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Investigating flow at work and vital engagement of working adults across three years

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Master of Clinical Psychology (Wollongong University, 2010)

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ABSTRACT OF THE DISSERTATION

Investigating flow at work and vital engagement among school staff across three years

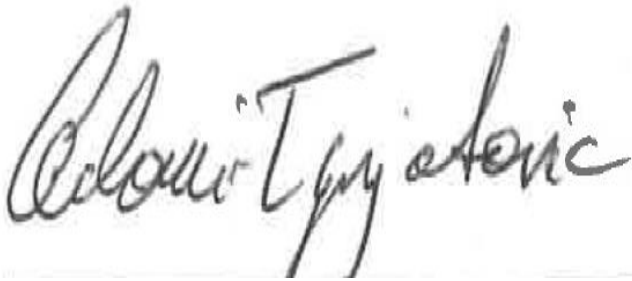
This dissertation focuses on the process of sustaining authentic engagement among adults within work as a foundation for lifelong flourishing. Embedded within an evolutionary systems perspective of human development, this dissertation examines the processes underpinning work-related flow and vital engagement among school staff over a three-year period. The relevance of flow to optimal human functioning is well documented, with flow at work considered an important indicator and predictor of workplace engagement and wellbeing, both cross-sectionally and over short time periods. However, flow at work is also a dynamic and contextually bounded experience and when. Vital engagement, defined by the combination of work-related flow experiences alongside a sense of value-based cognitions and behavior, may provide a more contextualized understanding of engagement among working adults over longer periods of human development. Using data collected from school staff at an independent Kindergarten through Year 12 school in New South Wales, Australia (baseline $N = 327$), this research tests existing models of flow at work across a three year period, and then extends these models, providing an initial empirical examination of the vital engagement construct. First, providing background and a context for understanding engagement at work, a meta-analysis examining 54 independent samples ($N = 16,171$) was conducted from the last 30 years of flow at work – a form of daily authentic engagement with every day working activities. Findings point to the centrality of contextual factors such as social support, skill development opportunities, job resources, and autonomy as being critical to flow among working adults Second, extending previous models that have identified short-term associations between flow and optimal experiences and

functioning, Study 1 examined how flow at work and strengths use relate across longer time periods, testing a cross-lagged panel model of strength use and work-related flow across five measurement occasions over three years. Although flow and strengths use were correlated within each time point, results failed to support cross-lagged relationships across time; subsequent strengths use and flow were primarily predicted by prior strengths use and flow respectively. Findings from Study 1 point to the contextual nature of flow at work, with the evidence that whilst strengths use and flow at work exhibit strong bi-directional relationships during short periods of time, over months and years they are also dependent on other additional conditions. Consequently, the necessity to consider a broader model of adult engagement in work that goes beyond subjective experience to include behaviors, cognitions, and purpose. Extending the concept of work-related flow to capture broader elements of engagement among working adults, Study 2 provides an initial test of the broader vital engagement construct, proposed by Nakamura (2001) a type of authentic engagement in a profession, and/or field of practice and domain of knowledge. Findings provide support for vital engagement as an emergent construct, with the latent model supported across multiple time points. Moreover, vital engagement was relatively stable over time. Finally, the dissertation considers implications for future research and application related to flow and engagement at work, with consideration of the conditions needed to facilitate vital engagement among working adults. As a whole, this dissertation calls for sophisticated approaches to conceptualizing, measuring, and analyzing vital engagement as it unfolds across one's working life, with implications for better understanding of the conditions inherent in the complex nature of human flourishing.

DECLARATION

This is to certify that:

1. The thesis comprises only my original work towards the degree of Doctor of Philosophy, except where indicated in the overview section at the outset of selected chapters.
2. Due acknowledgement has been made in the text to all other material used.
3. The thesis is fewer than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.



Cedomir Ignjatovic

20th February 2020

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I want to firstly devote this piece of work and the nearly 10 years of persistence to make this dream come true, to my life partner, soul mate, and the mother of my glorious daughters (Vienna Kristina Copic-Ignjatovic: just turned 4 years old on November 14th, 2019 and Arianna Valentina Copic-Ignjatovic; just turned 3 years old on January 19th, 2020). Vecky, without you this process could not happen – your love in me makes me smarter and a better person (well mostly).

Secondly I want to thank my brother, Vojislav (aka. Troy), who has always been someone who I have shared much of our past, and present. We may live in separate cities, but you are always on my mind – this work proves that we don't have to be the products of our environments (even though it's very hard to overcome).

To my primary supervisor, and perhaps my longest teacher in this academic journey, Professor Oades, you have taught me to sink or swim, and the only way to survive is to keep (re)negotiating my circumstances toward something good.

To my dear mentor, A/Professor Kern, I hope that this work makes you proud to know that the successful learning conditions you created allowed me to finally thrive on this thesis journey – because of you I have been able to make this academic leap forward. Hope that we can continue to collaborate for many years to come - as you have previously said, the current dissertation is a platform for a multi-year project aimed at understanding the true nature of meaningful engagement among adults across their lifespan.

Preface

In fulfilment of the University of Melbourne's *Preparation of Graduate Research Thesis Rules*, the following section details the authorship, publication status, and retrospective contribution of multiple authors (chapters are listed in order of their appearance in this thesis).

Chapter 3: Associations between flow at work and wellbeing and job-related factors: A meta-analysis of 30 years of research

Publication status: Unpublished manuscript. Manuscript was submitted to December of 2018 and went through 1 round of revision before being rejected. Changes to the chapter were made to respond to the reviews. Publication will be pursued post PhD completion.

Citation: Ignjatovic, C., Kern, M. L., & Oades, L. G. (2019). *Associations between flow at work and wellbeing and job-related factors: A meta-analysis of 30 years of research*. Unpublished manuscript.

Retrospective contributions:

Authors	Conceptual design	Literature review	Research Design	Data analysis	Writing	Graduate research supervision for this chapter
Ignjatovic	80%	90%	60%	90%	80%	n/a
Kern	15%	5%	5%	5%	15%	95%
Oades	5%	5%	35%	5%	5%	5%

Chapter 5: Examining the relationship between strengths use and flow at work among school staff over a three-year period.

Publication status: Unpublished manuscript. Unsuccessfully submitted to the *Journal of Positive Psychology* in April 2019. Chapter was updated to address comments raised in the review. Publication will be pursued post PhD.

Citation: Ignjatovic, C., Kern, M. L., & Oades, L. G. (2019). *Examining the relationship between strengths use and flow at work among school staff over a three-year period*. Unpublished manuscript.

Retrospective contributions:

Authors	Conceptual design	Literature review	Research Design	Data analysis	Writing	Graduate research supervision for this chapter
Ignjatovic	80%	90%	60%	60%	80%	n/a
Kern	15%	5%	5%	40%	15%	90%
Oades	5%	5%	35%	0%	5%	10%

Chapter 6: Development and testing a model of employee vital engagement over three years.

Publication status: Unpublished draft in preparation and not submitted to a journal:

Citation: Ignjatovic, C., Kern, M. L., & Oades, L. G. (2019). *Development and testing a model of employee vital engagement over three years*. Unpublished manuscript.

Retrospective contributions:

Authors	Conceptual design	Literature review	Research Design	Data analysis	Writing	Graduate research supervision
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						for this chapter
Ignjatovic	85%	90%	60%	40%	85%	n/a
Kern	10%	5%	5%	60%	10%	80%
Oades	5%	5%	35%	0%	5%	20%

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FOREWORD

As an obsessed Michael Jordan fan, I was first exposed to descriptions of ‘he’s in the zone’ in the animated descriptions of commentators on the legendary basketball players’ performance on a night when he was at his best. After reading Mihaly Csikszentmihalyi’s *Flow: The classic work on how to achieve happiness* in year three of my undergraduate Art’s studies at the University of Wollongong, Australia, I felt I had unraveled a mystery of what this so called ‘zone’ was and how to potentially achieve it more often. During my years of training for a masters in clinical psychology, I read Corey Keyes’ and Jonathan Haidt’s (2003) book on flourishing, and was particularly struck by how I was naturally drawn to holistic (and very hopeful and positive) perspectives of mental health and, of course, flourishing – a term that had now begun to revolutionize my philosophy of how to help individuals change and my efforts towards being a scientist-practitioner so often discussed in academia (but harder to implement in real life).

As a practicing Clinical Psychologist of nearly 10 years now, I have often reflected on how to practically apply both Keyes’ and Csikszentmihalyi’s models of well-being in my own practice. Their viewpoints seemed to me to be well aligned with Dialectical Behavior Therapy (DBT; Linehan, 1993) and Acceptance and Commitment Therapy (ACT; Hayes, 2005). Given the dialectical philosophy underpinning flow theory, I was slowly unravelling the secrets that underpin both fields of theory and practice of a psychology of aiming to assist individuals and groups to flourish – a journey that was centrally about developing psychological flexibility (Hayes, 2005). As I would later understand, I was slowly becoming a developmentally orientated positive and clinical psychologist - increasingly focusing my emerging learning of flow principles in the applied realm of positive change intervention in individuals that would come to

my practice in Sutherland (New South Wales, Australia) for a range of clinical and subclinical levels of anxiety and depression. An alarming number of my clients in private practice were teachers – working adults of all ages experiencing the profession as highly unsupportive and overwhelmingly challenging. How could I assist them to flourishing and engage -thereby become psychologically flexible and skillful (Hayes, 2005: Linehan, 1993) - amidst a fast paced and highly bureaucratic nature of education institutions

The prospect of sustaining these experiences led me to understand the necessity of considering the ethical framework that is required when considering how to sustain flow among the working patients that I encountered, as they returned to their previous, or new, work contexts. Moreover, I developed a growing my desire to understand specific and practical ways to increase the chance that individuals will experience flow over a period of several years. As per my interest in contextual behavioral science (CBS; see Hayes, 2005), the important influence of context was affirmed on a daily basis. The context involves numerous and ongoing complexities and dependence on momentary contingencies. Hence, I was very impressed and awed by the research undertaken by Ceja and Navarro (2009, 2011, 2012) in regards to their use of chaos theory frameworks to view flow experiences. They influenced my thinking in making me appreciate the sophisticated ways of modelling and testing the contextual nature of flow. My early reading on the importance of self-efficacy on flow experiences was also very fundamental to my thinking – confirming the important impact of an individuals' perception on how often flow was experienced at work.

As I developed my project, my driving questions arose out of a desire to understand behavioral conditions impacting flow at work experiences – trying to identify more tangible ways to teach flow theory to my patients in private practice. Along the way, I became

increasingly interested in process-oriented measures, due to their appreciation of the strictly contextual nature of the human experience and functioning. This dissertation is the result of this integrative journey into investigating facilitators of flow experience among working adults.

Chapter 1 Overview:

This introductory chapter provides an overview of the theoretical and empirical arguments that guide this thesis project, which examines flow at work and vital engagement among working adults. Firstly, I explore the value of a positive psychology of adult development. This includes: the process of optimal development and flourishing among working adults; good work as the core to flourishing and human development; strengths use and flow among working adults; vital engagement among working adults as a sustainable flourishing process. Secondly, I detail the thesis overview and structure to expect of this dissertation.

Chapter 1

1.0 Introduction

This dissertation aims to provide a critical examination of some of the processes that sustain engagement and wellbeing among working adults across a several year period. It builds upon the extensive theories of human development processes, attempting to empirically model processes required for flow at work and vital engagement to occur. This introductory chapter overviews the flow at work, character strengths, vital engagement and presence of meaning in life theoretical and empirical landscape.

First, I discuss the importance of conceptualizing the process of flourishing in adults as a process of authentic engagement and alignment within a field of work, and the virtuous domain of human endeavor in which it rests. Next, I highlight the value of a taking a positive psychological approach to adult development. I describe flow theory, including why it is a viable indicator of optimal development – or flourishing – across the lifespan. Specifically, I highlight the dearth of studies on positive adult development, and summarize empirical evidence of the benefits of flow at work in optimal development and flourishing. Third, I present and discuss the concept of good work. I identify different perspectives around what good work entails, and provide a definition of how good work is used within this dissertation. Fourth, I argue for the benefit of utilizing an evolutionary systems approach for formulating how individuals sustain flow experiences as working adults. Fifth, I highlight the qualitative nature of most studies previously undertaken of flow experiences across the lifespan. These studies point to the positive impact of sustaining flow experiences in working careers, both on individual and cultural levels. However, these studies point to the need for additional studies that add quantitative methods to the existing body of knowledge. Specifically, I argue for the relevance of the sophisticated

modelling and analytic approaches to test theory on flow states and vital engagement. Sixth, I discuss the concept of vital engagement as an organizing construct for sustaining flow experiences across the lifespan, suggesting its potential impact on flourishing among adults across periods of development. Finally, I outline the structure and content of the subsequent chapters in this dissertation.

1.1 Authentic engagement working adults across the lifespan

Working adults are arguably the most important citizens of any society and are highly instrumental to the daily and practical actions necessary for any virtuous social endeavors to be realized (Csikszentmihalyi & Schneider, 2000; Gardner, Csikszentmihalyi, & Damon, 2001; Nakamura, Shernoff, & Hooker, 2009). It is perhaps just as important for social institutions such as workplaces to encourage the engagement of working adults whereby they are more often “fully ...[and] psychologically present during particular moments of role performances” (Kahn, 1990, p. 692). Alarming, however, surveys show that over 40% of working adults feel disengaged with their work (Stairs & Galpin, 2010). In the field of education - a domain of work key to cultural benefit, considering the role that educators play in developing future generations (Nakamura et al., 2009) - the process of ‘mechanized’ models of management severely impacts morale (Basom & Frase, 2004, p. 242), stress levels (Welden, 2018), and the mental and physical health of school staff (Arnup, & Bowles, 2016). This is a concerning picture, given the potential that educators hold for experiencing optimal experiences such a flow in their work. Furthermore, when functioning optimally, educators report a deep sense of meaning and purpose in their lives (Csikszentmihalyi, 1996; Delle Fave & Massimini, 2003; Delle Fave, Bassi, & Massimini, 2011; Nakamura, Shernoff, & Hooker, 2009; Rathunde, 2015), and their experiences of flow impact both their own wellbeing and that of their students (Bakker, 2005; Delle Fave & Bassi, 2012).

And yet this potential and the actual experience of engagement is not being realized for many educators, resulting in many teachers feeling, stressed, exhausted, burned out, and at risk of leaving the profession (Basom & Frase, 2004; Weale, 2019, Welden, 2018).

Research within school contexts and among educators is highly relevant for several reasons. Firstly, research on this topic provides an opportunity to identify what optimal trajectories for working adults entail during one of the most active phases of life. Educational institutions- both secondary and tertiary – are perhaps best placed to spearhead and facilitate the important cultural changes in which flow and vital engagement among adults can be more frequently facilitated.

Secondly, a pressing need exists to understand the conditions for employees to experience sustained engagement both on a daily basis and over extended periods time (Stairs & Galpin, 2010). The employee engagement literature is replete with approaches on engagement (e.g., Bakker & Oerlemans, 2019; Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010, Schaufeli & Bakker, 2003). Perspectives on engagement among working adults are often static models (Sonnentag, Dormann, & Demerouti, 2010), focusing primarily on individual-level factors associated with the affective and behavioral aspects of this experience (Langford, 2009), and neglect the impact of contextual factors related to optimal adult functioning (cf. Nakamura, 2011). Moreover, whilst work engagement has been formulated as both a trait and state construct, the bulk of the research has examined this construct as stable perspectives on the world and on one's work (Bakker & Oerlemans, 2019; Sonnentag et al., 2010; Stairs & Galpin, 2010). The development of more integrated models of engagement – those that focus on both momentary and more stable factors, alongside the interaction with contextual factors- among working adults is needed. In this thesis, I argue that these should be investigated through the lens

of developmental and systems theories, due to the meaningful connection that these areas hold with the values associated with flow-related activities as they evolve over the working life (Nakamura & Csikszentmihalyi, 2003; Rathunde & Csikszentmihalyi, 2006; Tse, Nakamura, Csikszentmihalyi, 2019).

1.2 The value of a positive psychology of adult development

Whilst numerous definitions and conceptualizations of flourishing exist (e.g., Huppert & So, 2013; Keyes, 2016; Keyes & Haidt, 2003; Seligman, 2011), from a lifespan developmental perspective, flourishing results from ‘ideal outcomes of adult development and psychological complexity’ (Rathunde & Csikszentmihalyi, 2006, p. 465). Flourishing is a key aspect of a psychology focused on the optimal development trajectories among adults across the lifespan (Csikszentmihalyi & Rathunde, 2006; Garner et al., 2001; Nakamura et al., 2009; Rathunde, 2015; Tse, et al., 2019). As a process that occurs throughout various stages across adult development, flourishing experientially fluctuates over time. Although often conceptualized as positive in nature, the flourishing life, whilst primarily positive, can entail periods of suffering on the journey of meaningful learning and self-development (cf. Keyes & Haidt, 2003). There is a need for a greater number of empirical investigations that model adult development, going beyond models of ‘normalcy and derailment’, focusing on the processes of flourishing and ‘contexts of positive adult development’ (Nakamura, 2011, p. 185), and examining trajectories of (positive) change over time.

The current thesis aims to complement other studies of positive human development that have occurred across the humanistic psychology, lifespan development, and healthy ageing literatures. The thesis examines positive human development primarily through an experiential lens (Rathunde & Csikszentmihalyi, 2006), and focused on the optimal experiences across

Erikson's (1950, 1968) adult developmental period of *generativity vs stagnation* – the period encompassing arguably the most productive phase of one's life, which is characterized by a building of meaningful foundations and support networks. While clear exceptions exist (which are reviewed in greater detail in subsequent chapters), much of the research on optimal experiences such as flow has focused on the child, adolescent, and elderly years (Csikszentmihalyi & Schneider, 2000; Csikszentmihalyi, Rathunde, & Whalen, 1997; Nakamura & Csikszentmihalyi, 2003; Csikszentmihalyi, 1996; Tse et al., 2019). These investigations have yielded in-depth descriptions of optimal developmental trajectories among both adolescent and elderly populations – providing important insights regarding aspects of 'becoming' an adult and coping with 'developmental losses' of elderly years. Other studies have focused on short-term experiences of flow, both during everyday activities and within various occupations (e.g., Ceja & Navarro, 2009, 2011; Csikszentmihalyi & Lefevre, 1989; Engeser & Baumann, 2014) – providing a consistent finding that flow occurs most commonly at work (compared with leisure) and is highly depended on a supportive context. However, further mapping of optimal developmental processes across adulthood is needed for a number of reasons.

Arguably, investigating flourishing and optimal development among working adults is relevant for several reasons, which I elaborate on in chapter 2. Briefly, despite adults spending a considerable portion of their life at work, there is a dearth research focusing on processes of optimal development across the middle adulthood working years (Nakamura, 2011, Rathunde, 2015). Moreover, further focus on research is need on work that is of a high quality is ethical and socially advantageous (cf. Garner, et al., 2001; Nakamura, et al., 2009) – given the immense contemporary pressure for sustainability oriented business practices (McKenna & Biloslavo, 2011). Moreover, the educational domain is a highly opportune context to investigate key aspects

of the flourishing process, given the significance of these institutions for cultural and individual evolution, as detailed in greater detail below (cf. Delle Fave & Massimini, 2003; Delle Fave et al., 2011).

1.3 Understanding positive adult development: Optimal experience theory

Numerous models of lifespan adult development exist (see Lerner & Overton, 2010). For instance, Baltes and Baltes (1990) suggested that successful ageing involves a process of selection, optimization and compensation (SOC, see also Baltes, 1997). Whilst a number of underlying assumptions exist within SOC, the core facet of this theory is that development is characterized by both trajectories of growth (i.e. the gains that result learning from learning a foreign language) and declines (i.e. the losses from declining health and/or memory in old age). Moreover, resources - defined as individuals' internal and external resources at each stage of ageing are limited- and are said to be interrelated with the personal or contextual characteristics that support a dynamic self-environment interaction. Piaget (1962) suggested that the constant change of cognitive structures within the individual was the central aspect of development. Through a dialectical process of adaptation and assimilation, the individual either attempts to assimilate the information within the existing schemata, or accommodate existing information into existing knowledge or innovating these into new patterns, depending on the existing contextual factors. Through the search for equilibrium the individual is able to reduce cognitive tension. It is notable here that cognitive tension is not the only indicator of development, with experiential indicators of equilibrium being useful facet of the holistic experience of human development. Relatedly, Backman and Dixon (1992) described the process of psychological

compensation - namely the potential for successful memory compensation in particular (Dixon, Garrett, and Backman, 2008) - and clearly focused on a cognitive aspect of development.

In this dissertation, I focus on optimal experience theory (Csikszentmihalyi, 1975, 1990, 1993; Nakamura & Csikszentmihalyi, 2005; Rathunde & Csikszentmihalyi, 2006) which is an experiential indicator of optimal human development via the process of psychological complexity. The focus on representing a 'subjective dimension of [the] goodness of fit' (Rathunde & Csiskzentmihalyi, 2006, p.477) between the person and their environment is corresponding to other developmental theories – particularly those which advocate for individuals as responsible agents of personal development (Lerner, 1982, Lerner & Lerner, 1987). In each day individuals are making hundreds (perhaps more) decisions with respect to which information to attend to both within themselves and their environment and flow is considered the optimal use of 'psychic energy' (Csikszentmihalyi, 1990, p. 30) during the process of psychological selection within the stability and change of cultural information (see also Inghilleri, 1999, 2014) – both at work and in society in general (Ceja & Navarro, 2011; Delle Fave, 2009). The importance of focusing on phenomenological accounts of states that describe 'effortless attention' (Csikszentmihalyi & Nakamura, 2010) is, among others, a highly ecologically valid technique of optimal development. That is, flow theory - in its attempts to describe moment-moment daily experiences of optimal experiences and functioning- is potentially useful means of creating contexts that facilitate human 'happiness in action' (see Csikszentmihalyi, 1990). As Inghilleri (1999) suggested in his historical account of the extant literature, the origins of the focus on flow was contextualized within a trend in which Maslow (1954, 1968)- among other influential examples such as Rogers (1959), Piaget (1962), and

Keegan (1982)- ‘suggested that self-realization factor [was] a privileged moment in the development of identity’ (p. 65).

I specifically draw upon what the theory’s consideration of the optimal experience of flow and the process of vital engagement of sustained flow experiences over the lifespan (Csikszentmihalyi, 1975/2000, 1990; Nakamura, 2001, 2011; Nakamura & Csikszentmihalyi, 2003, 2005). Flow theory focuses on aspects of the development process in which optimal experiences arise as one successfully negotiates one’s environment, both in the short term and across time, in a sustainable manner (Tse et al., 2019). Applied to the working adult years, the understanding of the nature and processes of how an individual behaves and experiences periods of optimal development provides valuable information about the conditions of authentic engagement within work (Csikszentmihalyi, 1975/2000, 1996; Garner, et al, 2001; Nakamura, 2009).

While studies over brief periods exist within working adults, historically, the bulk of research on optimal experiences over a period of months or years has primarily focused on the developmental period of adolescence (e.g., Csikszentmihalyi et al. 1997; Csikszentmihalyi & Schneider, 2000; Nakamura & Csikszentmihalyi, 2005). The exceptions to this are primarily retrospective accounts of older individuals who have managed to sustain their creativity and virtuous influence on their chosen fields or domains of work (Csikszentmihalyi, 1996; Gardner et al., 2001; Nakamura et al., 2009). These studies confirmed the proposed experiential indicators of the process of complexity (i.e., the ongoing balance of various individual and contextual factors), or the sustained period of flourishing due to the full development of individual potentials. Nakamura et al. (2009) provided in-depth accounts of the highly influential impact of mentors who exhibited pro-social behaviors, and who regularly used strengths such as honesty,

integrity in their daily work throughout their careers. Alongside Rathunde (1988, 2001)'s studies of the complex parent-child relationships over time, Nakamura et al. (2009)'s studies provide support for the fluid and dynamic nature of optimal experience – notably the relational and evolving processes (re)occurring over time. Hence, flow experiences facilitate human development through creating the capacity to experience a particular relationship with other people and the surrounding environments. They enable ‘an active and alert commerce with the world; at its height signifies complete interpenetration of self and the world of objects and events’ (Dewey, 1938, p.19; Rathunde & Csikszentmihalyi, 2006).

However, few studies have empirically tested the specific nature and relationship between flow at work and other developmental constructs over periods of months or years. A potential reason for the lack of quantitative research over extended periods of time is the widespread reliance on Experience Sampling Methodologies (ESM; Hektner, Schmidt, & Csikszentmihalyi, 2007) that dominate the flow literature, which have aimed to study the context and content of flow experiences over short periods of time (Delle Fave, Bassi, & Masimini, 2011; Nakamura & Csikszentmihalyi, 2005). While these studies and methods are important as they provide a map (or outline) of daily optimal experiences (Hektner et al., 2007), they are also limited in terms of understanding how flow and broader engagement processes unfold over longer time periods. The collection of empirical data that targets questions about the specific nature of flow in contexts where adults typically flourish over extended periods is comparatively fewer.

Moreover, despite the frequent use of quantitative methods in flow research, only a few studies have utilized sophisticated modelling and testing of the dynamic process inherent in flow experiences. Among these are the studies undertaken by Ceja and Navarro (2009, 2011, 2013) in

their use non-linear dynamical systems approaches (NDS). Ceja and Navarro (2011) showed that flow experiences among a sample of working adults ($N = 60$) showed non-linear or chaotic dynamics for 75% of the sample. Their modelling techniques manage to clarify important aspects of the terrain of being ‘in flow’ (Nakamura & Csikszentmihalyi, 2005) among workers. Their research also highlights the importance of employing sophisticated modelling and analytic techniques to study important flourishing processes- such as flow states- based on theoretical foundations and over a three-week period. Rather than studying flourishing process over a relatively short period of time, this dissertation investigates the longer – term optimal development trajectories across months and years.

1.4 Optimal development and flourishing among working adults

The question of what constitutes a ‘good life’, according to optimal experience theory, are experiences of full involvement in the present moment and complete absorption in *what one does* (Nakamura & Csikszentmihalyi, 2003; 2005). The flow concept is at the centre of eudaimonic perspectives of human flourishing that view it ‘as an ongoing process, stressing the importance of personal goals and meaning-making, rather than pleasure and enjoyment in the attainment of a good life’ (Delle Fave et al., 2011, p. 8). In contrast to hedonic perspectives of happiness, these authors suggest that central to flourishing are integrated and meaningful life experiences (Keyes, 2003, 2016; Ryff, 2018; Waterman, 1990). Furthermore, flourishing is often thought of as a state, and much like a majority of thinking on the flow concept (Nakamura & Csikszentmihalyi, 2005), that occurs over days and weeks. However, it is arguably also relevant to investigate the flow dynamics over extended periods of time such as months and years – namely the flourishing processes across the lifespan, especially during middle adulthood (Nakamura, 2011; Rathunde, 2015, Rathunde & Isabella, 2017). A clear need exists of research

that considers behavioral, affective, and cognitive experiences over time that provide indicators not only of flourishing states, but also flourishing trajectories.

