wellbeing Count	Wellbeing Weighted Percentage (%)	Intensive care nurse wellbeing	Intensive care nurse wellbeing Count	Intensive care nurse wellbeing Weighted Percentage (%)	Co-occurring terms from sub-study 1 & sub-study 2
health	335637	0.56	health	11298	0.71	health
social	280696	0.47	nursing	10085	0.63	social
study	221752	0.37	nurses	7971	0.50	study
research	179063	0.30	study	7592	0.48	research
journal	148864	0.25	patients	6361	0.40	journal
children	144235	0.24	patient	5691	0.36	children
psychological	137772	0.23	research	5345	0.34	psychological
satisfaction	133768	0.22	journal	4696	0.30	satisfaction
positive	129053	0.22	family	4561	0.29	positive
support	112173	0.19	nurse	4211	0.26	support
family	109738	0.18	practice	3401	0.21	family
model	109343	0.18	critical	3302	0.21	model
people	106899	0.18	support	3190	0.20	people
group	100033	0.17	social	3185	0.20	group
scale	96906	0.16	stress	2986	0.19	scale
table	94163	0.16	clinical	2981	0.19	table
wellbeing	93988	0.16	group	2832	0.18	wellbeing
studies	93948	0.16	participants	2716	0.17	studies
results	93751	0.16	staff	2579	0.16	results
women	92704	0.16	intensive	2506	0.16	women
effects	92305	0.15	people	2492	0.16	effects
mental	91586	0.15	information	2488	0.16	mental
among	90059	0.15	quality	2459	0.15	among
variables	88360	0.15	studies	2426	0.15	variables
related	87815	0.15	experience	2422	0.15	related
participants	87352	0.15	hospital	2365	0.15	participants
negative	86954	0.15	analysis	2360	0.15	negative
analysis	86818	0.15	children	2332	0.15	analysis
relationship	85498	0.14	intervention	2330	0.15	relationship
child	85194	0.14	based	2324	0.15	child

Wellbeing	Wellbeing Count	Wellbeing Weighted Percentage (%)	Intensive care nurse wellbeing	Intensive care nurse wellbeing Count	Intensive care nurse wellbeing Weighted Percentage (%)	Co-occurring terms from sub-study 1 & sub-study 2
psychology	84637	0.14	emotional	2203	0.14	psychology
subjective	82744	0.14	related	2153	0.14	subjective
level	82736	0.14	education	2109	0.13	level
sample	79757	0.13	medical	2093	0.13	sample
university	79199	0.13	university	2015	0.13	university
higher	78978	0.13	management	1998	0.13	higher
physical	77119	0.13	child	1970	0.12	physical
quality	76002	0.13	development	1966	0.12	quality
measures	74022	0.12	needs	1893	0.12	measures
stress	74014	0.12	women	1889	0.12	stress
school	73931	0.12	mental	1887	0.12	school
reported	72042	0.12	physical	1861	0.12	reported
income	71940	0.12	among	1845	0.12	associated
associated	71876	0.12	table	1842	0.12	found
found	71459	0.12	important	1796	0.11	development
development	70578	0.12	knowledge	1793	0.11	however
however	70030	0.12	using	1773	0.11	using
using	69403	0.12	control	1768	0.11	effect
effect	69367	0.12	results	1766	0.11	years
years	68996	0.12	factors	1752	0.11	levels
levels	68597	0.12	years	1748	0.11	based
based	68414	0.11	members	1747	0.11	individual
individual	67991	0.11	model	1741	0.11	emotional
emotional	65585	0.11	psychological	1728	0.11	depression
depression	65383	0.11	reported	1721	0.11	control
control	64726	0.11	community	1684	0.11	education
education	64565	0.11	level	1667	0.10	different
different	63169	0.11	however	1651	0.10	status
status	63094	0.11	experiences	1642	0.10	three
three	61884	0.10	outcomes	1618	0.10	factors
factors	61541	0.10	treatment	1618	0.10	items
items	61368	0.10	process	1588	0.10	differences
differences	61139	0.10	found	1572	0.10	scores
scores	60282	0.10	review	1530	0.10	important
important	60265	0.10	relationship	1524	0.10	affect

Wellbeing	Wellbeing Count	Wellbeing Weighted Percentage (%)	Intensive care nurse wellbeing	Intensive care nurse wellbeing Count	Intensive care nurse wellbeing Weighted Percentage (%)	Co-occurring terms from sub-study 1 & sub-study 2
affect	59721	0.10	scale	1505	0.09	groups
groups	58409	0.10	parents	1485	0.09	community
community	58165	0.10	burnout	1473	0.09	economic
economic	57622	0.10	environment	1472	0.09	relationships
relationships	57158	0.10	families	1460	0.09	individuals
individuals	54842	0.09	communication	1442	0.09	number
number	54190	0.09	cancer	1435	0.09	general
general	53902	0.09	services	1435	0.09	outcomes
happiness	53849	0.09	professional	1434	0.09	patients
outcomes	53485	0.09	coping	1431	0.09	personal
patients	53400	0.09	positive	1386	0.09	gender
personal	53246	0.09	different	1378	0.09	experience
gender	51055	0.09	effects	1376	0.09	change
experience	50960	0.09	personal	1374	0.09	measure
change	50366	0.08	impact	1370	0.09	within
measure	50039	0.08	within	1370	0.09	impact
within	49279	0.08	older	1361	0.09	perceived
personality	48868	0.08	individual	1357	0.09	older
impact	48489	0.08	satisfaction	1349	0.08	author
perceived	47720	0.08	healthcare	1343	0.08	symptoms
older	47642	0.08	evidence	1342	0.08	population
author	47011	0.08	students	1342	0.08	survey
symptoms	46997	0.08	symptoms	1342	0.08	human
population	46875	0.08	training	1335	0.08	significant
survey	46801	0.08	levels	1317	0.08	lower
human	46470	0.08	design	1296	0.08	review
significant	45842	0.08	three	1287	0.08	factor
lower	45715	0.08	general	1284	0.08	behavior
review	45372	0.08	associated	1273	0.08	problems
factor	44693	0.08	number	1268	0.08	students
behavior	43504	0.07	interventions	1260	0.08	total
problems	43463	0.07	assessment	1250	0.08	values
students	43346	0.07	anxiety	1240	0.08	activities
total	41774	0.07	infant	1240	0.08	anxiety

Appendix E. Inclusion criteria.

Reviewer: Date:

Publication Authors:

Publication Title:

Publication Year:

Inclusion criteria	Met (tick)	Not met (tick)
1) Population: critical or intensive care nurses		
2) Research type: primary		
3) Explores or measures: wellbeing		
Exclusion criteria		

Study meets all inclusion criteria (circle one):   Yes   No

Study has no exclusion criteria (circle one):   Yes   No

Include study: Yes   No

Appendix F. Data extraction form.

Data extractor: Date:

Study	Location	Research design	Wellbeing definition	Wellbeing dimension/s measured	Wellbeing measure/s	Sample size (*n*)	Participant characteristics	Intervention (if appropriate)	Analyses	Main outcomes