To this end, this thesis specifically focuses on authentic engagement, based on the investigations thus far undertaken on ‘authentic alignment’ (Csikszentmihalyi, 1996; Gardner et al., 2001, Nakamura et al. 2009) of working adults throughout their careers. Carried out on a subset of working adults (largely academics and scientists), these studies examine successful individuals as they engaged in work that upheld the highest of moral and ethics standards - or ‘good work’ (Gardner et al., 2001).

1.4.1 Good work as the core to flourishing and human development

Work is a central part of life for the majority of adults throughout the world. Work provides income and means for survival, but also can fulfill other needs such as allowing relationships with others, can provide a sense of purpose and identity, and allows people to productively contribute (Csikszentmihalyi, 2003, Nakamura et al., 2009). Noteworthy to the present dissertation, Gardner et al., (2001)’s conception of good work good-work concept is a central theoretical guide to the development of the flow and vital engagement over extended periods across the lifespan. However, it is acknowledged that *good work* is a multidimensional concept - that, in addition to focusing on *good work* also emphasises the *quality* of work (namely an “excellence” dimension). The latter however is not the central focus on the dissertation. The focus in this dissertation is on practical work activities that occur on a daily basis – namely arguing that frequent flow related experiences are evident in highly diverse job roles and education levels (Delle Fave et al., 2011) namely: in those who are seeking employment; individuals that suddenly lose their job; employees that transition from work to retirement; each

of which is associated with a variety of mental, physical, and financial negative outcomes (see also Kasl & Jones, 2000).

When considering the role of work within a broader perspective of optimal adult development, a distinction can be made between employment – working simply for the sake of earning an income and fulfilling basic needs – and good work – defined as ‘whatever advances development by supporting the fulfillment of individual potentialities whilst simultaneously contributing to harmonious growth of individuals and groups’ (Gardner et al., 2001; p. 244). The focus of this dissertation is to differentiate these via arguing for the centrality of involving the ‘whole self’ of the working adult (Kahn, 1990, p. 692) - namely the virtuous involvement of the working adult with the existing culture (cf. Nakamura & Condren, 2018).

Human flourishing, especially from eudaimonic and neo-Aristotelian perspectives (see McKenna & Biloslavo, 2011), is said to be a process of virtuous self- development (or a teleology of the self, Nakamura & Csikszentmihalyi, 2005). Rather than just advocating for just the process of *techne* (practical skills development), it is the role of educational or work institutions to be develop *phronesis* (insight, experience and wisdom, see Nyberg, 2008; McKenna & Biloslavo, 2011) among individuals. McKenna and Biloslavo (2011), for instance, argued that schools have the responsibility to effectively teach the skills to deal with ‘uncertainty, mutability and duality of everyday life’ (p. 691). Rathunde (2015) contended that educational staff should have a requisite understanding, personal experience and cultivated flow experiences alongside ongoing authentic involvement within the process of lifelong learning and identity development (see also Csikszentmihalyi 1982). Relatedly, Gardner et al. (2001) suggested the important ethical frameworks that exist in both the field and domains of knowledge, and the social responsibility for ‘good work’ in the rapid changing environments of

science and journalism (among others). Moreover, Nakamura et al., (2009) considered the particular contexts needed for optimal developmental trajectories of young professionals and their mentors. In summary, the above research points to the integration of both individual and institutional factors that provide the conditions necessary for individuals to flourish, especially from an early part of one's career (see also Csikszentmihalyi & Schneider, 2001; Nakamura et al., 2009).

It is also noteworthy that from optimal experience theory, the process of flourishing is considered to be fluid, dynamic and exhibiting a mutually beneficial relationship between agentic and cultural factors (Csikszentmihalyi, 1990; Nakamura, 2011; Rathunde & Csikszentmihalyi, 2006). In a similar vein, Aristotle's viewpoints on the 'golden mean' implied the contextually bound dynamic process of self-development, nearly 2500 years ago (Aristotle, 1976; Csikszentmihalyi, 1990; Linley, 2008). Over the past several decades, efforts to understand, conceptualize, and operationalize flourishing (Keyes, 2016) have resulted in more in-depth focus on factors related to a meaningful self-development across the lifespan, in concordance with the developmental challenges at each life stage (Tse et al., 2019). Moreover, according it has been argued that flow is conceptualized as a 'virtuous activity can be thought of as an example of flow because it is an unforced expression of the person's reasoning and feelings, in harmony with the rest of her character and structured system of goals' (Annas, 2008, p. 30; see also Dell Fave, et al, 2011).

Similarly, the *teleology of the self* (Nakamura & Csikszentmihalyi, 2005) is regarded as the process of *expressing* central aspects of the self, postulated to occur on moment-to-moment (or daily) basis, and in constant negotiation with contextual factors (see also Csikszentmihalyi & Rathunde, 2014; Rathunde & Csikszentmihalyi, 2006). Hence, the journey of identity

development is regarded as central facet within flow theory (see also Rathunde, 2015). Moreover, meaningful flow experiences are also said to assist in human development, based on capacity for ‘an active and alert [*and meaningful*] commerce with the world; at its height signifies complete interpenetration of self and the world of objects and events’ (Dewey, 1958, p.19, italics added; Dell Fave, 2009; Nakamura & Csikszentmihalyi, 2005). In this vein, this thesis focusses on moments when working adults are harnessing their best selves- namely their ability to use their character strengths in broad aspects of their lives and the relationship with flow at work over an extended period of time.

1.4.2 Strengths use and flow at work among working adults

Whilst various definitions and conceptualization exist of human talent and strength exist (see Biswas-Diener, Kashdan, & Minhas, 2011; Niemiec, 2017), this thesis defines a strength as a ‘pre-existing capacity for a particular way of behaving, thinking, feeling that is authentic and energizing to the user, and enables optimal functioning, development and performance’ (Linley, 2008; p.9). Peterson and Seligman (2004), in their landmark work on the classification of human strengths advocated for the idea now widely known as the recurrent practice virtuous actions (see Nakamura & Condren, 2018) – namely the contextually and ethically responsible use of one’s best self. To be authentic, the ongoing application of character strengths implies both individual and contextual level conditions which are simultaneously occurring, navigating changes that occur externally to maintain a sense of being true to oneself internally. The energizing experience of strengths use occurs in part due to the social benefit which they can provide (see Peterson & Seligman, 2004). For instance, the characteristics that are central to an optimal relationship between mentor and mentee were relational and contextual in nature (Nakamura,

2011) - suggesting the vitality benefits of character strengths development in culturally supported ways (see also Ighilleri, Riva, & Riva, 2014, Nakamura & Condren, 2018).

With the above as the underlying framework, I focus in this dissertation specifically on the use of one's strengths, rather than simply knowing of possessing knowledge of one's strengths (e.g., Govidji & Linley, 2007; Wood, Linley, Maltby, Kashdan, & Hurling, 2011). Indeed, while studies find various positive wellbeing outcomes correlate with knowing or learning about one's strengths within the educational, health, work and societal spheres of everyday life (Donaldson, Csikszentmihalyi, Nakamura, 2011; Niemiec, 2017) strength knowledge arguably is more relevant to short term interventions, in which the study hopes to find an increase in states of wellbeing before and after learning about one's strengths (see Peterson & Park, 2011). When considered as part of broader patterns of optimal development, self-knowledge alone is insufficient; it also depends upon how that self-knowledge impacts upon one's cognitions, emotions, and (flexible and virtuous) behaviors (see Inghilleri, 2014). Successful navigation of individual and contextual factors requires recognizing one's strengths, recognizing the ever-changing characteristics and requirements of a situation, and applying one's strengths accordingly. For instance, an early positive psychology intervention study found that it was the process of using character strengths in different ways on a daily basis that had the strongest effects on positive outcomes over a six month period (Seligman, Steen, Park, & Peterson, 2005). Similarly, Csikszentmihalyi (2014) suggested that patterns of symbolic interaction of individual and their cultural contexts were facilitated by a 'problem or set of problems, which the person wishes to solve above everything else and the means the person find to achieve a solution' (p. 83) – otherwise known in flow theory as a *life theme* (Csikszentmihalyi & Beattie, 1979) . The solving of these life (and work) problems occurs best from knowing one's

character strengths in combination with the continual process of harnessing them in virtuous ways (Nakamura & Condren, 2018; Rathunde, 2015).

In their research on good work and mentoring, Nakamura et al. (2009) provided evidence for the highly influential nature of character strengths as ‘integrity’, ‘honesty’, ethical conduct and social interconnectedness. Specifically, individuals who were routinely exhibiting these strengths were influential of other individuals and social context across several generations of employees in different educational institutions. The current dissertation argues that the future of a domain of knowledge or work profession is highly dependent on individuals’ ability to harness the best in themselves in an authentic way. Further, as detailed in the next section, I argue that it is through the continual process of strengths use (or self-development) via the flexible interaction with contextual challenges that arise throughout the lifespan (Inghilleri, 2014; Nakamura & Csikszentmihalyi, 2005; Rathunde, 2015) that vital engagement occurs.

Vital engagement involves the sustainability of flow experiences in authentic and meaningful ways, through repetitive actions and practice of virtue, manifested as strengths in action (Nakamura & Csikszentmihalyi, 2003). Within this thesis, flow at work is viewed as a capability (see Senge, 2006) of an employee that, in order to be beneficial, needs to occur alongside specific contexts, behaviors, and cognitions. As such, I propose in this dissertation the need for a contextually-specific adaptation of flow that provides flexibility for an individual to navigate circumstances and contexts to maintain a sense of wellbeing. This can only be studied over periods of time that extend beyond a few days or weeks. I suggest that the process of flourishing among working adults should be investigated over long periods in order to understand the exact nature and magnitude with flow at work experiences across a period of months and years. To enable the study of processes over time, it is practically necessary to

constrain the contexts under study, to be able to identify the opportunities and challenges that promote or limit optimal functioning by individuals.

For the purposes of greater clarity in this dissertation, I highlight several key points. Firstly, the focus of the research was within a school context, and the process of work as it unfolds for school staff. Secondly, I wish to make a remark regarding the way strength use was conceived and measured in this project; herein meant to be indicative of the virtuous application of capacities that may or may not be inherently virtuous (i.e. the skill relevant to a domain). This conception is more aligned with Linley (2008)'s strength use model- with its scope broader than just character strengths to include what he termed 'strengths of everyday'. As a general strength use measure (as per Linley, Nielson, & Biswas-Diener, 2006) was made use of in this project, it's the virtuous application of *daily* strengths – whether or not they are virtuous. That is, it is the virtuous application of capacities that may or may not be inherently virtuous. For example, a leader in an organization may be highly competent at managing her time well, and consequently her co-workers feel highly safe in her office and trusting whilst discussing personal concerns. That is, time management is not virtuous, but it is the virtuous application of things that the leader of the organization is good at and assists to help those around her (to potentially share trust and honesty which are virtuous) over months and years of her career.

Furthermore, I note that the strength use measure (i.e. Strengths use scale', Govindji & Linley, 2007) utilised in this project was not developed to tap into virtuous action. However, the context in which people were completing the measure meant that their concept of strengths was the Virtues- in- Action model (Peterson & Seligman, 2004) - meaning that the application of virtuous was frequently discussed and encouraged within the school context. Hence, the measurement in the current project is the use of strengths – which is dependent upon the people's

literacy around what that means, and the context of the school. One reliable way in which the strength literacy was facilitated by teachers and pastoral care workers at the school was by making culture wide changes encouraging virtuous application in both staff and students (see Green, Oades, & Robinson, 20011). Other examples have clearly pointed to the importance of both strengths and virtues literacy and context (Kern, & Benecchi, 2019). Here, and throughout the dissertation, I make the argument that the contextual factors associated with workplaces are key to individuals being able to apply their best self in ways which are appropriate to the daily challenge and opportunities – implying that more than just character strengths are necessary to flourishing and that routine daily challenges, especially those of a relational nature.

1.5 Vital engagement among working adults: A sustainable flourishing process

I propose that the pathway toward virtue and flourishing across extended periods is grounded in one's capacity to express one's best selves in flexible, enjoyable and virtuous ways. Sustaining optimal experiences and functioning across the lifespan occurs alongside 'authentic alignment...[where]...personal aspirations are consistent to the enduring values of the domain, the current roles and institutions in the field, and the interests of various stakeholders' (Gardner et al., 2001, p. 219). Similarly, Nakamura (2001) suggested that *vital engagement* is characterized by 'an absorbing and meaningful relationship between the self and the world' (p. 1). This relationship between a person and their world arguably is impacted by a multitude of contextual factors that occur at work, at home, and across different domains of life. Moreover, I suggest that working adults potentially interact with different levels of cultural information, including the values of any given domain and the current field of work (Gardner et al. 2001). For this reason, for an employee to experience vital engagement, the self-environment fit required

across various life situations (e.g., work, leisure, family) requires more than just ongoing flow experiences, which are neither sufficient nor in most cases even possible. The experience of flow is an important element of vital engagement, but it needs to be contextualized within a broader sense of significance and the efficient investment of attention and energy on a daily basis within meaningful and enjoyable activity (Nakamura, 2001; Nakamura & Csikszentmihalyi, 2003).

In spite of detailed accounts of vital engagement, based upon interviews with working adults that have made significant impacts within specific careers (e.g., journalism, genetics), to my knowledge, no previous studies have specifically modelled and tested vital engagement as a measurable construct. Much of the research on positive engagement that has modeled engagement-related constructs has been affective and behavioral in nature (see Bakker & Oerlemans, 2019; Langford, 2009; Stairs & Galpin, 2012). For example, one of the most commonly used models defines workplace engagement in terms of three psychological components: dedication to the organization, absorption in one's work, and vigor (Schaufeli et al., 2012). I suggest that the concept of vital engagement goes a step further than the majority of other conceptualizations of engagement among working adults, adding the capacity for a sense of vitality and meaning in life, and longer term sustainability of daily engagement (of flow) experiences. Further, vital engagement emerges through the process of developing toward complex personhood across the lifespan (Csikszentmihalyi & Rathunde, 2014) - conceptualized within this dissertation as the capacity to use one's strengths in diverse life domains.

In this thesis, as detailed in Chapter 2, I test a four-factor model of vital engagement (Chapter 6), comprised of strengths use, frequent flow experiences, a subjective sense of vitality, and the presence of meaning in life. The rationale for this model is as follows. Firstly, the coalescence of flow experience and the construct of meaning has been a critical part of flow

theory and research (Csikszentmihalyi, 1990; Delle Fave, 2009; Nakamura & Csikszentmihalyi, 2003). The process of experiencing a sense of meaningful purpose alongside flow experiences facilitates the ‘evolving self’ (Csikszentmihalyi, 1993) – with the coincidence of meaning and flow experience being regarded as the core of vital engagement (Nakamura, 2001; Nakamura, 2014). Secondly, particularly from a positive human development viewpoint, individuals who strive to return to flow experiences benefit both the individual’s capacity to overcome development challenges and the trajectories of others and the environment around them. Thirdly, at the core of the self is the capacity to harness one’s best self – or the real me who I was always meant to be (Linley, 2008; Linley & Harrington, 2006; Rathunde, 2015). Lastly, the experience of effortless attention (Csikszentmihalyi & Nakamura, 2010; Nakamura, 2001) - whilst engaging in activities throughout daily life- underpins the sense of subjective vitality proposed in this dissertation. That is, in order to engage in a domain of practice during both the difficult (e.g., anxiety, boredom, apathy) and compelling (e.g., flow experiences) periods, one requires frequent and high energy levels in order to sustain effort and efficient attentional processes (Csikszentmihalyi, 1990; Csikszentmihalyi & Nakamura, 2010; Debus, Sonnentag, Deutsch, & Nussbeck, 2014). Evidence shows that the relationship between flow at work and vitality is carried on throughout the day and throughout their evening (Demerouti, Bakker, Sonnentag, & Fullagar, 2012), but that workers often need to feel recovered from the previous day and have energy at the start of the day for ‘making flow happen’ (Debus et al., 2014, p. 2014).

Thus, in this thesis I operationalize good work in terms of vital engagement, particularly within the work context, as a process that unfolds over time of character strengths use (behavioral), subjective vitality (volitional), flow at work (experiential), and meaning in life

(existential) components. These come together not only as states experienced at one point in time, but dynamically over time, resulting in flourishing or languishing trajectories.

1.6 Key contributions of this dissertation

This thesis acknowledges the relevance of, and further research into, optimal developmental processes as they occur in facilitative contexts - where opportunities for flourishing exist among professionals that strive for self-development. Consequently, the current investigation among a sample of school staff is argued to have potential contribution to human development, given the considerable impact of educators and mentors have on younger adults and the community in general (Csikszentmihalyi, 1982; Delle Fave et al., 2011; Massimini & Delle Fave, 2003; Nakamura et al., 2009; Rathunde, 2015). Moreover, and specifically to flow research, studies utilizing sophisticated modelling and analytic techniques have rarely been undertaken, and none currently exist that empirically examines these constructs over a period of years. Additionally, despite the theoretical and qualitative support for the vital engagement construct, no previous studies have proposed and tested a 4 - factor model comprising of strengths use, subjective vitality, meaning in life, flow at work experiences.

This thesis includes a focus on developmental processes as they occur in a highly relevant and socially significant sample (school staff) who were followed across five time points over a three year period. Such data are hard to collect but creates new opportunities to study flow and vital engagement over time. Whilst historically ESM studies of flow occur over days and weeks (Hektner et al., 2007) this dissertation undertakes the modelling and analytic techniques over months and years – a research focus not often been employed within flow, educational, organizational or lifespan development fields. I test existing theoretical assumptions of both flow and vital engagement across longer time periods and focus on a working adult

population. Additionally, I empirically consider vital engagement as an extension of flow research – a construct that has been discussed theoretically, but not tested empirically.

1.7 Thesis overview

There is growing consideration on the nature and quality of work experiences play in peoples' wellbeing, and especially ways to build and support wellbeing and workplace engagement. While studies might look at factors that correlate with engagement or wellbeing, little is known about the processes of how an authentic alignment (or vital engagement) unfolds over time within the workplace environment. The central claim of this thesis is that flow and vital engagement among working adults are suitable constructs to study 'good work' (Gardner et al., 2001), 'good work life' (Salanova, Bakker, Llorens, 2006) and will assist our understanding of agentic and contextual factors of positive adult development (Nakamura, 2011).

The overall aim of the thesis is to examine the natural occurring developmental processes among working adults- with a specific focus on sustained flourishing over a period of months and years. I attempt to contribute to the empirical research through: i) a meta-analytic examination of the contextual factors that are relevant for flow at work to have positive benefit (ii) the investigation of the relationship between strengths use among school staff and the experiences of flow at work – stipulating that a dynamic relationship exists over time; and iii) developing and testing a model vital engagement, which comprises strengths use, subjective vitality, the presence of meaning, and frequent work-related flow experiences. The empirical studies examine data from an independent K -12 school in New South Wales (NSW), Australia.

1.8. Structure of the Thesis

Chapter 2 details the epistemological, theoretical, and methodological foundations of the research undertaken. Chapter 3 details the meta-analysis of research on flow at work undertaken

over the last 30 years, with the aim of providing specific information about the ‘why’ and ‘how’ of flow experiences this time period. We observed the highly contextual nature of flow experiences and observed a distinct lack of research in examination of strengths use and flow at work among working adults.

Based on the findings in chapter 3, Chapter 4 provides the methodology and approaches utilized to develop and test the developed models from for the use of archival dataset collected among a panel of staff at an independent K-12 school in NSW (Australia) over a 36- month period (baseline $N = 327$) that was in the process of undergoing culture wide changes to align itself with positive tenants arising from applied positive psychology paradigms. As per the core tenants of optimal experience theory and the process of psychological selection, we argue that context is highly relevant because it facilitated both contextual changes in the policies and procedures of the school context and the encouragement of agentic developmental factors such as strengths use. We then describe the process of developing and testing key models using archival data.

Based on the conceptual foundation of flow theory and psychological selection, the next two chapters detail the two empirical studies undertaken. Specifically, Chapter 5 details an empirical investigation aimed to specify the magnitude and direction of flow at work and strengths use across five time points and a period of three years among staff at an independent K-12 school in New South Wales, Australia. A central finding in this study is the highly contextual nature of sustained optimal experiences. Building on work from Chapter 5 suggesting the highly contextual nature of flow experiences, Chapter 6 details the priori theory, development and testing of the vital engagement among the same population. Initial support was established for the vital engagement model, as a construct that emerges from the four components and is

relatively stable over time. In Chapter 7, I bring together the different parts, discussing how the dissertation fits within and contributes to the broader literature, discussing results, detailing key conclusions, and considering implications for future research and practice.

Chapter 2 Overview:

This chapter overviews the theoretical and empirical arguments that guide this research into flow at work and vital engagement among working adults. Broadly, the current chapter aims to establish the epistemological, theoretical, and methodological foundations to the modelling and analysis of the empirical and longitudinal data in this research. It is argued that work is a critical part of flourishing and that the optimal experience theory and research is a substantiated way to examine optimal human development. Among the topics covered within this chapter are the evolutionary systems perspective on human development and an experiential perspective on flourishing over time. A definition of flourishing is presented. Finally, an operationalization of vital engagement is provided, with the rationale for conceptualizing the constructs as the combination of flow at work, strengths use, subjective vitality and meaning in life.

Chapter 2

Epistemological, theoretical, and methodological foundations

2.1 Introduction

In this chapter I describe theoretical foundations for this dissertation and the rationale for the methodologies utilized. I begin by identifying the need that this dissertation addresses – namely that work is a critical part of adult life, and yet many working adults are disengaged with their work, undermining an optimal developmental trajectory. I next outline the underlying epistemological frameworks, theories, and perspectives of the dissertation, which include an evolutionary systems perspective, an experiential perspective on flourishing, with specific examination of flow experience within daily psychological selection, and lifespan perspectives on optimal human development. I highlight the need for a developmental perspective of flourishing, which extends beyond single time-limited states to encompass the trajectory that a person traverses across adulthood. To begin to understand and support adult flourishing, I focus specifically on the work context, which comprises a significant portion of adult life, and thus navigating this well is critical to healthy development. Within the work context, I focus on the experience of, conditions surrounding, and outcomes associated with engagement (i.e., authentic alignment with the field and domain of the chosen profession), beginning with the experience of flow, and then expanding to the broader concept of vital engagement. I then highlight the need to consider flow processes across broad time periods. Moreover, I propose that optimal experiences occur in combination with other aspects of the person and within the everyday experiences and changes that modern-day employees encounter (i.e. within real world settings). I end with implications of these theoretical foundations for the approaches used within this dissertation,

which include a meta-analysis of existing research identifying correlates of flow at work (chapter 3), dynamic associations between flow at work and strengths use over a three year period (chapter 5), and the proposal and testing of a vital engagement model (chapter 6).

2.2 Work as a critical part of healthy human development

Despite flow being reported as occurring more often at work than during times of leisure, employees have historically reported wishing they were doing something else whilst at work (Csikszentmihalyi & LeFevre, 1989). One possible explanation is that despite the positive effects of flow experiences, large surveys demonstrate that between 35-42% of individuals have ‘never experienced states of intense absorption that they lost track of time’ (Gallup Poll, 1998; Nakamura & Csikszentmihalyi, 2005, p. 98) – a crucial aspect of optimal experience and development. An even greater percentage have only rarely experienced such feelings. This lack of flow experiences may contribute in part to the extensive levels of disengagement occurring in workplaces worldwide. Indeed, Gallup (2017) estimates that 85% of employees worldwide are not engaged with their job – and 18% are actively disengaged. Such workers are at risk of leaving the organization, and are at greater risk of physical, mental, social, and financial difficulties.

The lack of engagement reported by workers is concerning, considering the significant portion of the adult life on a daily basis and across the lifespan invested in employment, with the average adult spending an estimate of one third of their life working (World Health Organization [WHO]; 1994). Work plays in critical role in one’s health and wellbeing across the lifespan (see Donaldson, Csikszentmihalyi, Nakamura, 2014; Tse et al., 2019). Work provides a source of income to support meeting one’s basic needs, which is crucial for maintaining physical health. For many working adults, the relationship between identity and occupation is very significant

(see Csikszentmihalyi, 1996: 2003; Delle Fave et al., 2011; Rathunde, 2015). Moreover, Nakamura, (2011) argued that optimal human development across the lifespan cannot ignore the need to address the working period as part of the process of that development - central perspectives assisting with the formulation of the process of flourishing, or flow and vital engagement over time in this dissertation.

2.3 Theoretical perspectives on optimal experience and functioning across the lifespan

I draw on several different theories and perspectives to inform the arguments, which are detailed below. First, I draw on an evolutionary systems perspective. To study the optimal developmental process among working adults, I was guided by the previous writing on cultural evolution as ‘the transformation of cultural resources for individual and collective action’ (Nakamura et al., 2009, p. 223). These writings suggest that the evolutionary process of ‘transmission’ should be examined from a systems perspective (Csikszentmihalyi, 1988). In this dissertation, I apply that perspective to the domain of good work (Gardner et al., 2001), with consideration of the teaching and mentoring relationship contexts (Csikszentmihalyi, 1982; Nakamura et al., 2009). Work is a good example of the relational process that occurs between individual and cultural context (such as educational system). Moreover, multiple research efforts have been guided evolutionary systems perspective on the role flow experiences on identity and cultural evolution (Csikszentmihalyi & Massimini, 1985; Massimini & Dell Fave, 2003; Delle Fave et al., 2011; Nakamura et al., 2009; Rathunde, 2015).

Second, I consider flow experiences within daily psychological selection and lifespan perspectives of development. The ideas of ‘lineage signature memes’ by Nakamura et al. (2009) - which are a distinctive set of values and strengths which are unique to a mentor (or educator) and the field and domain in which they practice and are applied often, and exhibit an

‘intergenerational transmission’ trajectory over time (p.122). Relatedly, Rathunde (2001) provided the details of sustaining ‘continuity and change in the undivided interest in the context’ (p. 168) of families where flow was commonplace. The strength of his study was that it was a longitudinal examination of a complex process of flow experience within an important context, and how it may be sustained over time. In a similar vein, the present dissertation pursued a greater understanding of the relationship between flow and character strengths use (i.e. signature memes) over several years.

Both on a daily basis and over an extended period such as months and years, the process of psychological selection occurs (at its most influential) during optimal experiences (Hektner, Schmidt, Csikszentmihalyi, 2007). Further these authors stipulate that optimal experiences are ‘subjectively perceived in the interaction with the environment’ (p.20). These individuals process of meaning making over the lifespan (Kegan, 1994) are also a central facet of eudaimonic wellbeing (Huta & Waterman, 2014; Waterman, 1990). It hence seems important for research to ‘use of tools of empirical investigation – including available technologies, research designs, and statistical analyses’ (Hektner et al., 2007; p. 6) of daily experiences. Consequently, the current dissertation aimed to investigate flow and vital engagement over a period of months and years, instead of days and weeks -potential shedding light on the conditions and mechanisms of the important indicators of flourishing and optimal development.

2.3.1 An evolutionary systems perspective on human development

Regardless of how culture is defined, culture influences the totality of a person’s learned, accumulated experience (Csikszentmihalyi & Rathunde, 2014; Delle Fave et al., 2011; Inghilleri, 1999, 2014). A *person* can be construed as a socially constructed entity who depends upon the ongoing interaction between the self and the surrounding environment (Csikszentmihalyi &

Rathunde, 2014; Nakamura & Csikszentmihalyi 2005). From this perspective, optimal development occurs when this interaction is navigated well. An individual who routinely and successfully negotiates the fit between personal capacities and the challenges present in their environment would be expected to experience a greater number of optimal states, which have been represented in some of the literature as the experience of flow and vital engagement in work or life (Nakamura & Csikszentmihalyi, 2003). Moreover, those who are vitally engaged throughout their lifetime potentially may positively impact the developmental trajectories of others individuals, thereby impacting on knowledge and behaviors that are passed on to subsequent generations (Nakamura et al., 2009). For instance, Rathunde (2001)'s longitudinal investigation of parent-child dyads over a 2 year period showed that parents that were able to provide both support and challenge were also linked with the child's 'development of undivided interest, or a synchrony of positive moods while engaging important goals' (p. 158) – implying the importance of optimal interactions within the key attachment relationships across longer periods of time.

However, the context alone is insufficient, as a person's experience of and interpretation of those contexts also impacts upon behavioral expression across the lifespan (Ighilleri, 1999: 2014; Rathunde, 2015; Rathunde & Csikszentmihalyi, 2006), but the context enables and/or limits the behaviors that are expressed, perceptions of what is acceptable, and opportunities available (Nakamura, 2011). Workplaces are arguably microcosm of broader cultural systems (Gardner et al., 2001), and this dissertation specifically considers flow, engagement, and developmental processes within the work context. The current research project thus provides potential avenues for investigating flourishing as part of one's developmental trajectory across adulthood. The argument made here is that this process revolves around exhibiting more frequent

psychologically and behaviorally flexible repertoires of personhood and experiencing flow states frequently and sustainably across the lifespan. The bi-directional interaction between aspects of the individual and their environment (Nakamura, 2011, Rathunde & Csikszentmihalyi, 2006) is one specific interest in this dissertation.

Practically, the full consideration of dynamic factors unfolding across contexts could not be addressed through available research data. From a systems perspective, boundaries around what is included in any given investigation are necessary to make that investigation manageable, even while those boundaries are temporary and contrived by the researcher (Kern et al., 2019). Hence, the longitudinal and analytic approaches used in this dissertation were used specifically to examine the reciprocal linkage between flow experiences and strengths use, while excluding other relevant factors. The decision around what factors to include (i.e., where to draw boundaries around what was included) were informed by both prior research and the data available from the archival dataset used in the studies presented (see chapters 3 and 4). First, Salanova and colleagues have undertaken various studies in the last decade, and have proposed and tested reciprocal causation models of flow and personal and organizational resources both among workers (Salanova et al., 2006; Rodriguez-sanchez, Salanova, Cifre, & Schaufelli, 2011) and teams (Salanova, Rodriguez-sanchez, Schaufelli, & Cifre, 2014). These studies have been instrumental in the impetus to empirically investigate (and model) the process of ‘the self-regulative capacity to move toward optimal experiences by negotiating a better fit or synchrony with environment’ (Rathunde & Csikszentmihalyi, 2006; p. 481). The full investigation of school staff (see chapter 3 for details) included measures of strengths use and flow at work, consistently assessed across the five measurements occasions. Consequently, my proposal and testing of a bi-

directional model between strengths use and flow at work among school staff arose based on *a priori* theory, which was then adjusted to the data available.

2.3.2 Experiential perspective on flourishing over time

The flow concept originated from studies undertaken among various individuals whilst they were engaging in a particular activity, work or otherwise, and examine the ‘lived experience’ when activity engagement was going really well. (Csikszentmihalyi, 1975/2000). These studies resulted in the initial attempts to model flow states, which were thought to occur primarily when challenge and skill are equally met. These would result in states where the self-environment was operationalized– leading to the Channel model of flow (Csikszentmihalyi 1975/2000). Figure 2.1 (left) shows the model, which stipulates that flow is more likely to occur as challenge and skill meet. In the off-diagonal, too much skill with insufficient challenge results in boredom, whereas too much challenge with insufficient skill results in anxiety. The aim becomes working within the channel, deploying the appropriate skills based upon the contextual challenges. The information that the individual receives back from the environment (during the intense involvement process) and the ‘self becomes organized around the goals’ (Nakamura & Csikszentmihalyi, 2005, p. 91). Such is the depth of action and awareness that the individual loses a sense of ‘me’ (the known; self-consciousness) and becomes one with situation (or the ‘I’; Mead, 1931; see also Nakamura & Csikszentmihalyi, 2005). This is where ‘psychic energy’ is used most efficiently because of the process of ‘effortless attention’ (Csikszentmihalyi, 1990; Csikszentmihalyi & Nakamura, 2010) – given the experience is enjoyed only for the immediate rewards that are present. A key positive aspect of flow experiences are they facilitate ‘self-expansion’ (and vice versa; see Dean, 2009) – primarily leading the individual to feel like they have managed to go beyond previous level of performance (or authentic relationship) in a

meaningful way. These key aspects of flow theory share important similarities with eastern points of view on Mindfulness (defined as a attention that is paid with love and compassion) – the key difference being that when ‘in flow’ the participant has often described being carried by the flow of a river, where as mindfulness is a process of a kind of caring attention (requiring the practice of keeping one’s attention steadily fastened on an activity, whereas in flow attention is ‘effortless’). Perhaps the continual daily practice of caring attention (rather than an ‘effortful attention’ or forced and/or labored; see Csikszentmihalyi & Nakamura, 2010) in a virtuous way (via practicing mindfulness; Kee & Wang, 2008; Lefevre, 2012), whilst using one’s virtues and skills (Niemi, 2017), facilitates sustained optimal experiences across the lifespan within a domain of knowledge and a field of practice (cf. Nakamura & Condren, 2018; Nakamura, 2014). It is acknowledged that Although strengths are likely to lead to flow, they are not necessary for the skill portion. The need for high skill and high challenge are relative to the individual. Thus, even though I’m very good at chess, it can still be a flow activity if I find a challenge relative to my skill level. An example also are video games which do a highly effective job at adapting to find the right level for the individual even though it might not have anything to do with their strengths. However, in this dissertation I make the argument for the broader virtuous execution of capabilities that leads towards vital engagement and flourishing (see further below).

The notion of flow activities becoming ‘autotelic’ (or self-reinforcing; Nakamura & Csikszentmihalyi, 2005) highlights the importance of both daily and longer term vitality and meaning during the longer term practice skills and talents. Moreover, the psychological selection process that stems from, and assists with, these optimal experiences is both individually and culturally valuable towards either creating or maintaining innovations that are central to human survival and evolution (Delle Fave, 2009; Csikszentmihalyi & Massimini, 1985). Flow

experiences have hence been aptly described as ‘engine of psychological selection’ (Csikszentmihalyi & Massimini, 1985) in significant part due to its ‘dynamical nature’ (Ceja & Navarro, 2009, 2011, 2012) – namely that fluctuations over time are frequent to account for the patterns of the (personal) context and (external) environment. The present dissertation is to contribute to the current dearth of studies that empirically examine specific patterns and fluctuations of flow and other positive constructs over a period of months and years.

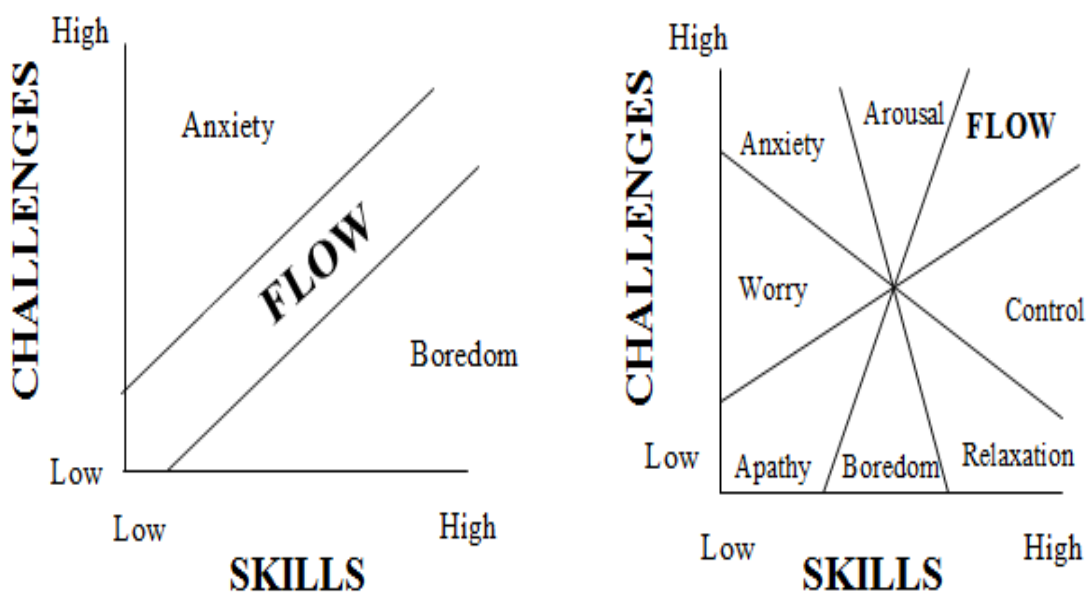


Figure 2.1. The Channel model of flow (Csikszentmihalyi, 1975/2000) on the left and the Experience fluctuation model (Csikszentmihalyi, 1988; Massimini & Carli, 1988).

In the years following the first qualitatively oriented investigation undertaken by Csikszentmihalyi’s (1975/2000) research team, researching flow states was overtaken by the considerable studies utilizing Experiential Sampling Method in various multi-cultural contexts (ESM; Hektner et al., 2007; Dell Fave et al., 2011). These studies suggested that flow often did not occur, even when there was a match between challenge and skill level. Consequently, the

model was refined into a broader Experience Fluctuation Model (EFM; see Figure 2.1, right), which suggests that rather than a flow channel, the experience of flow only occurs at both high levels of skill and challenge (Delle Fave et al., 2011; Massimini & Carli, 1988). As depicted in Figure 2.1 (right), the EFM suggests that flow experiences are one of seven (Arousal, Anxiety, Worry, Apathy, Boredom, Relaxation, Control) other moment-to-moment experiences that are proposed to occur, depending on interactions between the self and the environment (Delle Fave et al., 2011). The EFM model specifies the conditions for anxiety and worry, which can act as feedback mechanisms, that can help the act in ways that is based on one's values and best self.

These models were instructive for this dissertation in several ways. First, they discuss the idea of 'skills' as a way operationalizing the *self* in the self-environment interaction (Nakamura & Csikszentmihalyi, 2005). The proposal of incorporating strengths use as aspects of the self can potentially be viewed as a specific type of skill. The definition of skill has typically been quite broad – 'skills involved at handling the self and the social situation' (Csikszentmihalyi, 1990, p. 72) - which makes sense, given the theoretical notion that flow can occur in any situation and thus any skill can be used to potentially make it happen. There are at least two types of skills possible for a working adult: skills that have been learned through training as part of the work, and skills that are used in the work context but are part of the core parts of one's self. For example, an employee may learn the art of assertive communication as part of work related training and assistance, or just have the love of learning about people and have a tendency towards extraversion. The latter is clearly bringing a part of themselves which is utilized in various life contexts and a core part of who they authentically feel there are (see Linley, 2008).

Second, although multiple works suggest specific relationships between the self and the environment across the flow among working adult literature (Csikszentmihalyi 1997, 2003;

Gardner et al., 2001, Nakamura et al., 2009), studies that empirically investigate of strengths use as a form of expression of one's authentic self are relatively nonexistent. Similarly, Rathunde (2015) discussed the relevance of flow at work (of staff in schools) was crucial for staff member (and student) development, particularly in the role of development of their sense of identity and, authentic engagement across middle adulthood (see also Rathunde & Isabella, 2017). Most recently, Tse, Nakamura, Csikszentmihalyi (2019), specified aspects of the developmental model of flow to include other cognitive and behavioral responses over the lifespan – perhaps character strengths application is one such response. The benefits of examining strengths use as the behavioral aspect of optimal self-expression is that it not only conceptualizes strength use as fluid process that is always (re)forming but is also an opportunity to examine the process of authentic alignment with one's work.

Flow is considered to be a eudaimonic construct (Csikszentmihalyi, 1990; Delle Fave et al., 2011). While there are various ways in which eudaimonia has been discussed and operationalized (Ryan & Deci, 2006; Huta & Waterman, 2014; Heintzleman, 2018), this dissertation defines it as a human flourishing that occurs due to the ability to successfully apply the best self for 'good work' (Gardner et al., 2001) among adults over significant periods of time. That is, flourishing involves the frequent and longstanding experience of 'enjoyed absorption' (Nakamura & Csikszentmihalyi, 2003, p. 87) toward virtuous ends (Nakamura & Condren, 2018). From this perspective, by possessing and properly using one's intellectual, aesthetic, and moral virtues, the process of optimal experience and functioning occurs (Annas, 2008; Delle Fave et al., 2011, Nakamura & Condren, 2018). Hence, flourishing arises through the process of the ethical actions of courage, temperance, liberality, magnificence, magnanimity, gentleness, truthfulness, wittiness, friendliness, and modesty via the 'golden-mean' (Aristotle, 1976;

Csikszentmihalyi, 1990) – the importance of using the ‘right strength, to the right amount, in the right way, and at the right time’ (Linley, 2008, p. 58). Simply stated, I suggest that flourishing arises from the authentic engagement of an individual within their context.

This dissertation specifically focuses on the educational context. In describing the interplay between human processes of *thinking* and *doing*, Dewey (1950) suggested the significant role of social contexts in promoting optimal experiences and learning. Flow research has managed to model this fluid process in some detail (see for instance Ceja & Navarro, 2009; 2011; & 2012 for empirical accounts of the dynamics of flow). Moreover, some work has been completed on Dewey’s ideas on organic interaction and ‘reciprocal implication of the self and world in every experienced situation’ (Kestenbaum, 1977, p. 1). If one was to consider that self-efficacy (Bandura, 2001) is considered an expression of a core parts the best in a person, then the empirical examinations of the interaction of self-efficacy and flow experiences over time is one way of testing these theoretical presuppositions (see Salanova et al., 2006; Rodridguez- Sanchez, Salanova, Cifre, & Schaufelli, 20011). Relatedly, Delle Fave and Massimini (2003) contend that the process of teaching is as ‘relational activity par excellence’ (p. 335). That is, adults working in educational contexts have the capacity to both know and experience flow for themselves, and establish the contexts for others to do also – such that they model the *grandeur* of self-development and learning (Montessori, 1965; Rathunde, 2015). As such the implication between the fluid nature of flow experiences and the necessity of engaging core parts of one’s *selves* in work activities for educational staff during modelling the dynamics of ‘serious play’ (Rathunde & Csikszentmihalyi, 2006, p. 478)

Recent investigations of the causal relationship between mentoring and elevation provides support for the complexity of this process such that mentoring may result in elevation,

and that, in turn, experiences of elevation may have a future positive impact on mentoring process (Thomson, Nakamura, Siegel, & Csikszentmihalyi, 2014). Other studies have shown that flow at work and personal and organizational resources exhibit a bi-directional relationship with personal and organizational resources (Salanova et al., 2006), self-efficacy (Rodriguez-Sanchez, Salanova, Cifre & Schaufeli, 2011) and efficacious teamwork (Salanova, Rodriguez-sanchez, Schaufeli & Cifre, 2014). These studies provide support for my current argument regarding the formulation of the relationship between character strengths use – what I argue is defined as the skill of behavioral expression of personal strengths in virtuous ways (cf. Nakamura & Condren, 2018) -- in varied contexts (including at work) and the experiential aspects of optimal experiences during the process of negotiating the variability of self-environment fit across 6 to 12-month periods.

Moreover, individuals are ‘driven by the deep humanity of eudaimonia that is the basis of virtue, intelligence and reason enhances the person so doing and the lives of those around them’ (McKenna & Biloslavo, 2011, p. 673). Building on these perspectives and described in more detail in chapter 6, I suggest that an individual is vitally engaged if they can sustain self-environment fit that benefits the quality of their experience, the field they are working in, and the domain of knowledge within which these are nested in (Gardner et al., 2001). The vital engagement model developed within this thesis was in an effort to further understand the conditions of sustainable and ethical flow experiences among working adults.

Specific to the research project, the above is also combined with the subsequent review of the studies undertaken over the last 30 years on the various conditions of flow experiences across the lifespan. Among these, Kevin Rathunde’s important studies on the various conditions for optimal family interactions showed that adult-child relationships that contextual bound the

balanced activities that allowed for connection and separation of family are experiences as more enjoyable and interesting (Rathunde, 1988; 1997; 2001). These studies investigate family context as the central environment in which key interactions occur between adult and child and the conditions for flow experiences -- providing implicit support for the dynamic and relational nature of flow experiences among working adults. Other studies also showed that social conditions such as supportive mentorship (Nakamura, Shernoff, & Hooker, 2009) and opportunities for self-development (Inghilleri, 2014; Rathunde, 2015) were important supporting conditions of positive change through frequent and intense flow experiences. Csikszentmihalyi (1997) contended that flow experiences provide a valuable window for viewing the developing person. I agree with this viewpoint by arguing that a flourishing person undergoes the process of complexity via the intentional efforts to live at the very 'edge' of stability and change (p. 482). Given the various possible conditions possible for flourishing, and flow experiences among employees, this dissertation includes a systematic review and meta-analysis of flow experiences within workplaces.

2.3.3 Developmental process investigations over extended periods

A third foundation of this thesis is a lifespan developmental perspective on human development. While the flow at work literature has advanced our understanding of the importance of this experience (see Fullagar & Delle Fave, 2017), much of the work on flow has focused on states in which flow occurs, rather than as part of longer developmental trajectories. I suggest that as part of a broader developmental process, there is a need to consider flow experiences within the broader human experiential profile and contextual factors underlying human developmental experiences. The process of 'authentic alignment' (Gardner et al., 2001, p.

27) – characterized by clear personal goals and values, the capacity to find challenges in diverse contexts, the obstacles and ethical dilemmas, and generally the sense of authentic alignment in the profession chosen for working career- is a similar construct to vital engagement – a particular type of absorbing and meaning relationship with the world’ (Nakamura, 2001, p.5). When comparing vital engagement and authentic alignment, it can be argued that the former is broader and incorporates a type of relationship with the world (Nakamura, 2001) whereas the latter is more related to a profession and work role (only one facet of life).

From this perspective, vital engagement is an indicator of how an adult navigates the challenges of work life with the facets of themselves they use in all aspects of life over long periods. These core and authentic parts of the *selves* of personas are impacted by experiences, contexts, and perceptions, and necessarily need to be considered as part of longer-term developmental processes, adapted to the context of the person. According to the theory of optimal experience, the process of flow experiences reoccur in one’s life over the lifespan through ‘the self-regulative capacity to move toward optimal experience by negotiating a self-environment fit that integrated and differentiated, or a fit that achieves an optimally arousing balance of order and novelty’ (Rathunde & Csikszentmihalyi, 2006, p. 480). That is, individuals who successfully and flexibly negotiate the challenges that confront them might be expected to experience flow more often and develop in a more optimal manner. Whilst the trait component of flow experiences are present (i.e., the autotelic personality; Nakamura & Csikszentmihalyi, 2005) upwards of 75% of flow experiences are experienced due to the state based factors such as working conditions (Fullagar & Kelloway, 2009). Indeed, according to Rathunde and Csikszentmihalyi (2006), the developmental aspects of flow experiences arise from the sustained process of successful self-regulation and ceaseless process of cumulative development of key

aspects of oneself toward greater psychological complexity across the lifespan. Collectively, these viewpoints were fundamental in this dissertation, particularly the development of the models which proposed specific conditions in which flow and vital engagement occur over several years.

Further, human development is embedded within biosocial and cultural contexts and exhibits *genetic, epigenetic, behavioral, and symbolic variation* (Csikszentmihalyi, & Massimini, 1985; Jablonka & Lamb, 2014). Consequently, individual flourishing is arguably a virtuous process (cf. Nakamura & Condren, 2018) strongly intertwined within a set of cultural criteria of full personhood (Csikszentmihalyi & Rathunde, 2014). Hence, this thesis contextualizes sustained flow experiences within other eudaimonic constructs, including meaning in life, strengths use and subjective vitality. After all, both theory and research have suggested that flow is an ‘amoral’ experience, and that wellbeing or good work does not always result from striving compulsively to flow experiences (Delle Fave et al., 2011; Nakamura & Csikszentmihalyi, 2005). I suggest that sustained flow experiences of the individual are contextualized within the field of practice and professional domain of the working adult (Gardner et al., 2001; Nakamura et al., 2009) – but also encourage the individual to flourish in their lives across the lifespan. Based on this thinking on individuals’ experience and perception of self, field and domain in this dissertation, the examination of flow over sustained periods is contextualized within the process of longer - term ‘vital engagement’ (Nakamura, 2001, p. 5; Nakamura & Csikszentmihalyi, 2003, p.83).

Working contexts are arguable ‘micro-cultures’ when compared to the breath of human domains – providing an opportunity to model ways in which flourishing among working adults occurs. Schools for example, provide an example of the influence that they pose to cultural and

individual evolution (Delle Fave & Massimini, 2003; Rathunde, 2015) - namely through either supporting or preventing human agency to negotiate the developmental challenges inherent across the lifespan, especially during the generativity vs stagnation life stage (Erikson, 1950). Successful negotiation of the challenges within this life stage is said to require an ‘altruistic concern and creativity which many absorb their kind of parental drive’ (Erikson, 1968, p.138) and the use of such character strengths as Bravery, Citizenship, Kindness, Love and Perspective (Vaughan & Rodriguez, 2013). Moreover schools are places where opportunities for authentic self-development are inherent to the context and staff are typically drawn to this work due to a love for learning and/or desire to make a meaningful impact on students’ educational process and the field of teaching (Bassi & Delle Fave, 2012; Delle Fave & Massimini, 2003; Delle Fave et al., 2011; Rathunde, 2015). Investigating work-cultures provide opportunities for action that are based on developing core aspects the person within a work context.

2.4 Optimal evolutionary development in working adult

The research project within this dissertation is situated within the context of wishing to model the complexity of the flourishing process as it unfolds over time. Bringing the perspectives discussed in this dissertation together, Figure 2.2 illustrates the theoretical underpinnings of this dissertation. The different theoretical streams suggested intersect, resulting in optimal evolutionary development. Complex systems are said to ‘exist in the boundary between order and chaos and are most likely to evolve. They have acquired the ability to bring order and chaos into a special kind of balance.....where new ideas and innovative genotypes are forever nibbling at the edges of the status quo’ (Kaufman, 1995, p. 245). As illustrated in the figure, I emphasize the importance of an authentic and strongly engaging relationship between

the working adult and their context and environment, specifically the interrelationship between the individual and their cultural domain and field of practice (cf. Gardner et al., 2001).

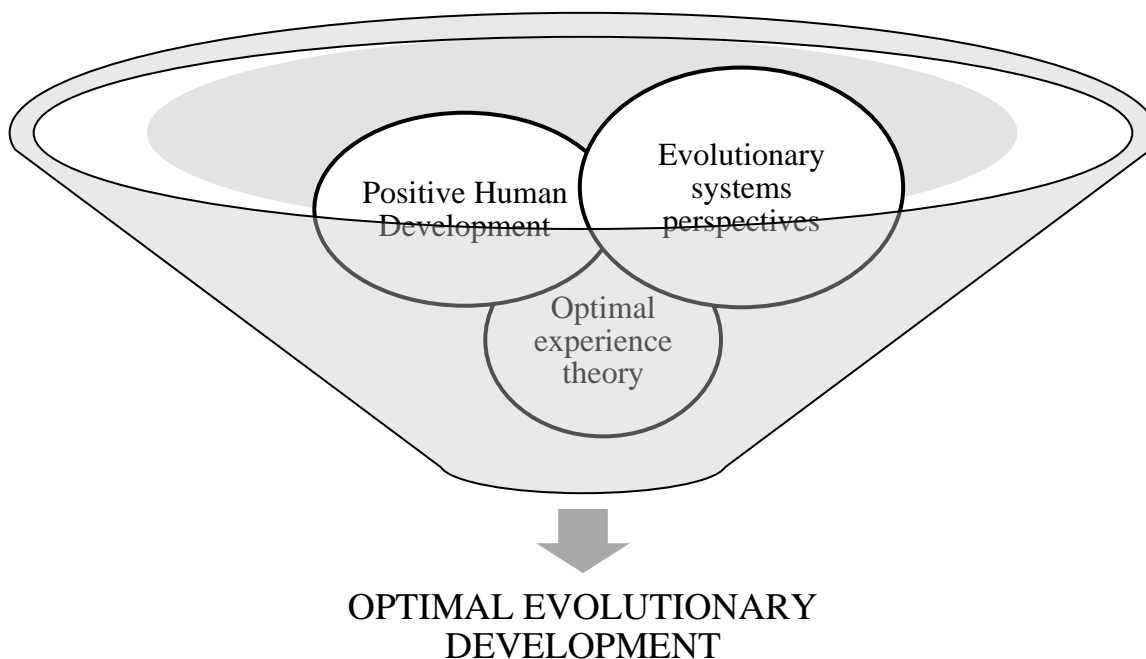


Figure 2.2 Theoretical underpinnings of the present research on flourishing processes over time

As noted above, the frequent experience of flow whilst at work is an important indicator of flourishing in the shorter and longer term. The importance of utilizing an ‘experiential perspective of human development’ (Rathunde & Csikszentmihalyi, 2006, p. 465) is the potential to guide formulation and testing of daily and routine conditions that can affect flourishing among working adults across the lifespan. That is, the possible consequences of these short-term positive experiences are positive both to the individual and their context – otherwise known as a ‘win-win’ within successful organizational change based on the interrelationship of employee and organizational advantage (Will, 2015). Moreover, it is arguably one of the most ecologically valid ways of understanding these naturally occurring contexts of everyday life. For instance,

Hektner et al. (2007) discussed ways in which human consciousness can and has been measured -- namely through thoughts, feelings, and sensations of an individual at various times both on a daily and weekly basis. Whilst previous studies are important in understanding how to sustain flow at work over short periods, they provide much less information about how to sustain flow over a period of months or years. The promise of investigating short-term positive constructs (i.e., experiences of flow at work), over extended periods of time (i.e., months and years), and its relationship with other positively oriented developmental constructs (i.e., strengths use, vitality, sense of meaning), is the furthering of our understanding of optimal human development. In large part, my dissertation was informed by Hektner et al., (2007) viewpoints and call for greater empirical research of short-term experiences (such as flow) over extended periods.

In this vein, the current dissertation focused on further understanding the empirical relationships between flow at work and other agentic and contextual factors within a real-world setting and among working adults. Centrally, the empirical investigation of an individuals' capability to 'wield a significant self-regulative control over attention, experience and growth' is a core part of systematic phenomenological thinking (Rathunde & Csikszentmihalyi, 2006, p. 471). Notably, Nakamura and Csikszentmihalyi (2005) describe the *emergent* nature of flow experience. That is, the inevitability of changes in contextual circumstances (thinking, feeling, physical events, environmental events) require ongoing cognitive (and behavioral) flexibility that result from the optimal interaction of individual and contextual factors (see also Inghilleri, 2014). Nakamura (2001) further argued for the importance of a relationship between self and world, immediate factors, felt significance and engagement over time.

Consequently, based on the above, I argue that a person who experiences frequent enjoyed absorption (Nakamura & Csikszentmihalyi, 2003), actively sustains their lived optimal experience via the capacity for expanding a meaning in life (Csikszentmihalyi, 1990; Delle Fave, 2009; Ighillieri, 1999), experiences a sense of daily vitality and energy (Demerouti, Bakker, Sonnentag, & Fullugar, 2012), and develops their identity (Csikszentmihalyi, 1990; Nakamura & Csikszentmihalyi, 2005; Rathunde, 2015), flourishes throughout the lifespan. However, the individual is not considered merely a passive receptacle of cultural information (transmitted largely from schools and workplaces; cf. Csikszentmihalyi & Nakamura, 2005). Instead there is a mutual benefit (or bi-directionality in effect) of contextual and individual factors, which are key to optimal experiences over extended periods- influencing the selection of biocultural information over time and across settings (Csikszentmihalyi & Massimini, 1985; Inghillieri, 1999: 2014; Massimini & Delle Fave, 2000).

2.5 Consideration of what is optimal across the lifespan

While the theories described above consider aspects that contribute to optimal development, an important question becomes what is meant by “optimal”. Theories from the positive psychology and organizational psychology perspectives tend to define optimal in terms of growth in individual and employee development. For example, the Conservation of Resources theory (COR; Hobfoll, 1989) discusses the concepts of resources gain over time such that ‘resource gain begets future gain, thus constituting so-called ‘gain spirals’ (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010) which are defined as ‘amplifying loops in which cyclic relationships among constructs build on each other over time’ (p. 119). Fredrickson’s (2001) broaden and build theory suggests that positive emotions broaden one’s momentary thoughts and

behaviors, which leads to the ‘building’ of personal and social resources. These in turn result in greater positive emotions, such that positive spirals might occur over time. From these perspectives, optimal refers to increasingly better functioning over time. Key researchers on the flow experience have also alluded to a spiral process between flow and core aspects of the self, using the phrase ‘virtuous spiral’ (Delle Fave, et al., 2011, p. 121).

However, from a systems perspective, ongoing growth ultimately is likely to burn out the system (Meadows, 2008). Hence a more nuanced viewpoint of development is needed, such that ‘optimal’ refers to a system that self-organizes in such a way to be sustainable over time. Applied to a lifespan development perspective, optimal becomes a ‘dynamic interplay between functional gains and losses’, in which resources are allocated differently to fulfil not only the needs of growth but also the needs of maintenance of functioning (Tse et al., 2019, p. 4). As contexts are always changing and there is not just growth that occurs in life, spiral processes that involve uninhibited growth are at counterintuitive and rather unlikely. Moreover, Lindsley, Brass, and Thomas (1995) argue that positive spirals are difficult to sustain and that trajectories of change exhibit pathways of growth alongside plateau or decline over time. These assertions are also supported by developmental perspectives on the flow experience (Tse et al., 2019; Nakamura, 2011), however have been less utilized in research aiming to model and test flow trajectories in working adults over time. One reason is perhaps that the flow model is disproportionately based on qualitative research and hence a trend of using top-down perspectives of moment-to-moment facets of these optimal experiences. Thus, the proposed theoretical model in this dissertation is intrinsically interactionist (cf. Rathunde & Csikszentmihalyi, 2006), acknowledging the dynamic relationship between self and environment in sustainable and vital ways across the lifespan.

2.6 A theoretical model of vital engagement among working adults

Figure 2.3 illustrates the proposed theoretical model underlying the perspectives and studies of this dissertation. The model has several specific elements informed by the various theories and perspectives described above. First, the model aims to capture the process of optimal development during adulthood, specifically within the work context. The process of optimal experiences within working adults is examined as they engaged in a work situation, and hence the investigation of flow among working adults within this dissertation. Because of the way in which the self is realized via the ‘transaction with the environment’ (Nakamura & Csikszentmihalyi, 2003, p.88), the model proposes that dynamic constructs are used in order to conceptualize this ongoing process. It also noteworthy that the fundamental orientation of this dissertation and project stems from practice-based perspectives – namely the attempt to develop and test theoretical models that may also have real world application.

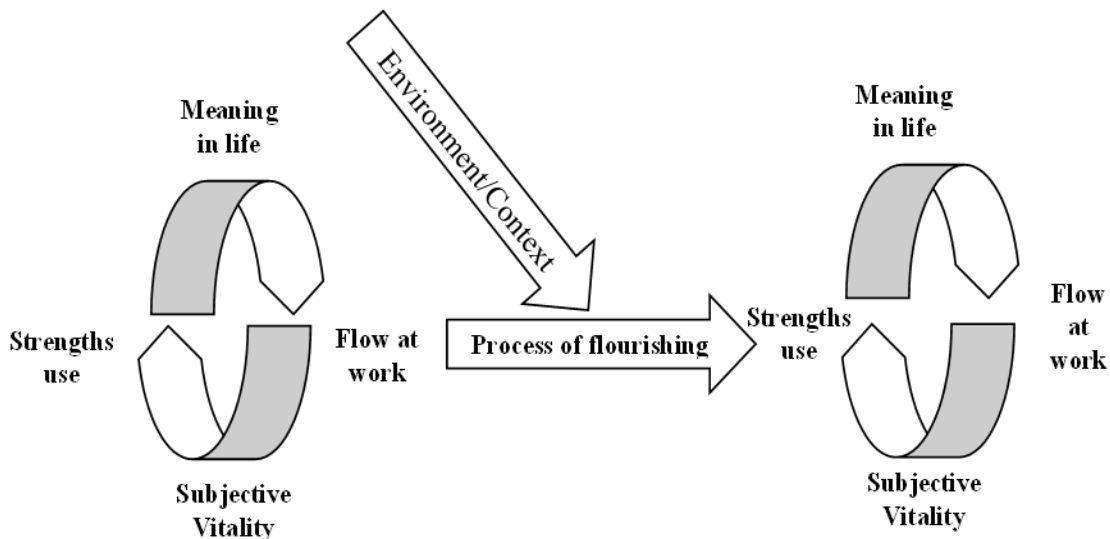


Figure 2.3 Theoretical model of vital engagement

As shown in the figure, the inclusion within the vital engagement in practice model of both proximal antecedents and consequences – namely strengths use (antecedent), flow at work and meaning in life (vital engagement) and subjective vitality (consequence/indicator). With regard to the latter, subjective experience is regarded as being in a ‘feedback’ loop with vital engagement – such that both experiences are highly reliant when flow is experienced in a meaningful way. That is, the current research project had a practice based implications in mind when aiming to testing these relationships- naming providing further insight on facilitating vital engagement in social environments, cognizant of the contextual factors, and incorporating a behavioral component (strengths use) as a condition or contextual factor.

This dissertation aimed to extend the modeling of flow theory to include not just flow experiences but *meaningful* flow experiences. The difference lies in evidence showing not all flow experiences are beneficial for individuals (Shuller & Nakamura, 2013). Furthermore,

Csikszentmihalyi (1990, 2003) argued the centrality of virtuous actions of capacities (which may or may not be virtuous) in flow activities across the lifespan, alongside the ongoing feedback mechanism of subjective vitality. Finally, qualitative accounts among successful workers have been gathered of the complex nature of vital engagement, especially leaders from various organisations (Csikszentmihalyi, 2003; Gardner et al., 2001; Nakamura et al, 2009) – finding that leaders that were most influential were able to create a thriving context of ideas and discoveries among the team, had the capacity to understand the particular strengths and area's of promise, to have a deep sense of understanding and deep connection with their professional work, and the daily enthusiasm and energy to continue their work with vigor - and that this itself was also sought after by these leaders to give them feedback that they were on the a mutually beneficial direction.

A noteworthy point is that the vital engagement in practice construct includes behavioral and energetic constructs that are above the theoretical viewpoints of vital engagement (as only meaning in life and flow at work). The present project is an initial attempt in the process of modelling this complex constructs; namely the modelling of a dynamic system (see figure 2.3), which one cannot capture with the archival data available in this study. Consequently, given that limitation of separating out the dynamic aspect based on snapshots in time by the data available, the the first step is provided below in Figure 2.4 – namely that the constructs of flow at work, meaning in life, strengths use, and subjective vitality factor co-occur. Moreover, the project aimed to examine this four factor model across months and years.

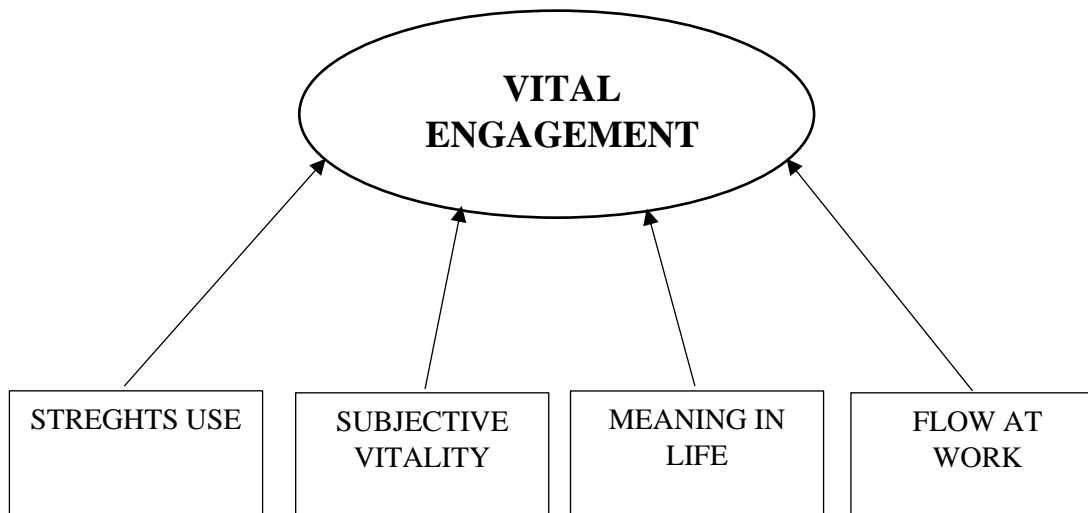


Figure 2.4 Conceptual model of Vital engagement among school staff

For example, as alluded to above, strengths use is considered within this dissertation as the fluid process of harnessing core aspects of the self. This might be a helpful clarification. In flow, the notion of loss of self-awareness is often discussed but that is not to be confused with self-identity even though flow experiences – especially those that are meaningful – might shape identity. Thus, when thinking about the self in flow, we are really thinking just about the loss of self-consciousness. Notably, thoughts about the activity as central to self-identity could be a barrier to flow as they impede the loss of self-consciousness.

The focus in this dissertation is on strengths use (rather than strengths knowledge alone) because it reflects the developmental process of meaning-making (Kegan, 1982). The process of authentically developing ‘one’s relationship with the world’ (Nakamura, 2001, p. 83) is central to flow theory. A daily ‘psychic energy’ is needed for, and replenished by, experiencing effortless attention on the moment-to-moment contingencies in daily life (Csikszentmihalyi, 1990, p. 39; see also Csikszentmihalyi & Nakamura, 2010). That is, although the ‘participation in an enduring

relationship' is important to vital engagement (Nakamura & Csikszentmihalyi, 2003, p. 84), the present moment attention on applying the best of oneself in virtuous ways is critical. Hence, I argue that this process of longer term authentic, or vital, engagement is fueled by a type of 'feeling energy and spirit' (Bostic, Rubio, & Hood, 2000, p. 323) at the core of which is a daily form of meaningful and enjoyed relationship with one's life and work.

Third, while these vital engagement elements may be captured at a single point in time (described in this dissertation at each of the five measurement occasions), the extent to which these dynamic factors balance is dependent on both individual and environmental factors. Without the balancing effect of these factors the relationships that are unfolding between flow and other positive phenomena over time may exhibit what Salanova, Schaufeli, Xanthopoulou, and Bakker (2010) define as 'amplifying loops in which cyclic relationships among constructs build on each other over time' (p. 119). However, I argue that from a systems perspective this type of relationship is not sustainable, and that optimal functioning is a cyclical process within a specific environment or context. Arguably, key aspects of the environment and the context create a balancing effect that are actually creating a homeostatic effect, rather than a growth effect (cf. Rathunde & Csikszentmihalyi, 2006).

Based on the above, the theoretical model of vital engagement in practice is proposed – whereby individual are argued to function within their optimal zone when vital engagement factors are all working together, in a reinforcing manner, are balanced by the environment in ways that are maintaining a level of functioning well. In contrast, I argue that it may be possible that an individual may have some of these factors (such as subjective vitality and knowledge of their strengths) but perhaps these may not enough to sustain virtuous flow experiences in the long term.

2.7 Summary and Conclusions

Based on the theories and perspectives described above, and with the aim to ‘articulate a clearer picture of desirable adult developmental outcomes’ (Rathunde & Csikszentmihalyi, 2006, p. 498), this chapter described the process of flourishing from the perspective of optimal experience theory and the process of psychological complexity across the lifespan.

Consequently, I defined flourishing as a positive developmental process which occurs when an adult frequently experiences an optimal relationship with their daily work, together with vital self-expression and sense of purpose in broad areas of life. Furthermore, this research undertook the development and testing of models of optimal experience and vital engagement over time, specifically within school staff. The hope was to significantly contribute to providing an evidence-based guideline of adult flourishing that is centered around flow at work experiences.

Work is a critical part of adult life and highly influential on health and wellbeing of employees. And yet many working adults are disengaged and alienated – especially school staff (Basom & Frase, 2004, Weale, 2019) - with their jobs or view their work as ‘drudgery’ (Nakamura & Csikszentmihalyi, 2003, p. 83), undermining an optimal developmental trajectory across an important stage of development. This dissertation adopts key aspects of an evolutionary systems perspective to establish the theoretical foundations for this dissertation and the rationale for the methodologies utilized. This involves conceptualizing human flourishing as an ongoing process of frequent flow experiences. I have argued that despite flow theory being a lifespan development perspective (cf. Tse et al., 2019), positioned within the broader evolutionary systems perspective, the specific modelling of the mutual benefits of flow and specific developmentally facilitative conditions have been neglected. Moreover, given the positioning of flow theory with the positive psychology perspective (cf. Seligman &

Csikszentmihalyi, 2000), I highlighted the need for a developmental perspective of flourishing (and flow among working adults), which extends beyond single states to encompass the optimal development trajectory of vital engagement that a person traverses across adulthood.

The next chapter of this dissertation focuses on the experience flow at work and the conditions and outcomes associated over the last 30 years. That is, this dissertation begins with the experience of frequent flow experiences at work which is where the bulk of exact literature has focused. Based on the strong developmental foundations of flow theory, I then expand the inquiry and modelling of the broader concept of vital engagement. Consequently, I advocate for flow processes being investigated across longer time periods. Moreover, I propose that optimal experiences occur in combination with other aspects of the person, within the everyday experiences, and rapid environmental changes that modern-day employees encounter (i.e., within real world settings).

Notably, the implications of these theoretical foundations for the focus of investigation and methods used within this dissertation are as follows. Firstly, the intention to further understand the specific conditions necessary for flow at work led to a meta-analysis of existing research identifying correlates of flow at work (chapter 3). Secondly, given the need to further understanding the reciprocal nature between flow at work experience and core facets of oneself over time, the dynamic associations between flow at work and strengths use over a three-year period were modelled and tested (chapter 5). The notable influence of environmental and context dependent factors on flow experiences among working adults have also resulted in the proposal and testing of a vital engagement model that included flow at work, meaning in life, subjective vitality and the use of personal strengths in general life situations (chapter 6).

Chapter 3 Overview:

The chapter presents a systematic review investigating the ‘why’ and the ‘how’ of flow at work, with a specific examination of the conditions that impact job and well-being related factors among working adults. The systematic review of the flow at work literature and the meta-analyses highlights the dynamic and fluid nature of flow experiences and the importance of context.

This chapter was developed as a journal article, which was submitted to the *Journal of Occupational and Organizational Psychology* in April 2018, was invited for revision, but was ultimately not accepted for publication. However, the chapter greatly benefited from peer reviewer feedback, and this chapter incorporates the reviewers’ feedback. The chapter is structured to facilitate resubmission to a peer reviewed journal article. The submitted article was written in collaboration with coauthors Margaret Kern and Lindsay Oades. I developed the ideas for the review, identified and coded relevant articles, and lead the writing and revision of the submitted manuscript, with a contribution of 80% of the content submitted to the journal, with full contribution to subsequent refinements.

Chapter 3

Associations between flow at work and wellbeing and job-related factors: A meta-analysis of 30 years of research

Abstract

Flow at work is a dynamic construct which is thought to contribute to optimal workplace experiences and has received varying amounts of empirical and practical attention. Summarizing research over the past 30 years, we meta-analytically combined 49 studies (54 independent samples, $N = 16,171$) to consider the extent to which flow at work correlates with positive job-related and wellbeing factors and moderators of effects. Flow at work was strongly correlated with job-related factors ($r = .43$) and wellbeing factors ($r = .39$). The strength of associations depended on the how flow was operationalized, the job-related or wellbeing factor, study design, and population used. Associations were stronger for longitudinal, within person designs compared to cross-sectional between person designs, pointing to the dynamic nature of flow. Findings point to practical changes that organizations can make to assist employees to experience flow at work.

3.1 Introduction

The emerging sophistication of study designs and analytic techniques over the past decade has provided organizational scholars with an unprecedented capacity to study dynamic indicators and correlates of workplace functioning with greater precision. One such factor that has gained empirical and practical attention is *flow at work*. Csikszentmihalyi (1988) suggested that flow results in and from a continuous and systematic expansion of skills to meet the growing demands on a daily or momentary basis. The employees who frequently experience flow are thought to also experience their selves developing via the dynamic interaction with, and meaningful contribution to, their environments (Delle Fave, Massimini, & Bassi, 2011). Moreover, employees' flow experiences can have a 'contagious' effect – having a positive impact on other individuals (Bakker, 2005) – and contributing to reinforcing positive effects in the organization over time (Salanova, Bakker, & Llorens, 2006).

Over the past several decades, flow at work has received varying amounts of attention in research and practice, as a potentially important factor contributing to positive workplace wellbeing and functioning (cf. Fullagar & Delle Fave, 2017). Flow at work has much to contribute to organizational contexts, such as providing insights as to how to encourage psychological flexibility from their employees. Given its ephemeral qualities, flow at work has been operationalized in several ways and related to a variety of outcomes. A systematic review is needed to clarify the extent to which flow at work contributes to wellbeing and functioning, as well as job-related factors that impact flow at work experiences. The current meta-analysis summarizes 30 years of research on flow, investigating the extent to which flow at work correlates with positive job and wellbeing variables, as well as considering study-related and contextual factors that impact the strength of these relationships.

3.1.1 Conceptualizations of Flow at Work

Csikszentmihalyi (1975/2000) first used the term ‘flow’ during his investigations into the experiences of creative, sporting, and professional individuals during activities in which they felt ‘peak enjoyment, energetic focus, and creative concentration’ (p. 36). For instance, in observing painters, Csikszentmihalyi found that while in this state, they worked intensely for long periods of time, seemingly without the need for food, water or rest; completely absorbed in the task of painting. Despite the intense focus and concentration, the painters evaluated flow as a highly enjoyable experience, which they sought to replicate for its own sake, with little regard for external benefits such as money or prestige. Similarly, successful surgeons provided a primary reason for why their work was perceived as intensely enjoyable and meaningful. Over subsequent decades, various researchers have demonstrated that flow occurs more often at work than in leisure and is connected to a number of positive employee and organizational outcomes (e.g., Bassi & Delle Fave, 2012; Csikszentmihalyi & LeFevre 1989; Engeser & Baumann, 2014).

As summarized in Figure 3.1 (below), the construct has primarily been defined and operationalized in three ways: (1) a multi-faceted experience, measured by questionnaires identifying experiences across nine factors (Moneta, 2012); (2) indicated by the high balance of perceived challenges (demands) and perceived skills (Csikszentmihalyi & LeFevre, 1989); and (3) an experience that at its core is made up of intrinsic work motivation, absorption and work enjoyment (Bakker, 2005).

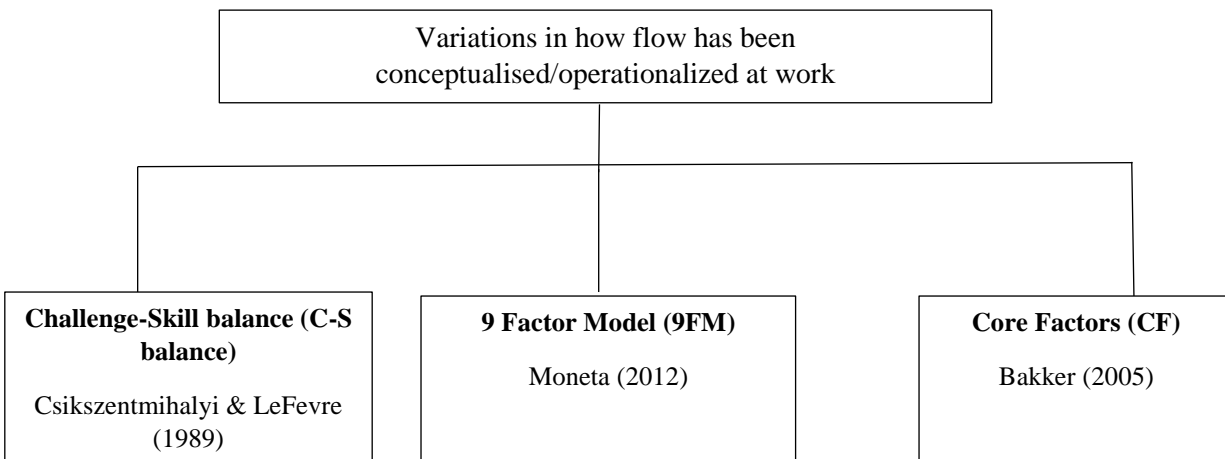


Figure 3.1. Variations in how flow has been operationalized at work, with representative publications.

The original conceptualization of flow defined nine indicative factors (the 9 factor model, or 9FM): (i) idiosyncratic perception of high personal skills and challenges or opportunities; (ii) intense present moment concentration; (iii) effortless merging of action and awareness; (iv) distinct absence of self-consciousness; (v) sense of being able to exercise control of personal actions; (vi) passage of time experienced as moving slower or faster than normal; (vii) goal achievement orientation from one moment to the next; (viii) clear feedback and rules inherent in the activity; (ix) reinforcing and intrinsically rewarding experience (autotelic). From this perspective, flow is considered to be a complex and unified experience in which the actor loses themselves in an activity and follows its internal logic from one moment to the next (Csikszentmihalyi, 1996; Delle Fave et al., 2011). Flow at work is also thought to be a dynamic wellbeing state and indicator of ongoing (and daily) self-development and meaning making (both individual and cultural) among individuals as both employees and social actors. A number of researchers have utilized the 9FM to consider associations across a variety of constructs (e.g., Engeser & Baumann, 2014; Fullagar & Kelloway, 2009; Martin & Jackson 2008; Moneta, 2012).

A second conceptualization of flow at work focuses on the balance between the challenge of tasks compared to the skills (or ability to meet the challenge) (C-S balance; Nakamura & Csikszentmihalyi, 2005). From this perspective, flow is more likely to occur when challenge and skill are both high and overlapping (Bakker, 2005; Rodriguez-Sanchez, Salanova, Cifre, & Schaufeli, 2011a). To experience flow, individuals must continue to harness a high level of psychological and behavioral flexibility, necessary to keep meeting the recurrent and increasing challenges present in the environment with personal strengths and skills (Csikszentmihalyi, 1990; 2003). To operationalize the balance of challenge and skill, studies of flow at work have incorporated experience sampling methods (ESM; Csikszentmihalyi & LeFevre, 1989; Ilies, Wagner, Wilson, Ceja, Johnson, DeRue, & Illgen, 2017), capturing the dynamic balance that occurs between perceived challenges and skills. This conceptualization thus focuses more on the conditions that make flow likely than on the experience of flow itself.

Others have argued that both the multifaceted nature of flow experience and a balance of challenges and skills conceptualizations confound the flow experience with its antecedents and consequences (Bakker, 2005, 2008; Quinn, 2005; Rodríguez-Sánchez, Schaufeli, Salanova, Cifre, & Sonnenschein, 2011; Salanova et al., 2006). As such, Quinn (2005) defined flow as the ‘merging of situation awareness with the automatic application of activity-relevant knowledge and skills’ (p. 610). Bakker (2005) similarly defined work-related flow as ‘a short-term peak experience at work that is characterized by absorption, work enjoyment and intrinsic work motivation’ (p. 27). From this perspective, flow can be considered a form of situational and momentary engagement, akin to what Sonnentag, Dormann, and Demerouti (2010) called ‘state work engagement’ (p. 25). As a state, flow is thought to be transitory in nature, and distinguished from trait-like engagement constructs that are longer term and more consistent.

In the current study, we define flow according to Bakker (2005, 2008), aligned with the perspective of flow as a state-like construct that contributes to optimal work and wellbeing outcomes within the workplace (Fullagar & Kelloway, 2009). However, within our analysis, we also consider the extent to which the different ways flow at work is operationalized impacts the effects observed.

3.1.2 Flow in work contexts and employee well-being

Organizations are increasingly being held responsible for the wellbeing of their employees (Aldana, Merrill, Price, Hardy, & Hager, 2005; McCarthy, Almeida, & Ahrens, 2011)). While organizations might offer a growing number of trainings or benefits (e.g., free gym membership), flow theory would suggest that a workplace that the most successful workplaces have systems and policies are in place that provide authentic opportunities to employees to thrive. The context of modern work is increasingly comprised of knowledge workers, such as professionals, teachers, and engineers and knowledge workers, who often must adapt to ongoing contextual and informational contingencies (Bakker, 2005; Quinn, 2005).

A number of flow at work researchers suggest that employee wellbeing and functioning is a dynamic, ongoing process (Ceja & Navarro, 2009, 2011, 2012; Rodriguez-sanchez et al., 2011; Salanova et al, 2006). The dynamic nature of flow makes it a potentially relevant resource for organizations to support and cultivate as a characteristic supporting employee wellbeing and functioning. Indeed, flow at work has been suggested as central to the happy and creative worker (LeFevre, 1988; Csikszentmihalyi, 1996; 2003; Salanova et al., 2006). Workplace wellbeing includes affective, cognitive, and behavioral aspects, which indicate how employees feel and function at work (McQuaid & Kern, 2017). Affectively, flow at work has been shown to correlate with greater positive affect and less negative affect (Engeser & Bauman, 2014; Fullagar

& Kelloway, 2009; Tobert & Moneta, 2013). Cognitively, flow fosters enjoyable self-development and a sense of meaningful contribution (Delle Fave et al., 2011). Behaviorally, engagement states such as flow correlates with adaptive behavior (Martin, Ginns, & Papworth, 2017) and work-related performance (Bakker, 2008).

Flow at work includes capacities such as the ability to be flexible and adaptive to changing circumstances, with potential to innovate elements of the problematic contextual contingencies (Inghilleri, 2014). Thus, flow provides an indication of psychological flexibility for employees, as they adapt to ever changing circumstance. There is an inherent self-environment fit focus within flow theory, with a dialectic process that involves periods of integration (a state which involves low arousal and cognitive processing) and periods of differentiation (periods of seeking challenges). Personal and organizational interventions need to look at wellbeing from an experiential and ongoing perspective (Ceja & Navarro, 2011), which are aware of such fluctuations in the employee and correspond to them helpfully. As such, systematic understand of the individual (self) and organizational (environment) factors that are associated with flow at work is needed.

Flow experiences are thought to impact the evolution of the self, both at individual and societal levels (Delle Fave et al., 2011). From this perspective, the gratifying and meaningful aspects of flow are reinforcing and result in progressive development of personal skills in response to increasing levels of challenge. This process in turn results in positive work behaviors and feelings of wellbeing. That is, fostering flow might have a positive effect of wellbeing and increasing wellbeing or positive job factors might result in flow, and thus wellbeing can be an antecedent, consequence, or correlate of flow. We thus consider the extent to which flow at work

correlates with wellbeing in general, as well as examine the extent to which effect sizes differ based on the aspect of wellbeing, without implying causal directions of these associations.

Studies suggest that a broad set of job-related factors are associated with flow at work, including the balance between challenge and skill (Bakker, 2005), social support (Salanova et al., 2006), job demands (Zito, Bakker, Colombo, & Cortese, 2015), job autonomy (De Fraga & Moneta, 2016), and skill development opportunities (Bakker, 2008). Similarly, studies have focused on various aspects of wellbeing. The dynamic nature of wellbeing implies that various personal and organizational resources such as conditions (i.e., collegial and leadership support), energies (e.g., money, knowledge), objects (i.e., job resources), and employee characteristics should be sought, developed, and protected (Hobfoll, 1989; Hobfoll, Johnson, & Jackson, 2003). We thus consider job-related factors that correlate with flow, which may have implications for fostering workplace flow.

3.1.3 The Need for a Systematic Review

Theory and research on flow theory have been undertaken for over 30 years by a number of notable researchers in the psychology, sociology and organizational behavior areas. Cross-culturally diverse study populations and dynamic ways to investigate the ephemeral nature of flow experience are prominent parts of this research field. For example, Delle Fave et al. (2011) presented a number of studies examining the flow experience, its conditions and consequences as part of a trans-discipline and cross-cultural examination of the flow experience itself. Furthermore, flow at work research has occurred across diverse organizational and employee contexts and populations, pointing to the potential benefit of flow across a broad range of job types and occupational contexts (Fullagar & Delle Fave, 2017).

Notably, several reviews of this literature have occurred. Basom and Frase (2004) reviewed 10 studies from 1994 to 2004 on flow in teachers, finding that efficacy and leadership helped foster flow experiences. Donaldson and Ko (2010), as part of a larger review of the scholarly literature on positive organizational psychology between 2001 and 2009, provided a brief account of the studies undertaken on flow at work. Most recently, Csikszentmihalyi et al. (2017) provided a review of ‘a subset of studies that would indicate trends and gaps in the research base’ (p. 103), based on flow at work literature occurring between 2005 and 2015. As the authors suggest, their approach did not meet the criteria for a formal, systematic and structured approach of all the literature on flow at work.

While these reviews highlight the importance of flow and identified some of the correlates, they were not systematic and lack a quantitative summary of effects. The current study provides a systematic review of research on flow at work. A clear advantage of the systematic review process is its basis on a comprehensive search of all available evidence based on detailed plan and search strategy, and clear research questions (Cooper, Hedges, & Valentine, 2009). We consider the extent to which flow at work correlates with wellbeing and job-related factors.

A benefit of meta-analyses is the potential to consider not only overall effects, but also moderators of those effects (Rosenthal & DiMatteo, 2001), which can inform objective and pragmatically useful conclusions that increase the usefulness and real-world usability of the research in organizational settings. As noted above, how flow and wellbeing are operationalized and which job factors are considered may impact the size of effects. In addition, some studies (e.g., Ceja & Navarro, 2009; 2011; 2012; Fullagar & Kelloway, 2009) treat flow as a dynamic state-like construct and have used experience sampling or other longitudinal designs to capture

within-person change over time, whereas other studies (e.g., Bryce & Haworth, 2002; Olcar, Rijavec, & Golub, 2017) capture more trait-like aspects of flow, using a between-person, cross-sectional design. We thus examine study design and measurement type as potential moderators.

3.2 Method

3.2.1 Literature Search

We drew on multiple sources and strategies for identifying relevant studies. First, we searched the PsycINFO, Web of Science, Scopus, ProQuest Central, ABI-Inform databases, entering “*Flow at work*” OR “*Work-related flow*” as key search phrases. Second, we examined titles of articles published in the main journals where flow-related studies have been published: *Journal of Vocational Behavior*; *Journal of Organizational Behavior*; *Journal of Occupational Health Psychology*; *Applied Psychology: An International Review*; and *Journal of Occupational and Organizational Psychology*. Third, we reviewed the reference lists of relevant flow-related studies and considered studies and book chapters that cited these studies.

We used the following inclusion criteria: peer-reviewed; written in English; included work-related flow and one or more wellbeing or job-related factors, and an effect size could be calculated; and included employees from education, business, or other government and non-government organizations. Swan, Keegan, Piggot, and Crust (2012) previously reviewed 17 studies that tested the impact of flow on professional athletes; we excluded these studies to focus on flow within typical workplace settings, rather than in the context of high achievement among an elite group.

This process resulted in a total of 49 independent quantitative research articles, of which five articles included two studies undertaken with independent samples (Bassi & Delle Fave,

2012; Baumann & Sheffer 2011; Eisenberger, Jones, Stinglhamber, Shannock, & Randall, 2005; Lan, Wong, Jiang, & Mao, 2017; Lavigne, Forest, & Crevier-Braud, 2012). We thus included a total of 54 independent samples in the analysis ($N= 16,171$). (See Appendix A for a diagram summarizing the search and inclusion process.)

3.2.2 Coding Studies

Studies were coded for year of study, average age of sample, gender composition, sample type, country, how flow was operationalized (9FM, C-S balance, core flow), measurement approach (ESM, surveys, repeated measure), design (cross-sectional, longitudinal), and correlate (see Appendix B for code sheet). We first classified each correlate as a job-related or wellbeing factor. We further classified these into two types of wellbeing factors (hedonic, eudaimonic) and four types of job-related factors (social support, skill development opportunities, job resources, and job autonomy). Eudaimonic indicators included work performance, adaptive behaviors (task management, behavioral flexibility, and skills application), adaptive mindsets (self-efficacy, meaning and valuing and mastery orientation), task involvement and sense of control. Hedonic indicators included overall affect, job and life satisfaction, positive activation (e.g., energetic, wide awake), and low negative activation (e.g., stressed, anxious, burned out).

Effect sizes were recorded as Pearson r correlations. When possible, correlations were pulled directly from a first-order correlation table. When unavailable, effect sizes were transformed from reported t statistics, converted from Cohen's d to r (Rosenthal & DiMatteo, 2001), or were converted from odd's ratios to r (Chinn, 2000). Several studies only reported beta coefficients as part of a path model. Although there is disagreement in the literature on whether such coefficients can be included in a meta-analysis, Peterson and Brown (2005) note that under

certain conditions, a modified beta coefficient does produce relatively accurate and precise estimates of the overall effect, and we thus included the transformed β to r values here.

The first two authors initially coded five studies. Inter-rater agreement was adequate ($\kappa = .73$). Refinements were made to the coding protocol, and full agreement on category classifications were reached with discussion. The first author then coded the remaining studies following the code sheet (Appendix A), and the second author confirmed that the extracted effect sizes were correct.

3.2.3 Data Analysis

We used the Comprehensive Meta-analysis (CMA, Version 3) program (Borenstein, Hedges, Higgins, & Rothstein, 2009) to calculate the average fixed effect (r_{fixed}), the standard deviation for the fixed effect (SD_{fixed}), the random effect (r_{random}), and 95% confidence intervals around the random effect. Calculations were first run for job-related and wellbeing factors. When studies included multiple effect sizes within a factor, effect sizes were averaged together, such that each study only provides one effect (Rosenthal, 1991). We then computed fixed and random effect sizes for each moderator category (wellbeing/ job resource category, study design, flow operationalization, and measurement approach), and tested variability across effect sizes using t-tests or ANOVA.

To consider possibilities for publication bias, CMA reports the fail-safe N (FSN), which indicates the number of unpublished studies with a zero effect would bring the average effect to non-significance (Rosenthal, 1979). In addition, Appendix A provides funnel plots, which visually indicate potential for bias (Kepes, Banks, & Oh, 2014). Lack of bias is indicated by effect sizes evenly scattered across the plot, regardless of sample size, whereas clustering and off-balanced plots indicate potential bias.

3.3 Results

3.3.1 Study Descriptives

Of the 54 included studies, 49 of the studies on flow at work were completed after the year 2000, of which 37 occurred in 2010 or after. Thus, 75.5% of all studies have occurred in the last 8 years. Of the studies that included demographic information, the mean age of participants was 38.51 (SD = 5.36); and 42.39% of the samples were male. For country of study, 57.4% were from Europe, 20.4% were from North America, with remaining studies occurring in Asia (7.4%), South America (3.7%), or various countries around the world (12%), speaking to the cross-cultural interest in flow. Close to half (46.3%) of the studies incorporated heterogeneous organizational sectors and/job types in their samples, 18.5% involved teachers, with other samples including nurses (3.7%), software professionals (3.7%), retail (3.7%), and managers (3.7%). (See Appendix B for a summary of demographic characteristics for each study)

Table 1 provides a summary of the included studies, grouped by correlate. The table includes how flow at work was conceptualized in the study, the study design, analytic strategies employed, the sample size, and effect size. We note that Table 1 only includes studies that had five or more studies undertaken per the flow at work correlate. There were also three other correlates that only had a few studies. The concept of goals was examined by three studies (Beard & Hoy, 2010; Quinn, 2005; Salanova et al. 2006). A few studies examined associations between personal strengths and flow at work among employees, showing that hope (Zubair & Kamal, 2015), optimism (Zito, Cortese, & Colombo, 2016), creativity (LeFevre, 1988, Moneta, 2012) were significantly related to flow at work. Two studies (Fullagar & Kelloway, 2009; Maeran & Cangiano, 2013) investigated the effects of meaning making and task significance,

suggesting that these variables may have a high practical significance in facilitating flow at work.

Thirty-five (64.8%) studies employed correlational designs and 19 (35.2%) employed longitudinal designs. Most (73.5%) of the longitudinal studies occurred in the past eight years. Longitudinal studies typically used ESM, studying flow experiences on a daily or momentary basis. Twenty-three (42.6%) studies also employed highly sophisticated analytic techniques including hierarchical linear modelling, structural equation modelling, and non-linear modelling techniques, pointing to the increasing sophistication of approaches used in this area.

In terms of operationalizing flow, 34 (63%) studies conceptualized flow using the core factors of flow; challenge-skill balance conceptualization occurred in 7 (13%) studies, and the 9FM conceptualization study occurred in 12 (22.2%) studies. Thus, there was a clear preference for operationalizing flow in terms of core factors.

In order to consider publication bias, our calculations of a “fail safe number” (Rosenthal, 1979) and corresponding funnel plots, indicate a slight indication of bias for overall wellbeing factor, however generally the effects were robust to bias (see Appendix A).

Table 3.1

Summary of correlates, number of studies, participant number, conceptualization, design, effect size (Pearson r), and analytic and modelling techniques

Correlate	Study	N	Concept	Design	r	Analytic and modelling technique
Job related factors						
Job resources	Brigsen et al., 2011	31	C-SB	L	.14	Regression modelling
	Colombo & Zito, 2014	197	CF	C	.30	Multiple regression and ANOVA
	Demerouti et al., 2012	83	CF	L	.46	Structural equation modelling
	Fagerlind et al., 2013	3667	CF	C	.17	Regression analysis
	Ilies et al, 2017	114	C-SB	L	.22	Structural equation modelling
	Ghani & Deshpande, 1994	149	CF	C	.28	Structural equation modelling
	Makikangas et al., 2010	335	CF	L	.48	Latent growth curve (LGC) analysis
	Maeran & Cangiano, 2013	105	9FM	C	.13	Regression analysis
	Moneta, 2012	367	9FM	C	.31	Regression analysis
	Moneta, 2017	492	9FM	C	.29	Regression modelling
	Nielsen & Cleal, 2010	58	9FM	L	.29	Hierarchical multilevel analyses
	Salanova, Bakker, Llorens, 2006	258	CF	L	.30	Structural equation modelling
	Smith, Bryan, & Vodanovich, 2012	121	CF	C	.37	Correlational and Regression analysis
Webster, Trevino, & Ryan, 1993	43	CF	C	.38	Correlational analysis	
Social support						
Supportive colleagues	Bakker, 2008	1346	CF	C	.13	Structural equation modelling
	De Fraga & Moneta, 2016	177	9FM	C	.36	Regression & mediation/moderation modelling
	Fagerlind et al, 2013	3667	CF	C	.18	Regression modelling
	Olcár, Rijavec, & Golub, 2017	480	CF	C	.24	Structural equation modelling
	Peters et al., 2014	1017	CF	C	.33	ANOVA
	Salanova, Bakker & Llorens, 2006	258	CF	L	.25	Structural equation modelling
	Trevino & Webster, 1992	287	CF	C	.15	Utilized SEM to test directional relationship
	Supportive leadership	Colombo & Zito, 2014	197	CF	L	.28
Lan et al., 2017a		219	CF	C	.33	Regression and mediation/moderation modelling
Lan et al., 2017b		208	CF	C	.53	Regression and mediation/moderation modelling
Peters et al., 2014		1017	CF	C	.33	ANOVA
Smith, Bryan & Vodanovich, 2012		121	CF	C	.40	Regression and mediation/moderation modelling
Trevino & Webster, 1992		287	CF	C	.15	Utilized SEM to test directional relationship
Zito et al., 2015		188	CF	C	.20	Structural equation modelling
Zito et al., 2016	279	CF	C	.26	Structural equation modelling	

<i>Performance Feedback</i>	Beard & Hoy, 2010	260	9FM	C	.42	Structural equation modelling
	Fullagar & Kelloway, 2009	40	9FM	L	.46	Hierarchical Linear Modeling (HLM)
	Maeran & Cangiano, 2013	105	9FM	C	.37	Correlational and Regression analysis
	Quinn, 2005	120	CF	L	.53	Structural equation modelling
<i>C-S balance</i>	Bakker, 2005	178	CF	C	.44	Structural equation modelling
	Bricteux et al., 2017	58	CF	C	.33	Structural equation modelling
	Ceja & Navarro, 2009	20	CF	L	.24	Recurrence and Surrogate Data Analysis
	Ceja & Navarro, 2011	60	CF	L	.38	Recurrence and Surrogate Data Analysis
	Llorens et al., 2012	957	CF	C	.79	Analysis of Variance (ANOVA)
	Quinn, 2005	120	CF	L	.68	Structural equation modelling
	Rodríguez-Sánchez et al., 2011a	258	CF	L	.59	Structural equation modelling
	Peters et al., 2014	1017	CF	C	.30	Hierarchical Linear Modeling (HLM)
	Webster, Trevino & Ryan, 1993	43	CF	C	.70	Correlational analysis
	Zito et al., 2016	279	CF	C	.38	Structural equation modelling
<i>Skill development opportunities</i>	Bakker, 2008	1346	CF	C	.41	Structural equation modelling
	Colombo & Zito, 2014	197	CF	C	.35	Multiple regression and ANOVA
	De Fraga & Moneta, 2016	177	9FM	C	.52	Regression and mediation/moderation analysis
	Fullagar & Kelloway, 2009	40	9FM	L	.64	Hierarchical Linear Modeling (HLM)
	Lan et al., 2017a	219	CF	C	.62	Regression and mediation/moderation analysis
	Lan et al., 2017b	208	CF	C	.69	Regression and mediation/moderation analysis
	Olcar, Rijavec, & Golub, 2017	480	CF	C	.41	Structural equation modelling
	Trevino & Webster, 1992	287	CF	C	.37	Structural Equation modelling
Hedonic Wellbeing						
<i>Affect</i>	Bassi & Delle Fave, 2012	184	CF	C	.03	Pairwise t-tests analysis
	Bryce & Haworth, 2002	144	CF	C	.49	Correlational analysis
	Burke & Matthiesen, 2005	211	9FM	C	.37	Correlational analysis
	Csikszentmihalyi & LeFevre, 1989	78	C-SB	L	.06	ANOVA
	Eisenberger et al., 2005a	365	C-SB	C	.27	ANOVA
	Engeser & Baumann, 2014	100	9FM	L	.31	Hierarchical Linear Modeling (HLM)
	Fullagar & Kelloway, 2009	40	9FM	L	.73	Hierarchical Linear Modeling (HLM)
	Ilies et al., 2017	144	C-SB	L	.12	Hierarchical Linear Modeling (HLM)
	LeFevre, 1988	107	C-SB	L	.23	ANOVA
	Martin & Jackson, 2008	637	9FM	C	.82	Confirmatory Factor analysis and correlation
	Moneta, 2017	492	9FM	C	.35	Regression modelling
	Tobert & Moneta, 2013	152	9FM	C	.44	Correlation and regression analysis
	Zito et al., 2015	188	CF	C	.43	Correlation and regression analysis

<i>Job satisfaction</i>	Bryce & Haworth, 2002	144	CF	C	.45	Correlational analysis
	Datu & Mateo, 2015	133	CF	C	.32	Regression analysis
	Csikszentmihalyi & LeFevre, 1989	78	C-SB	L	.08	ANOVA
	LeFevre, 1988	107	C-SB	L	.17	ANOVA
	Olcár, Rijavec, & Golub, 2017	480	CF	C	.24	Structural Equation modelling
	Zito et al., 2015	188	CF	C	.33	Correlational and regression analysis
<i>Life satisfaction</i>	Bryce & Haworth, 2002	144	CF	C	.46	Correlational analysis
	Geyser, Geldenhuys & Crous, 2015	415	CF	C	.43	Confirmatory Factor and regression analysis
	Ilies et al., 2017	114	C-SB	L	.15	Hierarchical Linear Modeling (HLM)
	Smith, Bryan & Vodanovich, 2012	121	CF	C	.71	Regression and mediation/moderation modelling
	Zito et al., 2015	188	CF	C	.26	Correlational and Regression analysis
<i>Positive activation</i>	Bryce & Haworth, 2002	144	CF	C	.46	Correlational analysis
	Beard & Hoy, 2010	260	9FM	C	.49	Structural Equation modelling
	Csikszentmihalyi & LeFevre, 1989	78	C-SB	L	.18	ANOVA
	Debus et al., 2014	121	9FM	L	.50	Hierarchical Linear Modeling (HLM)
	Demerouti, 2006	113	CF	C	.52	Structural Equation modelling
	Demerouti et al., 2012	83	CF	L	.40	Hierarchical Linear Modeling (HLM)
	Eisenberger et al., 2005b	365	C-SB		.33	ANOVA
	Engeser & Baumann, 2014	100	9FM	L	.59	Hierarchical Linear Modeling (HLM)
	LeFevre, 1988	107	C-SB	L	.43	ANOVA
	Moneta, 2012	367	9FM	C	.31	Regression modelling
Quinn, 2005	120	CF	L	.52	Structural Equation modelling	
Eudaimonic Wellbeing						
<i>Adaptive behaviors</i>	Baumann & Scheffer, 2011	51	CF	C	.32	Correlational and Regression analysis
	Ghani & Deshpande, 1994	149	CF	C	.59	Structural Equation modelling
	Martin & Jackson, 2008	637	9FM	C	.59	Confirmatory Factor analysis and correlation
	Nielsen & Cleal, 2010	58	9FM	L	.37	Hierarchical Linear Modeling (HLM)
	Smith, Bryan & Vodanovich, 2012	121	CF	C	.65	Correlational and Regression analysis
	Tobert & Moneta, 2013	152	9FM	C	.43	Correlations and regression
	Webster, Trevino, & Ryan, 1993	43	CF	C	.47	Correlational analysis
<i>Adaptive mindset</i>	Beard & Hoy, 2010	260	9FM	C	.46	Structural equation modelling
	Colombo & Zito, 2014	197	CF	C	.30	Multiple regression and ANOVA
	Csikszentmihalyi & LeFevre, 1989	78	C-SB	L	.15	ANOVA
	LeFevre, 1988	107	C-SB	L	.41	ANOVA
	Zito et al., 2015	188	CF	C	.16	Correlational and regression analyses
<i>Self-efficacy</i>	Burke & Matthiesen, 2005	211	9FM	C	.19	Correlation analysis

	Colombo & Zito, 2014	197	CF	C	.20	Multiple regression and ANOVA
	Martin & Jackson, 2008	637	9FM	C	.72	Confirmatory Factor analysis and correlation
	Rodríguez-Sánchez et al., 2011a	258	CF	L	.44	Structural equation modelling
	Salanova, Bakker, Llorens, 2006	258	CF	L	.38	Structural equation modelling
	Zubair & Kamal, 2015	532	CF	C	.24	Correlation and regression analysis
Task Involvement	Bassi & Delle Fave, 2012b	184	9FM	C	.02	Confirmatory factor analysis and t-tests
	De Fraga & Moneta, 2016	177	9FM	C	.66	Regression and mediation/moderation analysis
	Geyser, Geldenhuys & Crous, 2015	415	CF	C	.82	Confirmatory factor and regression analysis
	Lavigne et al., 2012a	113	CF	C	.58	Path analysis
	Lavinge et al., 2012b	325	CF	L	.56	Structural equation modelling
	Martin & Jackson, 2008	637	9FM	C	.74	Confirmatory factor and correlation analysis
	Moneta, 2012	492	9FM	C	.41	Confirmatory factor and regression analysis
	Quinn, 2005	120	CF	L	.35	Structural equation modelling
Concentration	Bassi & Delle Fave, 2012a	14	C-SB	L	.50	Pairwise t-tests
	Bassi & Delle Fave, 2012b	184	9FM	C	.004	Confirmatory factor analysis and t-tests
	Beard & Hoy, 2010	260	9FM	C	.42	Structural equation modelling
	Csikszentmihalyi & LeFevre, 1989	78	C-SB	L	.17	ANOVA
	LeFevre, 1988	107	C-SB	L	.38	ANOVA
	Quinn, 2005	120	CF	L	.54	Structural equation modelling
Sense of control	Beard & Hoy, 2010	260	9FM	C	.69	Structural equation modelling
	Debus et al., 2014	121	9FM	L	.34	Multi-level modelling
	Ghani & Deshpande, 1994	149	CF	C	.50	Structural equation modelling
	Quinn, 2005	120	CF	L	.73	Structural equation modelling
	Zito et al., 2015	188	CF	C	.27	Correlational analysis and Regression
Ill-being indicators						
Negative activation	Burke & Matthiesen, 2005	211	9FM	C	-.20	Correlational analysis
	Datu & Mateo, 2015	133	CF	C	-.30	Regression modelling
	Engeser & Baumann, 2014	100	9FM	L	-.19	Hierarchical Linear Modeling (HLM)
	Lavinge et al., 2012a	113	CF	C	-.44	Path Analysis
	Lavinge et al., 2012b	325	CF	L	-.53	Structural equation modelling
	Martin & Jackson, 2008	637	9FM	C	-.59	Confirmatory Factor analysis and correlation
	Rodríguez-Sánchez et al., 2011a	100	CF	L	-.29	Multilevel regression modelling
	Tobert & Moneta, 2013	152	9FM	C	-.34	Correlations and regression
Exhaustion	Demerouti et al., 2012	83	CF	C	-.23	Hierarchical Linear Modeling (HLM)
	Lavinge Forest & Crevier-Braud, 2011a	113	CF	C	-.10	Path analysis
	Lavinge Forest & Crevier-Braud, 2011b	325	CF	L	-.42	Structural equation modelling

Makikangas, 2010	335	CF	L	-.31	Latent growth curve (LGC) analysis
Zito et al., 2016	279	CF	C	-.54	Structural equation modelling
Lan et al., 2017a	219	CF	C	.62	Regression and mediation/moderation analysis
Lan et al., 2017b	208	CF	C	.69	Regression and mediation/moderation analysis
Olcár, Rijavec, & Golub, 2017	480	CF	C	.41	Structural equation modelling
Trevino & Webster, 1992	287	CF	C	.37	Structural Equation modelling

Note. C-SB = challenge-skill balance, 9FM = 9 factor model, CF = core factor, C = cross-sectional; L = longitudinal

3.3.2 Wellbeing and Job-Related Correlates of Flow at Work

Table 2 summarizes the meta-analytic correlates and moderators of flow at work. Across the observed constructs all effects were significant. Effects were slightly stronger for wellbeing related factors ($r_{\text{random}} = .43$; $r_{\text{fixed}} = .44$) than for job-related factors ($r_{\text{random}} = .39$; $r_{\text{fixed}} = .32$).

Table 3.2

Summary of meta-analyses for flow at work for job-related and wellbeing factors, along with moderators and personal and organizational factors

Variable	k	N	r_{fixed}	CI	r_{random}	CI
<i>Job related factors</i>						
Overall job resources	57	23227	.32	.30-.33	.39	.33-.45
<i>Moderators</i>						
<i>Job factor</i>						
Social support	18	9012	.26	.24-.28	.39	.30-.48
Skill development opportunities	8	2826	.38	.35-.41	.36	.28-.44
Job resources	13	5608	.26	.24-.29	.39	.26-.50
Job autonomy	11	4130	.26	.24-.29	.29	.21-.37
<i>Study design</i>						
Longitudinal	17	2924	.60	.57-.62	.48	.29-.62
Correlational	40	20303	.26	.26-.28	.35	.30-.39
<i>Flow operationalization</i>						
Core flow	39	20604	.31	.30-.32	.42	.35-.48
9FM	15	2364	.37	.33-.40	.36	.28-.43
C-S balance	3	259	.14	.02-.26	.14	.02-.26
<i>Measurement approach</i>						
ESM	11	775	.53	.47-.58	.46	.17-.68
Surveys	41	21260	.30	.29-.31	.37	.30-.43
Repeated-measures	5	1192	.40	.35-.45	.40	.27-.52
<i>Wellbeing factors</i>						
Overall wellbeing	58	13589	.44	.42-.45	.43	.36-.49
<i>Moderators</i>						
<i>Wellbeing factor</i>						
Eudaimonic Wellbeing	25	5317	.44	.42-.46	.41	.30-.50
Hedonic Wellbeing	33	8273	.44	.42-.45	.44	.36-.52
Ill-being	13	2773	-.38	-.42--.30	.33	-.42--.23
<i>Study design</i>						

Cross-sectional	33	9826	.41	.39-.42	.39	.31-.47
Longitudinal	25	3763	.52	.49-.54	.48	.39-.56
<i><u>Flow operationalization</u></i>						
Core flow	25	6868	.43	.41-.45	.48	.40-.55
9FM	21	5001	.50	.48-.52	.44	.32-.55
C-S balance	11	1570	.25	.20-.29	.25	.19-.30
<i><u>Measurement approach</u></i>						
ESM	15	1249	.43	.39-.47	.41	.30-.51
Survey design	39	11416	.44	.42-.45	.43	.35-.51
Repeated measures	4	924	.42	.35-.48	.42	.35-.48

Note. r_{fixed} is the average effect using the fixed model, SD Range relates to r_{random} data

For job-related factors, effects were fairly consistent across type of job-related factor, with stronger effects for social support, skill development opportunities, and job resources compared to job autonomy. Effects were consistent across hedonic and eudaimonic wellbeing domains. Effects were significantly stronger for longitudinal studies than for cross-sectional studies and were much stronger when flow was operationalized as core flow or 9FM, compared to C-S balance. For measurement approach, effects were stronger for job-related factors with ESM studies, whereas for wellbeing, effects were consistent regardless of approach.

Exploring the various types of job-related factors further, social support showed a moderate association with flow at work; effects were stronger when support came from leaders than by colleagues. This suggests that although both colleagues and leaders matter, leaders may be particularly crucial to facilitating flow experiences. Leaders in part provide or disable resources for employees that may be useful. Employees benefitted from skill-development opportunities and having resources available in their job, which can help deal with environmental demands.

Exploring wellbeing factors further, job satisfaction and positive affect had similar associations, whereas life satisfaction showed a weaker relationship than job satisfaction ($r = .28$

vs. $r = .42$), pointing to the contextual nature of associations. In terms of cognitive aspects of the person, self-efficacy and adaptive mindset were both moderately strongly related to flow at work. This implies that employees benefit from perceiving that contextual challenges can be successfully negotiated.

3.4 Discussion

The current study extends previous attempts by flow researchers by quantitatively synthesizing existing studies on flow at work. The effects point to the ‘why’ and the ‘how’ of flow at work. Specifically, in terms of *why* flow matters for workplaces, flow at work was positively correlated with a variety of wellbeing factors, including both hedonic and eudaimonic elements, suggesting that flow is a beneficial construct for workplaces to consider, with broad positive impact on various elements of employee wellbeing both at work and beyond. In terms of *how* flow can be fostered, job-related factors, including social support, job resources, autonomy, and opportunities to develop skills were all significantly correlated with flow, pointing to factors that work places might cultivate to support the flow experience in employees. Study and analytic designs have become increasingly sophisticated over the past three decades, and effects tended to be stronger with increased sophistication, including longitudinal designs and employing experience sampling methodologies (ESM).

Flow at work has been operationalized in several ways in the literature, including flow as core factors (primarily intrinsic motivation, absorption, work enjoyment), as a nine factor model (9FM), and as a balance of challenge and skill (C-S balance). The core factor approach was most common. Notable, effects were similar for studies that used the core factor of 9FM approach, but were much weaker for C-S balance. This finding is supportive of the research that has examined C-S balance as a pre-cursor to flow at work (Bakker, 2005; Rodriguez-sanchez et al., 2011)

rather than as an indicator of flow; that is, high challenge combined with high skill may be an important condition for flow to occur, rather than representing the experience of flow itself.

One of the advantages of conceptualizing flow as core factors or as the 9FM is the suitability of these models for study designs that employ repeated measurements (Schiepe-Tiska & Engeser, 2017). A key assumption of both psychological selection and flow theories is the constant and dynamic process of the person-environment interaction throughout both daily and longer-term periods (Delle Fave et al., 2011; Nakamura & Csikszentmihalyi, 2005).

Encouragingly, the past decade has seen a comparative increase in studies which employ sophisticated analytic and modelling techniques, which incorporate multiple assessments, experience sampling methodologies, structural equation modeling, and other more dynamic ways of assessing flow and analyzing trajectories. Notably, our review suggests the benefit of incorporating this sophistication into the study design, with stronger effects for longitudinal studies that consider within person change over time, compared to cross-sectional, between-person comparisons. Perhaps the most noteworthy among these were Ceja and Navarro's (2009, 2011, 2012) studies, which used dynamical systems approaches to examine the dynamic nature of flow as it occurs in employees over time. The authors suggest that flow at work exhibits nonlinear and dynamic patterns at work over time. They further stipulated that managers should understand (dynamic) conditions to put in place to increase flow in the workplace, and our review points to several relevant factors. Our study points to several *hows* of flow at work: social support, providing adequate job resources, the opportunity for skill development, and to a lesser extent, a sense of autonomy.

Close to half (46.3%) of studies utilized a heterogenous sample of varied job types. However, among the studies of employees within specific jobs, flow at work among school

teachers was most often investigated. Csikszentmihalyi (1982) made a case for the primacy of the flow experience in the teaching and learning process. Promising recent findings show that increased optimal learning experiences among students (Bakker, 2005), increased teacher self-efficacy (Salanova et al., 2006), performance (Chu & Lee, 2012) and concentration and involvement in the task at hand (Delle Fave & Bassi, 2012) are experienced more readily in teachers that experience flow in their work. Our findings support Delle Fave et al.'s (2011) assertion that flow among 'helping professionals' (p. 165) is critical for the physical wellbeing and mental health of individuals and the positive impact they have on cultural evolution.

The job-related factors suggest the importance of providing a supportive environment for employees. Our findings suggest that assistance from those in leadership positions may be more important than support from colleagues, although both matter to some extent. It seems that leaders can be very influential in how often employees experience flow at work (Colombo & Zito, 2014; Lan et al., 2017; Zito et al. 2015). These findings are supportive of Basom and Frase's (2004) review of flow studies undertaken among teachers, showing the relative importance of support from school principals in increasing efficacy levels and flow experiences. Although studies on the dynamic relationship between leadership and flow at work are scarce, the existing studies do suggest the facilitative impact of leadership on flow at work and the importance of a positive and beneficial interaction between leader and sub-ordinates (Bakker, 2005; Lan et al., 2017).

Opportunities to improve employee skills, whether these be personal or work related, also were related to greater prevalence of flow at work. Work environments that provide sufficient trainings that increase the variety of their skills, opportunities to learn new things, and environments that encourage the use of personal strengths may help increase the occurrence of

flow experiences at work. Within flow theory, the skills construct has historically been defined as capacities that assist to deal with the demands of the context (Csikszentmihalyi, 1975/2000; Delle Fave et al. 2011). We suggest that skills at work could denote the use of either, or both, work-related competencies and/or personal strengths use to address work related challenges. Whilst conclusive support cannot be offered by current empirical knowledge, flow and psychological selection theories contend that encouraging individuals to freely use both personal strengths and work-related competencies are beneficial for increasing employee flow experiences, which in turn may help support employee wellbeing.

The associations evident in our review are consistent with Conservation of Resources (COR) theory (Hobfoll, 1989), which suggests that, among other resources, the attainment and development of personal characteristics (such as personal skills) are central to individual motivation and performance. Moreover, Hobfoll (1989) implied that individual resilience is developed by continual acquisition, protection and growth of resources over time. Rodríguez-Sánchez et al. (2011a) suggested that incorporating self-efficacy training in workplaces-- thereby increasing enactive mastery, models of performance, coaching and encouragement and being able to manage the physiological sequelae of stressful situations-- should be a key consideration in planning and execution of flow-based intervention.

3.7.1 Limitations

A number of limitations of the current study must be acknowledged. Although we included over 50 studies across several occupational categories (teachers, insurance company personnel, psychologists), the extent to which identifies associations apply across other occupations is unknown. While it appears that findings may generalize across multiple organizational contexts, other contexts should be explored.

Effect sizes attempt to capture true effect sizes, but as seen in our study, effects are impacted by how each construct is operationalized and measured. Meta-analyses are constrained by the measures and effects available in existing studies. Each contains a certain amount of error. Although our analyses confirm the general relevance of each of various job-related and wellbeing variables, caution should be used in directly ranking the importance of each variable, due to the range of study designs, measures used, and approaches employed. Our review cannot show conclusive evidence of how flow at work and its personal and organizational correlates interact with each other over time.

While we found a clear trend of empirical investigation into the dynamic elements of flow at work and how they are association with other personal and organizational constructs however approaches to capturing dynamic aspects of flow are in their infancy. Associations are most likely bi-directional in nature, change over time, and are impacted by a number of situational factors. While methods are becoming more sophisticated, continual work on how to best measure, study, and review dynamic associations are needed.

3.4.2 Implications and Future Research

Our meta-analysis demonstrates the widespread and positive personal and organizational impact of flow at work as well as factors to emphasize in the workplace to support flow experiences. Strong correlations with affective, cognitive, and behavioral wellbeing factors suggest that flow at work helps support a variety of positive employee outcomes. Thus, it is beneficial to consider strategies for allowing flow to occur. The job-related factors point to several possibilities: fostering social support, providing opportunities for employees to develop their skills, providing adequate resources for employees, and fostering a sense of autonomy.

Studies have increasingly considered dynamic associations across a variety of correlates. Notably, although goal setting and meaning making are central tenants of both daily flow and optimal experience across the lifespan (Csikszentmihalyi, 1990; Delle Fave et al., 2011; Inghilleri et al., 2014; Tse, Nakamura, Csikszentmihalyi, 2019), neither has received much attention in the literature. Future studies might consider the extent to which these constructs provide alternative approach for facilitating and sustaining wellbeing in the workplace.

Similarly, figures within positive psychology and flow theory have previously suggested that flow occurs most reliably when an individual deploys their highest strengths, talents, and virtues to meet the challenges that come their way (Annas, 2008; Csikszentmihalyi, 2003; Nakamura & Condren, 2018; Seligman, 2002; 2011), but there is little empirical data to support such claims. Strengths have been given limited attention in workplace studies, despite one of the central tenants of flow specifies a continual stretching of one's capacities to match the existing challenges of the environment (Delle Fave et al., 2011). Future research should fill these empirical gaps and aim to extend the flow theory by specifying the kinds of skills that play a major role in the development of the individual when faced with commensurate environmental challenges.

Research that examines state-based variables and daily fluctuations of both experience and behaviors are becoming more prevalent, but considerably more work in this area, using increasingly sophisticated data collection and analytic approaches, is needed. We agree with Sonnentag et al. (2010) that research into dynamic factors related to daily and within-person wellbeing will extend the knowledge base of the temporal patterns of 'work-related experiences and behaviors' (p. 27); permit investigation of more proximal antecedents and consequences of states of engagement (such as flow); and is a more reliable and ecologically valid indicator of

nature of these relationships over time. Specifically related to this study, future research should further examine the proximal processes within flow research – given the clear implications of this experience on job resources and wellbeing among employees.

3.5 Conclusion

Flow theory and research has much to contribute in the investigation and understanding of dynamic wellbeing. The regular fluctuations and benefits of flow experiences among employees has been recognized for over three decades (Csikszentmihalyi, 1975/2000). Our findings confirm the primacy of the dynamic interplay between individual and environment within organizational contexts and identify which individual and environmental variables may be applied in prospective interventions to increase flow among employees. Whilst not without its challenges, exploration into flow at work has the potential to assist in sustaining and ‘growing’ happy employees and workplaces.

Chapter 4 Overview:

The chapter details the study design, model development and testing that resulted from the greater appreciation of the contextual factors which were necessary for flow to occur at work, with the full study design and findings reported in Chapters 5 and 6. The context of the study is discussed as an opportune investigation of working adults' experience of flow at work and other positive developmental states, which ultimately allowed me to test empirically provide a preliminary test of the vital engagement model described in Chapter 2. The archival data of a panel of school staff provided a rare opportunity to empirically test aspects of the optimal experience theory – the relationship between strength use and flow at work, and the empirical testing of the vital engagement model.

Chapter 4

Study design, model development and testing

4.1 Introduction

The studies described in this dissertation took advantage of data available as part of a larger study. This chapter first provides details on the original data collection undertaken between 2011- 2013 with staff at an independent Kindergarten through 12 (K-12) school in New South Wales, Australia. Next, I summarize the process of developing the models that are examined within this dissertation. I then provide an overview of the methods used in the two empirical studies included in this dissertation (see chapters 5 and 6).

4.2 A description of the context and broader study

The studies conducted as part of this dissertation made use of data that were collected within a larger study, which aimed to study the impact of a school-wide initiative to integrate positive psychology throughout the school's culture. The study occurred within the context of shifting national policies, and shifting practices occurring within the school. The school was a large private K-12 school, which had been in operation for nearly 100 years. Beginning in 2010, school leadership observed that there were many antiquated notions the school was utilizing. Leadership was also concerned about the growing levels of student depression and mental health issues, and low levels of social and emotional well-being. Nationally, Australia was undergoing its own set of changes according in accordance with the Melbourne Declaration on Educational Goals for Young Australians (2008), which prescribed the need to ensure that the building of social and emotional intelligence was of utmost importance in schools.

In considering how to begin to address the concerns raised, leadership chose to work towards making social and emotional intelligence central to the school by working directly with the staff - namely engaging and involving the staff in an authentic way to achieving school wide changes of both student and staff wellbeing. Working with external consultants with expertise in positive psychology and organizational change, the school developed a wellbeing program, with the motto “engagement, empowerment and trust”. The program aimed to involve staff authentically in wellbeing philosophy and changes, giving them opportunities to contribute toward this goal, and trusting them to be able to carry this out.

One of the first steps that the administrators did was to employ appreciative inquiry interviews among the staff to understand the unique needs and skills that were required to achieve their goals. Staff were asked to consider what legacy did the staff want to leave, what was their purpose for being there, what did they hope to change, what were their personal aspirations as a person at the school (Wikks, 2014). School staff were reportedly observed to want to create a positive supportive, encouraging and caring environment which all the members in a school wide community are given the skills and opportunities to make a one-one impact on students (including contemporary problems of gaming, gambling, internet and social networking addictions), help with developing the skills of awareness of students, and their own sense of independence and autonomy (Wikks, 2014).

Over the next three years, the school underwent a culture wide changes in policies and practices within the school in order to align itself to positive education and applied psychology principles. Table 4.1 summarizes the process and evaluative approaches included. Through the changes, the school aimed to increase opportunities for action, self-development, and harnessing strengths. The interventions included a variety of activities and initiatives to incorporate positive

psychology principles into school policies and the daily practices of students and staff. For instance, behavior management strategies were changed to incorporate restorative practices. Strengths training, guided by the characters strengths and virtues approach to the identification, assessment and development of strengths (see Peterson & Seligman, 2004), was provided to all school staff. Workshops and coaching were offered to staff, focused on how to overcome problems with application of strengths, the benefits of leaders embodying the applied psychology practice of coaching. Additional strengths training was provided 12 months after initial training.

Table 4.1.

Overview of the intervention and evaluation structure for the larger study.

Date	Who	What
May 2011	Staff	Appreciative inquiry interviews
May 2011	Staff	Character strengths training (Time 1)
May 2011	Staff	General wellbeing and cultural surveys (Time 1)
August 2011	Staff	Workshops and coaching
August 2011	Staff	Leadership training for small sample of leaders
Nov 2011	Staff	General Wellbeing and cultural surveys (repeat – Time 2)
May 2012	Staff	Character strengths training (Time 2)
May 2012	Staff	General Wellbeing and cultural surveys (repeat – Time 3)
Nov 2012	Staff	General Wellbeing and cultural surveys (repeat – Time 4)
Nov 2013	Staff	General Wellbeing and cultural surveys (repeat – Time 5)

Note. Bolded lines indicate the source of data used in the current dissertation.

To evaluate the impact of the school's efforts, the school partnered with researchers at a local university. As part of the evaluation, staff were interviewed at baseline, and then completed a general wellbeing and school culture survey at five measurement occasions across a three-year period. These assessments were primarily in the form of quantitative surveys, which included demographic information (age, gender, job type, and years employed at the school), and a variety of measures described below (see section 4.4 of this chapter)

While the collected data were intended to evaluate the intervention, staff also consented to their data being used for research purposes. I was able to access the data after receiving ethics approval in December 2017 (University of Melbourne Human Research Ethics ID: 1750027.1). The studies included in this dissertation thus took advantage of the data that were collected through the evaluation to address the intended research questions, framed by the theoretical framework specified in chapter 2 and developed through the course of this investigation (see Figure 4.1).

To assess impact and change over time, school staff were asked to complete a survey over five occasions. Participants were assessed twice per year for the first two years and once in the third year. Given the data was archival, the data was received from the research team (see Green, Oades, & Robinson, 2011) which had been gathered using the Survey Monkey System of data collection between 2011 and 2013 (3 years). Once I received my ethics approval from The University of Melbourne, I examined the data and observed that there were 351 individual cases, in which a participant had logged in and had registered to complete one or more of the questionnaires. Out of these, 17 data cases were completely blank entries – namely the respondent had logged into the systems, developed their unique profile, however chosen not to answer any of the questionnaires. All efforts were made to ensure the uniqueness of the

identifying code used by the respondents- namely in the case of identical cases, the respondent was checked against gender and age, time of service at school and job type. During this process I observed identical responses for seven cases, which I decided to remove to ensure independence of observations at each time point.

As usually occurs in longitudinal studies with multiple measurement occasions over a multi-year period. Given that the analytic strategies chosen in these studies (see section 4.5 of this chapter), which under a missing at random assumption can handle missing data, I chose to include all staff who completed the work-related flow, strengths use, subjective vitality at least once across the five occasions. This resulted in a final sample of 327 school staff used in the two studies described in this dissertation. Figure 4.1 illustrates the percentage of the 327 staff who completed the four key variables at each measurement occasion. The greatest participation occurred at Time 1, with the least participation at Time 3 (note that meaning in life was not included in the Time 1 or Time 2 assessments). Interestingly, a greater number of staff returned to the study at Time 5.

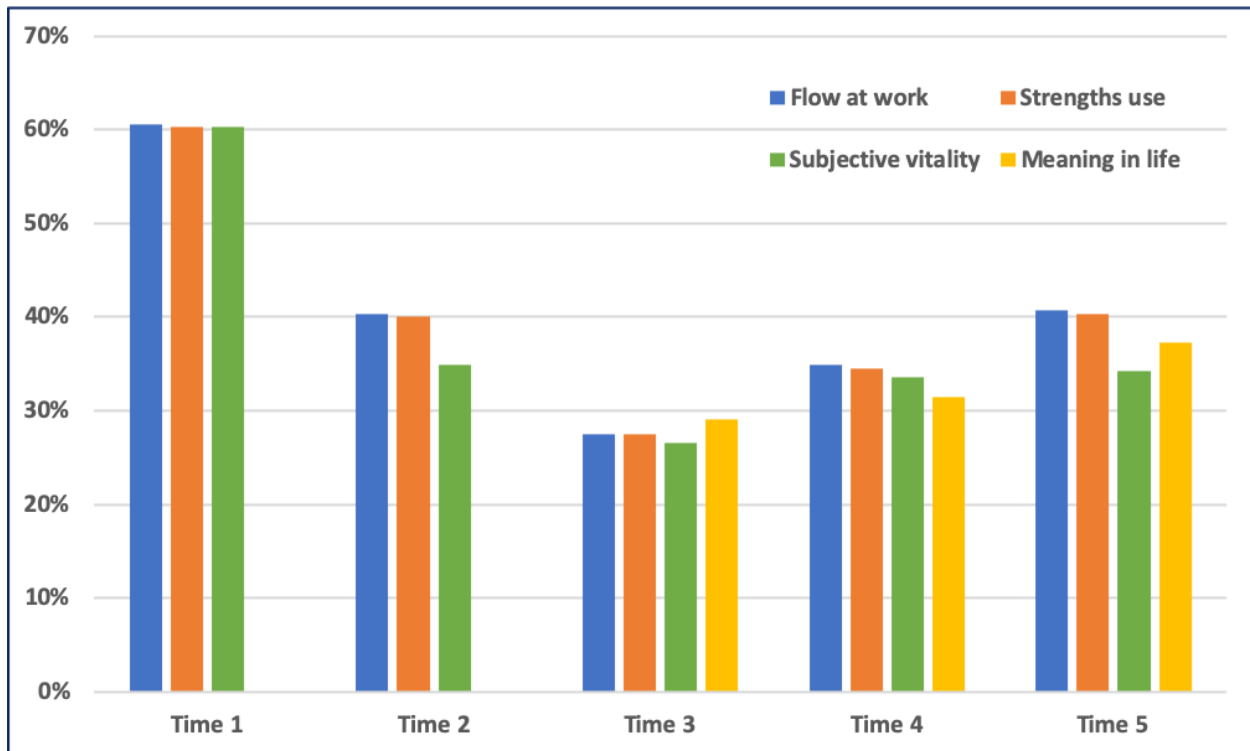


Figure 4.1 Percentage of staff completing the flow at work, strengths use, subjective vitality, and meaning in life measures at the 5 measurement occasions. Note that meaning in life was only included in the Time 3-5 assessments.

Figure 4.2 illustrates the missing data patterns that occurred across these variables. Of the 327 staff, 31 participants completed all five timepoints, 68 completed four time points, 119 participants completed three time points, 178 completed two time points, and 327 completed a single time point. To consider the impact of attrition, I compared individuals who completed three to five assessments with those who completed one or two, using independent sample t-tests for continuous variables and chi-square for categorical variables. The reason these time-frame periods is regarding the desire to understand the differences between one year versus across 2 or more years. No significant differences appeared between the two groups on levels of flow experience ($t(196) = 0.92, p = 0.36$), strengths use ($t(195) = 0.23, p = .08$), subjective vitality

($t(196) = .87, p = .32$), and meaning in life ($t(196) = .29, p = .03$), type of profession ($X^2(6) = 6.81, p = .34$), time of employment at the school ($X^2(6) = 10.29, p = 0.11$), gender ($X^2(2) = .37, p = 0.83$), or age group ($X^2(8) = 12.08, p = 0.15$). Guided by the work of Jakobsen et al. (2017) the current project utilised multiple imputation to be used for handling missing data. Figure 4.2 suggests no clear systematic reasons for missing data, supporting the use of multiple imputation to deal with missing data, as described in greater detail below and in Chapter 6.

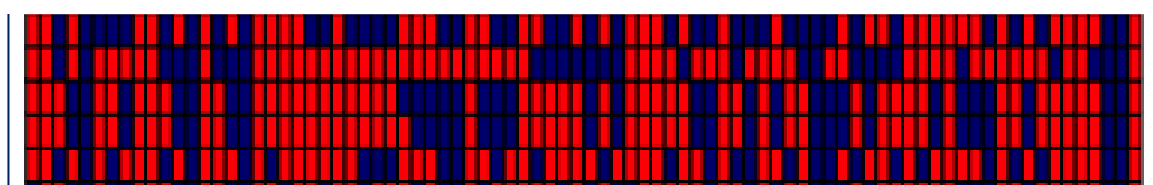


Figure 4.2. Missing data patterns for the flow at work, strengths use, subjective vitality, and meaning in life variables (red indicates missing data).

The demographics of this data set provided the following contextual information about the sample. Firstly, it showed that there was a fairly equal percentage of males to female staff (53.2% vs. 46.8%), implying a constancy of representation of both sexes in this context. Teachers were the highest proportion of occupations among the sample (66.1%) with the other categories including administration staff (20.2%), and executive (6.1%) and support staff (7.6%). The years of employment was also highly similar among the sample with 28.1% of staff being employed at the school over 10 years, 23.5% for between 5 and 9 years, 27.5% between 1 and 4 years, and 20.5% for just under twelve months. Furthermore, the highest percentage of staff were between 41 and 50 years of age (30.6%), followed by almost identical proportions of

those between 31-40 (25.7%) and 51-60 (25.1%) years of age, and finally the smallest proportion were staff aged 21-30 (12.2%) and those aged above 60 years of age (6.4%) respectively.

4.3 The choice to use this dataset

Figure 4.3 summarizes the process of arriving at the models for testing using the archival data of a sample of school staff and the methodological, epistemological and theoretical frameworks that both informed and guided the work of this study. Chapter 2 describes the frameworks underlying the study. The contextual changes to school practices and policies that was undertaken in this independent K-12 school provided a microcosm of the broader cultural changes that social institutions can make to both individual and society at large. The surveys that were completed across multiple measurement occasions included a variety of constructs directly thought to be relevant to flourishing, as I described in detail in Chapter 2, including flow, strengths use, meaning in life and subjective vitality. The inclusion of both experiential indicators of flourishing, such as flow at work experiences, and behavioral indicators such as strengths use, lent itself to an examination that draws on multiple aspects of the human experience.

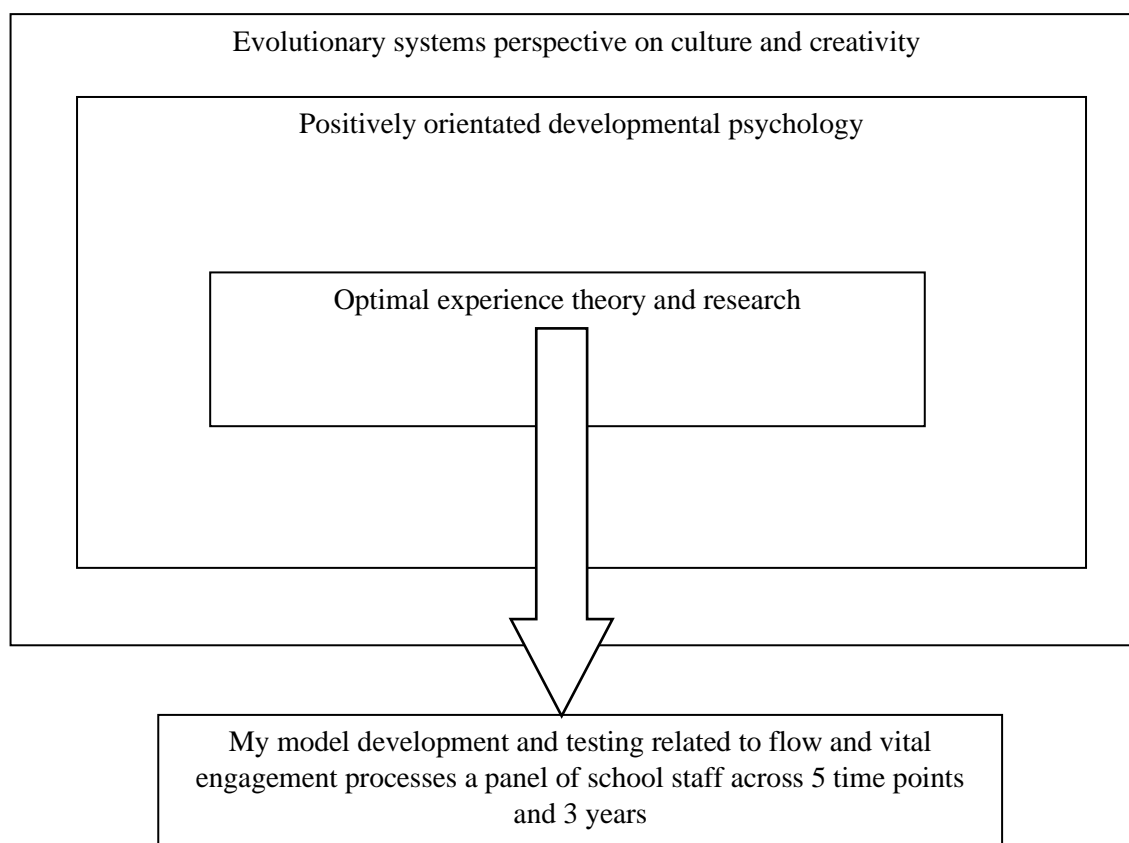


Figure 4.3 Process taken in research project model development

While the data provided far from perfect indicators of the intended constructs, suffered from missing data (including meaning at life not being included in the first two assessments), and were not originally intended to address the questions of this dissertation, secondary data analysis of archival data is valuable for a number of reasons. Archival data are important for addressing developmental questions (Greenhoot & Dowsett, 2012). The longitudinal and panel nature of the data provided an opportunity to consider these constructs over multiple years, as opposed to the cross-sectional and intensive short-term uses that prior studies have utilized. Whilst ESM studies have often examined flow at work over one to three weeks, studying the process of optimal evolutionary development among working adults also requires longer term perspectives and

methodological approaches that observe processes over months and years. Archival data offer the opportunity to testing these developmental processes over time. Indeed, archival data have played a crucial role in addressing lifespan questions related to human development, over the past decade (Jones, 2010). Whilst limitations of archival research are acknowledged - namely the possibility that measures are outdated, missing data issues, and generalizability concerns outside the select group under investigation (Elder, Pavalko, & Clipp, 1993; Martin & Friedman, 2000) - there are also significant strengths of utilizing this data for modelling dynamic and fluid constructs such as flow and engagement.

A misconception about secondary data is that working with archival data simply involves picking up existing data and running analyses, with little effort on the part of the analyst. However, the process of archival work is significantly labor intensive, especially the extensive knowledge of the data and consideration of validity issues that are required (Elder et al., 1993; Kern, Reynolds, & Friedman, 2010). The process of recasting is commonly required - a process of restructuring existing data to create new measures of a construct (Elder et al., 1993). It is important to highlight that this process is more than simply recoding; but rather a systematic process of taking a new theoretical model and attempting to shape the data to answer specific research questions (Kern et al., 2010). Throughout the process model development and testing – and consequently attempt to recast an archive of data, theory and specific research questions are essential. The ongoing consideration of the strengths and weaknesses of the data is needed during the process of drawing conclusions from research findings.

Moreover, the existing wealth of archival data that was sourced for this dissertation provided the rare opportunity to understand the specific nature and magnitude of relationships, especially over months and years. Considering the time and resources spent on collecting the

data across the five time points and the burden on participants, it is important that research make use of the data (Andersen et al., 2011; Kern et al., 2016; Tomlinson-Keasey, 1993).

4.4 Overview of the two empirical studies

The two empirical studies included in this dissertation had two primary objectives. Firstly, I set out to examine the nature and magnitude of the relationship between strength use and flow at work among working adults over time, specifically testing whether or not strengths use and flow at work exhibited a bi-directional relationship over time. Secondly, I aimed to test vital engagement as a model, extending research on flow at work to focus more on sustainable flow experiences as they intersect with the workplace across a period of adult development. Using the archival data described above, I conducted two studies, which are detailed in chapters 5 and 6. In both studies, I used Structural Equation Modelling (SEM) techniques (Hu & Bentler, 1999; Lei & Wu, 2007), which allowed the inclusion of all available data, the use of latent factors, and consideration of structural associations over multiple time points. Here, I provide a brief overview of the studies, introduce the measures used and highlight the analytic strategies used to address these aims.

4.4.1 Study 1: Associations between flow at work and strengths use among school staff over a three-year period

The first study aimed to explore the longitudinal relationships between the flow at work and general strengths use, testing bi-directional relationships between the constructs both within (e.g., strengths use and flow at work at Time 1, Time 2, etc.) and across time points (e.g., Time 1 to Time 2). Whilst character strengths use has often been regarded as a predictor of flow experiences, a more theoretically nuanced exploration of this relationship would support

theoretical claims that strengths use can act as both a predictor and an outcome of flow experiences. As such, I test the relationship between flow at work and strengths use as a cross-lagged panel model, as illustrated in Figure 4.2. This model offers a specific way of understanding of: (i) relative stability of both flow experiences and strength use experiences across time; (ii) the bi-directional relationship between flow at work and general strengths use at each time point (which according to measures occurred during the day-to-day and weekly periods), and; (iii) the relationship between these constructs over 6-12 month periods.

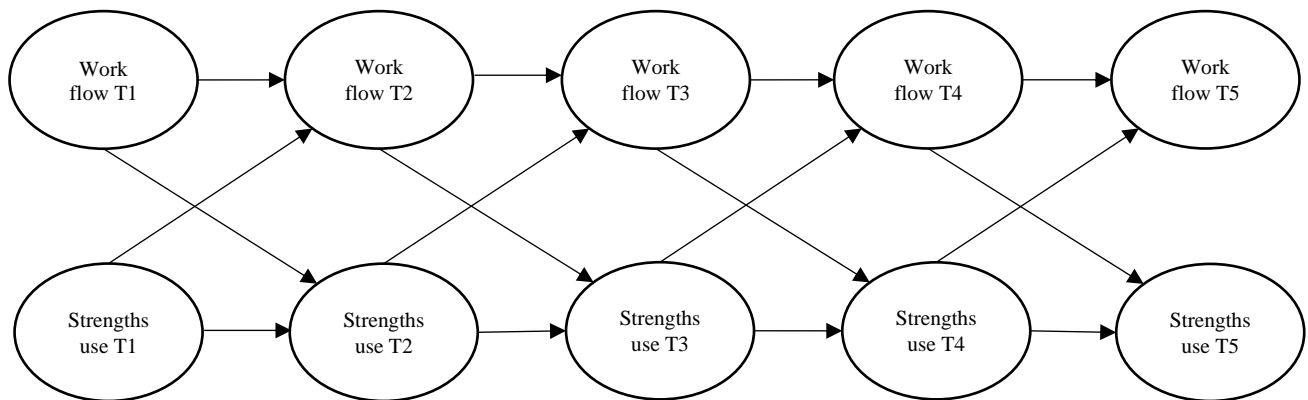


Figure 4.4. Conceptual model, with dynamic inter-relatedness of strengths use and work-related flow

4.4.2 Study 2: Vital Engagement in Employees: Development and Testing of a Model Over Three Years

Extending beyond flow at work, Study 2 aimed to develop a broader conceptualization of optimal engagement within the work context, proposing and empirically testing a model of vital engagement. Vital engagement was operationalised as the experience of frequent work-related flow experiences, among individuals that experienced a sense of subjective vitality, meaning in life and general strengths use. As illustrated in Figure 4.3, I expected to find a four-factor model

that is relatively stable over 6 to 12-month periods, which correlates but is distinctive from other similar constructs of adult flourishing such as wellbeing, work engagement, passion, and work climate constructs. This model of vital engagement offers; 1) operationalization of vital engagement among working adults; (ii) information regarding the stability of this construct across 6-12 months measurement intervals and across a period of 3 years; (iii) investigation if previous experiences of vital engagement was a good predictor of future vital engagement experiences; and (iv) the relative similarity and distinctiveness with similar well-being constructs.

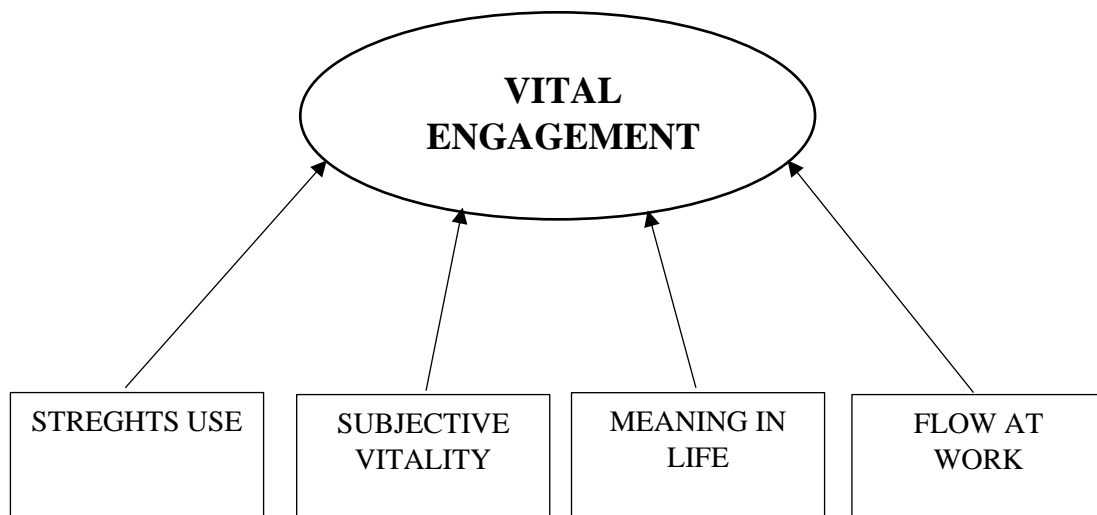


Figure 4.5 Conceptual model of Vital engagement among school staff

4.5 Measures

The constructs being examined within this project examine individual's subjective perceptions and experiences and are psychological in nature. The method of data collection was the use of self-report questionnaires containing a number of items. Table 4.2 summarizes the measures used, including the number of items, scaling, and instrument source. Figure 4.4 illustrates when the measures were completed by the participants. Study 1 utilized the flow at

work and strengths use measures, while study 2 incorporated all of the measures noted in the table.

Table 4.2

Scales used in studies 1 and 2

Construct	Name of Instrument	No. Items	Scale	Instrument Source
Flow at work	Work-related flow questionnaire	13	0-6	Bakker, A. B. (2005)
Strengths use	Strength use questionnaire	14	1-7	Govindji, R., & Linley, P.A. (2007).
Subjective vitality	Subjective vitality scale	6	1-7	Bostic, Rubio, & Hood (2000)
Meaning in life	Meaning in life questionnaire	10	1-7	Steger, Frazier and Matthew (2006)
Wellbeing	Warwick-Edinburgh Mental Wellbeing Scale	14	1-5	Tennant, Hiller, Fishwick, Platt, Joseph, Weich, Parkinson, Secker, Stewart-Brown (2007)
Work climate	Work climate questionnaire	13	1-7	Baard, Deci, & Ryan (2004)
Work engagement	Utrecht Work Engagement Scale	17	0-6	Schaufeli & Bakker (2003)
Organizational engagement	Passion subscale of Voice Climate Survey	10	1-5	Langford (2001)

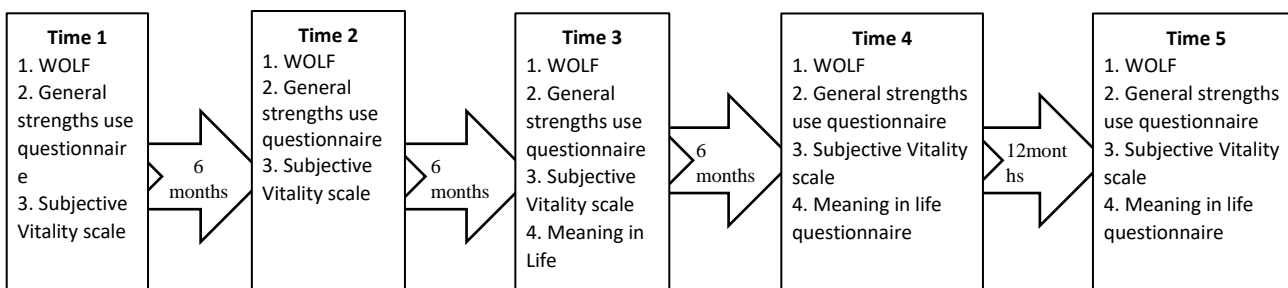


Figure 4.6 Repeated measures with 5 waves of data collection

4.5.1 Work-related flow (WOLF)

The Work-related flow scale (WoLF; Bakker 2008) is a 13 item self-report instrument that measures the frequency of employee experiences of flow at work. The scale has three subscales that relates to the dimension that are posited by Bakker (2005; 2008), namely: absorption (4 items), work enjoyment (4 items) and intrinsic work motivation (5 items). The instrument utilizes a Likert scale rated on a 1 (“Never”) to 7 (“Always”) scale. Example items include ‘I get carried away by my work’ (absorption), ‘I do my work with a lot of enjoyment’ (work enjoyment), and ‘I get my motivation form the work itself, and not from the reward from it’ (intrinsic work motivation).

4.5.2 Strengths use scale (SUS)

The Strengths Use Scale (SUS) is a 14 item self-report instrument that measures the extent to which participants use their strengths. Govindji and Linley (2007) developed the strengths use scale based on a review of the positive psychology literature. The instrument utilizes a Likert scale and gathers information on the extent to which participants use their strengths, which are rated on a 1 (“Strongly Disagree”) to 7 (“Strongly Agree”) scale. Example items include ‘I always play to my strengths’, ‘I am able to use my strengths in lots of different situations’, and ‘Most of my time is spent doing things I am good at doing’.

4.5.3 Meaning in life- Presence subscale (MLQ-P)

The meaning in life questionnaire (MLQ) is a 10-item instrument designed to measure life meaning of respondents. This instrument is comprised of questions aiming to assess within the participant the following; firstly, the presence of meaning (how much respondents feel their lives have meaning), and Secondly, the search for meaning (how much respondents strive to find meaning and understanding in their lives) (Steger et al., 2006). The instrument utilizes a 7-point Likert scale ranging from 1 (Absolutely True) to 7 (Absolutely Untrue). Example items include ‘I understand my life’s meaning’ and ‘I have discovered a satisfying life purpose’.

4.5.4 Subjective Vitality Scale (SVS).

The subjective vitality scale was originally developed by Ryan and Fredrick (1997), and was subsequently refined by Bostic, Rubio, and Hood (2000). The measure was designed to reflect as ‘the subjective experience of being full of energy and alive’ (Bostic et al., 2000, p. 52) - namely the individuals’ ability to mobilize mental and physical health and enthusiasm. Six items assessed subjective experience of being full of energy and alive among participants utilizing a 7-point scale (1 = not at all, 7 = very true). Example items include ‘I have energy and spirit’ and ‘I look forward to each new day’.

4.5.5 Utrecht Work-engagement Scale (UWES)

Work engagement is conceptualized as level of devotion of time and effort; a sense of significant and meaningful pursuit; and a time when one is engrossed and fully concentrated (Schaufeli & Bakker, 2003). The Utrecht work engagement scale (UWES) was developed as a 17-item self-report measure which measure the three underlying dimensions of work engagement. It consists of 3 subscales which are; vigor (six items), dedication (five items), and

absorption (six items) Items are rated on a 7- point Likert scale ranging from 0 (never) to 6 (every day). Example items include ‘At my job, I am very resilient, mentally’ (vigor), ‘My job inspires me’ (dedication), and ‘It is difficult to detach myself from my job’ (absorption).

4.5.6 Warwick-Edinburgh Mental Wellbeing Scale (WEMBS).

The Warwick-Edinburgh Mental Wellbeing Scale (Tennant et al., 2007) was developed to enable the monitoring of mental wellbeing in the general population and the evaluation of projects, programs and policies which aim to improve mental wellbeing. 14 items assess general wellbeing over the past two weeks on a 5-point scale (1=none of the time, 5=all of the time). Example items include ‘I’ve been feeling useful’, ‘I’ve been feeling close to other people’ and ‘I’ve been interested in new things’.

4.5.7 Voice Climate Survey- Passion Subscale (VCS-P).

The Voice Climate survey is an opinion survey that measures work practices and outcomes (Langford, 2009) across seven domains: purpose, property, participation, people, peace, progress and passion. The survey consists of 102 items, rated on a 5-point scale (1=strongly disagree, 5=strongly agree). The current research utilized only the Passion subscale which included the combination of organizational commitment (e.g., “I feel a sense of loyalty to this organization’, job satisfaction (e.g., ‘Overall I’m satisfied with my job’) and intention to stay (e.g., ‘I can see a future for me in this organization’). The survey is a 10 - item measure of the attitudes of engagement among employees and characterized by the addition of scores on organizational commitment job satisfaction, intention to stay.

4.5.8 Work Climate Questionnaire (WCQ).

The Work Climate Questionnaire assesses the sense of managerial support within a working context (Baard, Deci, & Ryan, 2004). The questionnaire consisted of 15 items

prompting participants to indicate their agreement on a 7-point scale (1 = not at all true, 7 = very true). Items include 'I feel that my manager provides me choices and options', 'my manager conveyed confidence in my ability to do well at my job, and 'my manager made sure I really understood the goals of my job and what I need to do'.

4.6 Modelling and analytic approach overview

Structural equation modelling (SEM) was used to analyze the data collected within this research project. SEM is an extension of the general linear modeling (GLM), which allows for latent variables to be included in the model, offers an approach for model testing, and provides goodness of fit statistics indicating the extent to which data fit the theoretical model (Lei & Wu, 2007). SEM tests the fit of the theoretical model to the data by examining the degree to which the hypothesized network of relations among the constructs is evident from the data collected (McQuitty & Wolf, 2013). As we were interested in analyzing the relationships between latent (i.e., work-related flow) and observed constructs (i.e., strengths use), SEM is able to test hypothesized patterns of directional relationships among a set of observed (measured) and unobserved (latent) variables (MacCallum & Austin, 2000). In contrast, regression analyses would only be able to examine smaller components or paths of the model to be examined at any given time (Preacher, Rucker, & Hayes 2007). This is limiting as we are interested in the way multiple constructs simultaneously impact upon one another across multiple time points.

SEM requires a minimum of 200 participants for models to be reliable (Lei & Wu, 2007); the 327 participants available thus provided a sufficient sample size. In addition, SEM software allow models to be estimated using maximum likelihood estimation or other analytic approaches, such that any information provided by respondents can be included (McQuitty & Wolf, 2013). GLM models typically involve complete case analysis --which due to the high amount of missing

data that occurs in longitudinal studies (including this one), such analyses result in a biased sample involving a very limited number of respondents. This also fails to make use of the available data. In contrast, SEM allows respondents to be included in the analyses, with the analysis making use of whatever information is included.

In Study 1, we calculated descriptives and cross-sectional and longitudinal correlations amongst the among the study variables. Then, a cross-lagged model using structural equation modeling (SEM) was tested with the lavaan package (Rosseel, 2012) in R (version 3.3.3). Strengths use was modeled as a single manifest variable at each time point, based on a composite of the 14 scale items. Work related flow was modeled as a latent construct, consisting the three WRF factors (absorption, work enjoyment, and intrinsic work motivation), with the relevant items indicating each factor. Thus, the cross-lagged model includes latent WRF variables and a manifest SU variable at each time point. Model fit evaluations were primarily based on the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Residual (SRMR). We also evaluated the Tucker Lewis Index (TLI), and the Comparative Fit Index (CFI), with values greater than .90 indicating adequate fit (Hue & Bentler, 1999).

In study 2, to support modelling of the latent vital engagement construct over time, missing data was first imputed using multiple imputation by chained equations (Raghunathan, Lepkowski, Van Hoewyk, & Solenberger, 2001; Van Buuren, 2007). The use of multiple imputation tools allowed all participants to be included, and consequently avoiding bias that may occur in using only complete cases. Moreover, using these tools helped to account for the statistical uncertainties that occur with imputing missing values (Azur, Stuart, Frangakis, & Leaf, 2011; Schafer, 1999). The imputed data was then used to test a structural equation model using the lavaan package (Roseel, 2012), with the runMI() function available through the mice

package. For our primary model, we tested vital engagement as a latent factor comprised of WRF, SUS, SVS, and MLQ (at T3-T5 only) across the five measurement occasions. Model fit was evaluated with the Root Mean Square Error of Approximation (RMSEA), the Tucker Lewis Index (TLI), and the Comparative Fit Index (CFI), with good fit indicated by an RMSEA, and TLI and CFI (Hu & Bentler, 1999). Moreover, the extent to which vital engagement overlaps with other constructs (rather than predictive validity) was considered using correlations separately by measurement occasion -- examining the correlations between vital engagement (as a latent factor) with the wellbeing (WEMBS), passion (VCS-P), work climate (WCQ), and work engagement (UWES, T4 and T5 only) measures.

4.7 Conclusion

This chapter provided an overview of the sample, measures, and analytic approaches included in the two empirical studies that are part of this dissertation. Theoretical background, specific study details, results, and conclusions are provided in the next two chapters.

Chapter 5 Overview:

The chapter empirically investigates the relationship between flow at work and strength use over a three-year period. The investigation specifically focuses on strengths use, rather than knowledge, driven by the arguments noted in Chapter 2. The intention was to consider bi-directional relationships between flow experiences, and personal and contextual factors in self-development. This implies ongoing development over time, which requires a focus on behaviors and the application of self-knowledge, as opposed to more ‘static’ constructs such as merely strengths knowledge. As I argued in Chapter 2, this better captures the dynamic nature of the individuals’ realization of the best in themselves and the flexible behavioral acts are required on a regular (daily, weekly, monthly, yearly) basis for proficiency and recurrent flow experiences.

As described in Chapter 4, the study used archival data, based on school staff. Using data collected over a 3 year period and five assessments, we tested the nature and magnitude of the relationship between strength use and flow at work over time, using structural equation modeling, testing cross-lagged models. In doing so provide clarity with regarding whether this relationship was mutually beneficial relationship that was either ‘cyclical’ or ‘spiral’.

This chapter was developed as a journal article, which was submitted to the *Journal of Positive Psychology* in December 2018. Although it was not successful at the time, the chapter greatly benefited from reviewer’s comments. The chapter is structured to facilitate resubmission to a peer reviewed journal article. The submitted article was written in collaboration with coauthors Margaret Kern and Lindsay Oades (my contribution = 80%). I developed the ideas for the study, acquired, cleaned, and set up the data (including matching assessments over time, checking for duplicates, and managing challenges of the archival data), worked together with co-author Kern to conduct analyses, and led the writing and revision of the submitted manuscript.

Chapter 5

Study 1: Examining the relationship between strengths use and flow at work among school staff over a three-year period

Abstract

Flow at work is thought to be a dynamic and contextually bounded experience. Its relevance to optimal human functioning is well documented. Although flow theory suggests a mutually reinforcing association between flow and strengths use, studies have not tested the inter-relationship of flow at work and strengths use prospectively over long time periods among workers. Using a panel of school staff ($N = 327$), the current study investigated flow and personal strength use, measured five times over a three-year period. Although flow and strengths were correlated within each time point, cross-lagged analyses did not find flow as predictive of strength use nor strength use as predictive of flow. Results point to the complexities of understanding dynamic psychological processes over time, the impact of the time scales under which dynamic effects appear, and the relevance of contextual factors. Implications for measuring and supporting wellbeing at work, while taking into account its dynamic nature, are considered.

5.1 Introduction

Flow is a dynamic experience that involves affective (e.g., enjoyment), cognitive (e.g., absorption), motivational (e.g., intrinsic motivation), and volitional (e.g., positive activation and vitality) elements (Bassi & Delle Fave, 2012; Delle Fave, Massimini, Bassi, 2011). Its relevance to optimal human functioning is well-documented within the positive psychology literature (e.g., Csikszentmihalyi, 1988, 1990, 1996, 2003; Dell Fave et al., 2011; Nakamura & Csikszentmihalyi, 2005; Seligman, 2002; 2011). As such, it is important to identify ways to foster and support flow. Theorists have argued that flow can arise from the “unforced expression of the person’s reasoning and feelings, in harmony with the rest of her character and structured system of goals” (Annas, 2008, p. 30). That is some of the positive psychology literature has advocated for the value of harnessing personal strengths – or the best in one’s self - to support flow experiences (e.g., Csikszentmihalyi, 2003; Delle Fave et al., 2011; Nakamura et al., 2009; Rathunde, 2015; Seligman, 2002, 2011). However, empirical examinations of direct associations between flow and strengths are limited, particularly within work contexts over multiple years.

The experience of flow is dynamic in nature, impacted by aspects of the person and their environment. To capture its dynamic aspects, flow has often been studied using experience sampling methodologies (ESM, see Hektner, Schmidt, & Csikszentmihalyi, 2007), which can identify the occurrence and pattern of flow intensively within a short period (e.g., across a day or week). However, less is known about the experience of flow over longer time periods, such as months or years, or the extent to which contextual factors impact the flow process. In a seminal publication of cross-cultural flow research, Delle Fave and Massimini (2003) argued that flow among school staff is well-suited to provide insights into the dynamic nature of optimal experience states, primarily because these workers experienced flow considerably more often

than any other surveyed (see also Delle Fave et al., 2011). The current study thus investigated a cohort of school staff followed over a three-year period to gain further insight into the types of relationships that exist between flow at work, personal strength use, and work outcomes.

5.1.1 Defining Flow at Work

Whilst often recognizable by many individuals, flow has proven difficult to capture, define and operationalize (see chapter 3 for a review). Flow at work has been described as an experiential indicator of a balance between integrative and differentiated states of mind and behavior (Inghilleri, 2014; Rathunde & Csikszentmihalyi, 2006). Flow is a dynamic construct that is relational between cultural, psychological and biological aspects of a person. It has been postulated that these experiences are descriptive accounts that inform both child and adult development (Csikszentmihalyi, Rathunde, & Whalen, 1997; Rathunde & Csikszentmihalyi, 2006; Rathunde, 2015).

Review of the literature suggests that flow at work is most commonly conceptualized according to Bakker (2005) as “a short-term peak experience at work that is characterized by absorption, work enjoyment and intrinsic work motivation” (p. 27). Absorption occurs when employees experience complete immersion and concentration in work tasks to the point of complete exclusion of all else, combined with a distorted (quicker or slower) perception of time (cf. Csikszentmihalyi, 1990). Important aspects of working adult enjoyment, or positive experiential reports of working life, are made by those employees that report higher levels of enjoyment of work activities that arise from the cognitive and affective elements of the flow experience (Csikszentmihalyi & LeFevre, 1989; Fullagar & Kelloway, 2009; Ilies et al., 2017). Intrinsic work motivation refers to the performance of work-related tasks with only the inherent goal of activity related pleasure and satisfaction in mind of the employee (cf. Deci & Ryan,

1985). Employees with high levels of intrinsic motivation are continuously interested in what they are involved in (Harackiewicz & Elliot, 1998), and persist with and are fascinated by the tasks they perform, both in the short and longer term (Csikszentmihalyi, 1996; Gardner et al., 2001; Nakamura et al., 2009).

5.1.2 Flow experiences within educational contexts

Many educators around the world are committed to fostering the academic development of students, as well as instilling a love of learning, personal growth, and character development (Rathunde, 2015; Slemp et al., 2017). Teaching has been regarded as a “relational activity par excellence” (Delle Fave & Massimini, 2003, p. 335). Through the process of attachment and modelling, teachers (and school staff more broadly) can have a significant impact on the developmental trajectories of their students. Staff who embody and model their beliefs as to the relevance of identity development and continual expansion of unique personal capacities provide a valuable contribution to students, school or university, and community (Csikszentmihalyi & Schneider 2000; Nakamura et al., 2009; Rathunde, 2015).

Flow may be a powerful contributor to this virtuous educational process. Delle Fave and Massimini (2003) showed that successful teachers found meaning in their work, engaged in learning for its own sake, and experienced flow experiences during the process of teaching. Similarly, Bakker (2005) found that flow experiences in teachers were predictive of optimal learning experiences in their students. Other studies have shown that flow among teachers and personal and organizational resources offered from the school environment can lead to dynamic positive relationships over time (Rodriguez-sanchez, Salanova, Cifre, & Schaufeli, 2011; Salanova, Bakker, & Llorens, 2006). Flow experiencing teachers appear to be powerful transmitters of information during the process of teaching (Bakker, 2005; Rathunde, 2015).

Moreover, teachers have showed the capacity for both autonomous and controlled regulation and can experience both extrinsic and intrinsic motivation for their work (Bassi & Delle Fave, 2012). Hence, schools provide fertile ground for attempts to help understand flow experiences and dynamic indicators of optimal person-environment fit.

Flow is thought to involve a dynamic process of continuously balancing perceived challenges and personal skills, resulting in the striving toward ongoing developing toward a more complex self (Delle Fave et al., 2011) and culturally beneficial personhood (Csikszentmihalyi & Rathunde, 2014). The nature and direction of the association between flow and other positive constructs is also postulated to be cyclical in nature (Tobert & Moneta, 2013), such that the presence of one enhances the other in a mutually reinforcing manner (Salanova et al., 2005). For instance, personal and organizational resources were found to have a bidirectional impact on flow experiences over an eight-month period among a panel of Spanish teachers, such that flow was facilitated by self-efficacy and other key organizational resources over time, and vice versa (Rodriguez-sanchez, Salanova, Cifre, & Schaufeli, 2011; Salanova et al., 2006). Other studies have demonstrated the importance of teacher self-efficacy cross-sectionally (Bakker, 2005; Llorens et al., 2012) and over a several month period (Rodriguez-sanchez et al., 2011; Salanova et al., 2006). These studies point to the potential benefits for both teachers and their students when teachers have the psychological capabilities to experience flow, combined with a supportive school environment. In the current study, we focus on the cyclical processes of flow in combination with the active use of the unique capabilities of school staff.

5.1.3 Intersections of flow and strengths use

Flow theory specifies an ongoing and dynamic relationship between using one's capacities and flow experiences over time (Csikszentmihalyi, 1990; 1996; Delle Fave et al.,

2011). One's capabilities from a positive psychology perspective, is manifested in part through individual strengths. A strength has been defined as "a natural capacity for behaving, thinking, or feeling in a way that allows for optimal functioning and performance" (Linley & Harrington, 2006, p. 88). Wood and colleagues (2011) further defined strengths as "characteristics that allow a person to do well or at their personal best" (p. 16). Strengths are personal resources (Hobfoll, Johnson, & Jackson, 2003; Linley, 2008), which if harnessed, have the capacity to improve employee wellbeing (Korn, Woodard, & Tucker, 2016). The use of one's strengths can allow a more successful negotiation of environmental challenges and opportunities and is positively related to work productivity and job satisfaction among employees (Datu & Mateo, 2015; Olcar, Rijavec, & Golub, 2017; Lavy & Littman-Ovadia, 2016).

Importantly, dynamic processes underlie the cultivation of strengths over time, similarly to the dynamic nature of flow experiences and health – both wellbeing and ill-being - processes throughout the lifespan (Delle Fave et al., 2001; Rathunde & Csikszentmihalyi, 2006; Tse et al., 2019). Character strengths do not occur in isolation, but often involve a number of different strengths being used at one time, with different strengths dialed up or down depending on the context and circumstance (Peterson & Seligman, 2004; Linley, 2008). Effective strengths use is not only about using a strength in isolation, but the optimal use of different combinations of strengths within a supportive and virtuous context (cf. Nakamura & Condren, 2018). For instance, Csikszentmihalyi, Rathunde, and Whalen (1997) found that successful talent development occurred and were sustained over a two year period when there were flow experiences *and* supportive contexts.

Moreover, strengths are thought to intersect with and impact upon work-related flow in various ways across and over time (e.g. Csikszentmihalyi, 1996, 2003, Nakamura et al., 2009).

Evidence suggests that the capacity to harness strengths like conscientiousness (Demerouti, 2006), need for achievement (Eisenberger et al., 2005), creativity (Moneta, 2012), love of learning (Delle Fave & Massimini, 2003), and optimism (Colombo & Zito, 2014) has a positive impact on experiencing flow at work. However, to our knowledge, all the studies that have examined flow and strengths use have been cross-sectional or comprised a very short time frame – especially not over a period of years and not among adult populations. We note that Csikszentmihalyi et al. (1997) found that strengths constellations involving achievement, endurance, inquisitiveness, and aestheticism sustained flow over a two-year period of later high school years. However, Rathunde and Isabella (2017) have called for more studies into play and flow states in middle adulthood years – something that is seemingly less frequent yet just as important (if not more so) than any other developmental stage. Consequently, further empirical inquiry into the development trajectories of adults during working careers is needed as it offers insight into the positive impact of short-term positive experience (such as flow) over months and years. The present study offers one way of investigating how optimal functioning and experiences of working adults may be facilitated and encouraged.

When discussing the unfolding aspects of optimal human experiences, Delle Fave and her colleagues suggested that flow experiences lead to a ‘virtuous cycle’ of positive effects on meaningful aspects of the self (Delle Fave, 2009; Delle Fave et al., 2011). The use of the word ‘spiral’ by the authors presumably denotes the idea that flow experiences catalyze development of the self, supporting the value of incorporating flow experiences into the workplace. This idea of an upward spiral has been defined as ‘*amplifying loops* in which cyclic reciprocal relationships among constructs build on each other positively over time’ (Salanova, Llorens, & Schaufeli, 2010, p. 260; see also Lindsley, Brass, & Thomas, 1995). Suggestions of these

‘amplifying loops’ appear in a number of prominent positively oriented psychological theories - for example Broaden and Build theory (Fredrickson, 2001), Conservation of Resources (COR; Hobfoll, 1989; Hobfoll et al., 2003), and Social Cognitive theory (Bandura, 1997) - supporting an optimistic bias that success begets success and growth leads to growth. Related research evidence exists showing that positive mindsets such as self-efficacy impact flow at work over time among educational employees (Salanova et al., 2006; Rodriguez-sanchez et al., 2011). For instance, in a longitudinal study that followed 258 Spanish secondary teachers over an eight month period, Salanova and colleagues (2006) tested associations between self-efficacy beliefs and organizational resources and work-related flow (i.e., absorption, enjoyment and intrinsic motivation) over time. Results found bi-directional associations between organizational and personal resources and work-related flow. Findings were replicated and extended by Rodriguez-sanchez et al. (2011), in providing evidence for the bi-directional nature of the association between work-related flow and self-efficacy and challenge-skill balance among educational personnel.

It is possible that strengths and flow reciprocally support one another, such that both need to be considered within any workplace. That is, strengths use increases flow, which in turn increases the use of one’s strengths in a reinforcing manner (cf. Csikszentmihalyi, 2003). However, flow is dynamic in nature, and it is questionable the extent to which uninhibited growth might be expected to occur. From a systems perspective, in contrast to growth models, individuals and their environments balance one another (Csikszentmihalyi, 1996; Inghilleri, 2014; Meadows, 2008; Nakamura, 2011). There are limits to growth (e.g., Meadows, 2008), such that other factors (e.g., the socio-environmental context) may limit ongoing growth - that is, flow and strengths use may be correlated at a single point in time, but might be unrelated or

even inversely correlated over time, depending upon other factors (see Csikszentmihalyi, 2014 on his discussion of the creative process). As such, rather than ‘gain spirals’ a systems perspective on flow argues for the complex process occurring that is dependent on both on agentic and contextual factors across the lifespan (Nakamura, 2011, 2014; Tse, Nakamura, Csikszentmihalyi, 2019), including middle adulthood (Rathunde & Isabella, 2017). This implies an interactional process characterized by *balance* rather than *growth* over time (cf. Nakamura & Csikszentmihalyi, 2005). If this is the case, strengths use and the experience of flow at work would be likely to show a bi-directional relationship over time. However, these possibilities have thus far not been tested, and currently a gap exists in research on the exact nature and magnitude of these relationships.

5.1.4 Do strengths use lead to flow at work?

Research into the relationship between strengths and flow at work have tended to focus on individual strengths such as optimism (Zubair & Kamal, 2015), love of learning (Delle Fave & Massimini, 2003) and creativity (LeFevre, 1988; Moneta, 2012). Specifically, Moneta (2012) found that it was specifically the facilitation of idiographic opportunities (and lack thereof) for employees to apply their strength of creativity had a uni-dimensional positive impact on employee’s motivation at work and engagement levels in work tasks. The author concludes that the relationship between creativity and flow at work is likely to be bi-directional between flow experiences and positive behavioral and affective experiences (see also Tobert & Moneta, 2013). That is, the implication that the application of one’s best aspects had a bi-directional relationship. However, Csikszentmihalyi (2003), in his interview-based study of successful leaders, showed that the ability to apply a number of different skills, strengths and capacities across their working careers in response to the challenges they faced at the time. The implication here is that it is in fact

more likely, that the varied use and frequency of strengths was the most important (see also Seligman et al., 2005). Based on the above, the first proposition put forward is that strengths use have a direct impact on the experience of flow at work among employees, and hence:

Hypothesis 1: Strengths use among employees will have a positive influence on the experience of flow at work (absorption, work enjoyment, and intrinsic motivation) (causation hypothesis)

5.1.5 Does flow at work lead to more frequent use of strengths?

A central tenet in Flow theory is that when flow experiences are beneficial for the cultural context, these key innovations, and the individuals that create them, are enhanced and encouraged to great social influence. This implies that the experience of flow, when coupled with meaningful contribution, also provide greater scope for the use and development of an individuals' best self. Flow has been shown to be associated with adaptive behavior such as communication effectiveness (Trevino & Webster, 1992; Martin & Jackson, 2008), a healthy passion for work (Lavinge et al., 2012), and engagement with work tasks (Bakker, 2008; DeFraga & Moneta, 2016; Moneta, 2017). Whilst examining the positive outcomes of flow over time among strengths are currently sparse. However, flow at work has shown to have a significant impact of self-efficacy (a precursor to adaptive behavior, see Bandura, 1997) among a varied set of occupational types and employees' training and experience (Rodriguez-sanchez, 2011; Salanova et al., 2006). Moreover, results provided evidence that the increase of self - efficacy, the more flow at work, which in turn predicted future self-efficacy. Given that flow at work has been described as indicated by optimal attention and action (Csikszentmihalyi & Nakamura, 2010), and based on the above, the second hypotheses was proposed;

Hypothesis 2: Work -related flow (i.e. absorption, work enjoyment, and intrinsic work motivation) experiences among employees' strengths use) (reversed causation hypothesis)

5.1.6 The Current Study

While studies point to the inter-relatedness of flow and personal strengths, a greater understanding of the inter-relationships between harnessing one's strengths and flow experiences over time is needed. In addition, aligned with calls for psychology research and practice to be more contextually oriented (Ciarrochi et al., 2006), studies that can examine the evolution of positive psychological processes of staff working at a single school over time and over longer periods are needed.

The implicit assumption is that the two constructs mutually influence each other over time, in a reinforcing manner. To our knowledge, this assumption has not been directly tested beyond two measurement occasions. In the current study, we empirically investigate the specific nature, magnitude, and direction of inter-relationships over time. As illustrated in Figure 5.1, we employed a panel design and used covariance modeling over five time points across a three-year period. We aimed to empirically examine inter-relationships between flow experience and strength use over time, within the context of an organizational change process. Building upon the idea of positive reinforcing patterns that might occur over time, we hypothesized that strengths use facilitates flow at work, and employees who experience flow mobilize greater strength use (i.e., there would be evidence of cross-lagged effects, above and beyond the cross-time effects of flow predicting subsequent flow and strengths use predicting subsequent strengths use).

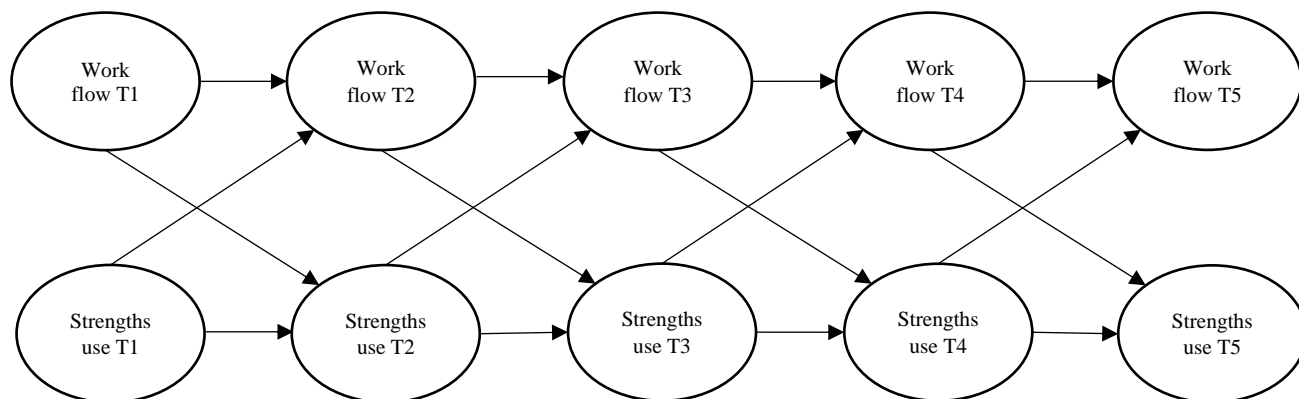


Figure 5.1. Conceptual model, with dynamic inter-relatedness of strengths use and work-related flow

5.2 Method

5.2.1 Participants

The current study is part of a larger study that aimed to evaluate the implementation of a wellbeing program over a three-year period (Green, Oades, & Robinson, 2011; Wikks, 2013). Between 2011 and 2013, a private K-12 school in New South Wales, Australia purposely aimed to sustainably increase the wellbeing of students, staff, and parents through a series of programs and interventions. To assess impact over time, school staff were asked to complete surveys over five occasions. Participants were assessed twice per year for the first two years and once in the third year. Each occasion included measures of work-related flow and strengths use, which we focus on here (the larger study included additional measures, as described in Chapter 4, which are beyond the scope of the current study).

The current study included 327 staff who completed the work-related flow and strengths use measures at least once across the five occasions. Of these staff, 31 completed all five occasions, 68 completed four occasions, 119 completed three occasions, and 178 completed two

occasions. To consider the impact of attrition, we compared individuals who completed three to five assessments with those who completed one or two, using independent sample t-tests for continuous variables and chi-square for categorical variables. No significant differences appeared between the two groups on levels of flow experience ($t(196) = 0.92, p = 0.36$), strengths use ($t(195) = 0.23, p = .08$), type of profession ($\chi^2(6) = 6.81, p = .34$), time of employment at the school ($\chi^2(6) = 10.29, p = 0.11$), gender ($\chi^2(1) = .37, p = 0.83$), or age group ($\chi^2(8) = 12.08, p = 0.15$).

5.2.2 Measures

Participants completed a self-report survey at each occasion which included measures of work-related flow and strengths use. The Work-Related Flow scale (WRF; Bakker, 2008) includes 13 items that measure the frequency that employees experience flow at work (1 = never, 7 = always). The scale has three subscales: absorption (4 items), work enjoyment (4 items) and intrinsic work motivation (5 items). The Strengths Use Scale (SUS; Govindji & Linley, 2007) includes 14 items that measure the extent to which participants use their strengths in various situations and challenges both on a daily basis and over time (1 = strongly disagree, 7 = strongly agree).

5.2.3 Data Analysis

We first calculated descriptives and cross-sectional and longitudinal correlations amongst the WRF and SUS variables. Preliminary analyses indicated that age and gender were not systematically related to the model variables and did not modify the results of the model testing. Thus, to facilitate model estimated and ease of presentation, subsequent analyses used the whole sample, without further consideration of demographic factors.

We then tested the cross-lagged model using structural equation modeling (SEM) with the lavaan package (Rosseel, 2012) in R (version 3.3.3), testing the model indicated in Figure 5.1. WRF theoretically includes three factors, whereas SUS is a single factor. We created a single manifest variable for SU, based on the average of the 14 items. We created three latent variables representing the three WRF factors (absorption, work enjoyment, and intrinsic work motivation). Thus, the cross-lagged model includes latent WRF variables and a manifest SUS variable at each time point. We evaluated model fit primarily based on the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Residual (SRMR); Hu and Bentler (1999) suggest that adequate model fit is indicated by an RMSEA δ .06 combined with SRMR δ .09. We also report the Tucker Lewis Index (TLI), and the Comparative Fit Index (CFI), with values greater than .90 indicating adequate fit.

5.3 Results

Descriptive statistics, reliability (Cronbach's alpha), and bivariate correlations (Pearson correlation coefficients) are summarized in Table 5.1 (see below). Across the time points, WRF and SUS had minimum alphas of .90, and were significantly positively correlated at and across the five time points.

Table 5.1

Means, standard deviations (SD), Cronbach's alpha (on the diagonal) and correlations for the study variables

	Mean	SD	N	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Flow at work T1	4.73	1.0	197	.92									
2. Strengths use T1	5.67	.71	197	.53**	.92								
3. Flow at work T2	4.80	1.1	98	.78**	.52**	.92							
4. Strengths use T2	5.66	.89	97	.44**	.71**	.60**	.96						
5. Flow at work T3	4.91	.97	61	.79**	.49**	.70**	.48**	.91					
6. Strengths use T3	5.74	.85	61	.23	.63**	.22	.64**	.45**	.96				
7. Flow at work T4	5.04	.93	72	.68**	.43**	.57**	.44**	.54**	.31*	.91			
8. Strengths use T4	5.73	.85	71	.34**	.66**	.27*	.68**	.49**	.81**	.46**	.95		
9. Flow at work T5	4.91	.95	84	.67**	.43**	.62**	.35**	.72**	.32*	.69**	.28*	.90	
10. Strengths use T5	5.85	.71	84	.38**	.65**	.31*	.64**	.37**	.70**	.52**	.64**	.50**	.95

* $p < .05$, ** $p < .01$ Correlations use pairwise deletion, according to the number of participants available at each time point

We then estimated the hypothesized cross-lag model (Figure 5.2, see below). Generally, our model did not demonstrate good fit to the data (RMSEA = .096, 90% confidence interval = .087, .105), SRMR = .103, CFI = .778, TLI = .726). At each occasion, while all three work-related flow factors significantly loaded on the latent WRF factor. Across each occasion, the majority of variance was impacted by the factor at the prior occasion (e.g., SUS at time 1 best predicts SUS at time 2), and correlations between WRF and SUS were much stronger within each occasion than across time

The one exception was a significant association between work-related flow (T4) and strengths use (T5). By this point, staff had experienced the well-being programs and interventions at the school over three years, and it is possible that the increased experience of flow at work among employees are due to the environmental opportunities facilitated the consequent strengths use 12 months later. However, associations could also be due to chance, and should not be interpreted without replication.

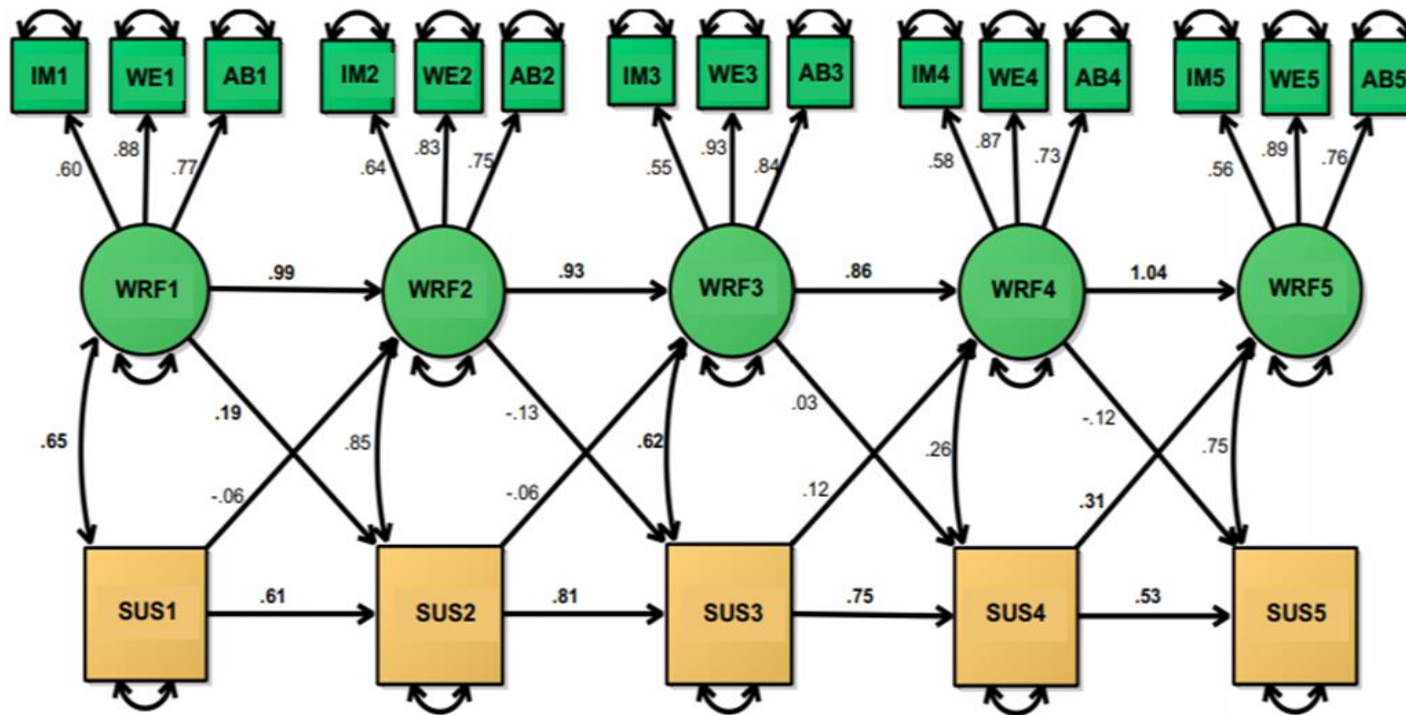


Figure 5.2. Cross-lagged model, testing within and cross-time associations between strengths use and work-related flow. Significant estimates are bolded. WRF = work related flow, SUS = strengths use survey, IM = intrinsic motivation, WE = work enjoyment, AB = absorption.

5.4 Discussion

The current study investigated bidirectional associations between work-related flow and strengths use in a panel of educational staff across five measurement occasions over a three-year period. The main research question was whether a bidirectional relationship existed between strengths use and flow at work over an extended period of time. We operationalized flow at work in accordance with Bakker (2005, 2008), namely a short-term and optimal experience that is indicated by employee absorption, work enjoyment and intrinsic work motivation. Based on previous studies (Rodriguez-sanchez et al., 2011; Salanova et al., 2006), we hypothesized that work-related flow and strengths use would influence each other over time, such that flow at work would predict future strengths use and vice versa. However, the hypothesized cross-lagged model did not adequately fit the data.

We found that work-related flow and strengths use were significantly correlated within each time point, except at Time 4, but the greatest predictor of subsequent responses was prior responses. That is, strengths use was the best predictor of subsequent strengths use, and flow was the best predictor of subsequent flow. It is possible that this stability is due to the measures used, such that they are not sensitive enough to capture actual change. Some authors have been critical of the work-related work measure, strongly urging researchers to use alternative forms of measurement of flow at work (Hapell, Gaskin, & Platania-phunga, 2014). Indeed, while all three factors loaded on the main WRF factor, intrinsic motivation fit worse than the other domains. Yet Schiepe-Tiska and Engeser (2017) describe the benefits of flow measurement using the core factor conceptualization of work-related flow. Furthermore, in a systematic review and meta-analysis of flow at work (see chapter 3), we showed that the most commonly utilized tool for operationalizing flow at work for the past decade was the work-related flow measure (WOLF;

Bakker 2005, 2008), which we used here. Moreover, our study showed that factors within each time point demonstrated adequate reliability in work-related flow among school staff over the three years in our study. Alternatively, rather than being two separate constructs, the experience of flow and strength use may be manifestations of underlying optimal experience, with flow being an experiential indicator and strengths use a behavioral indicator.

A third possibility is that there may be a dynamic coupling of the two constructs, such that they rise and fall together, with other factors balancing out and redirecting that rise and fall, preventing ongoing growth. This would align with lifespan developmental research and systems perspectives (e.g., Greenberger & Sorensen, 1974; Kern et al., 2017; Kern et al., 2019; Nakamura et al., 2009; Rathunde & Csikszentmihalyi, 2006; Senge, 2006), which suggest that balance of growth (or differentiation) and recovery (or integration) contributes to the maturity of the individual – specifically Rathunde and Csikszentmihalyi’s (2006) notions of ‘psychological complexity and development’ (p. 480) across the lifespan (see also Tse et al., 2019). Hence, although positive psychology often emphasizes constant growth, systems (including human biopsychosocial system) rarely constantly grow and develop – a variety of other factors can balance out that growth, helping to maintain stability (Meadows, 2008; Senge, 2006). Moreover, a darker side of striving to experience flow – especially without a meaningful purpose- is that constant push for self-development and self-growth can border on the cycle of increasing addiction, such as the continued perseverance on attainment. An example of this can occur in gaming communities, where the game perfectly matches skill level and challenge, resulting in some individuals spending almost every waking hour focused on the game (see also Schuler & Nakamura, 2013 regarding the risks potentially associated with flow).

Further, dynamic relationships between strength use and flow might function differently across different time scales and different contexts. This would support the reinforcing associations evidenced in short-term studies (Rodriguez-sanchez et al., 2011; Salanova et al., 2006) combined with the lack of cross-lagged associations over longer time periods, like what we used here. That is, short-term processes may have different trajectories and impacts over a period of years instead of days or weeks. In describing the development process of adults throughout their working careers, Rathunde and Csikszentmihalyi (2006) conclude that there is a number of dialectic elements that successful individuals need to resolve to have increased flow experiences in their lives, which unfolds in a dynamic process as individuals attempt to balance challenge finding with skill building across the lifespan (see also Csikszentmihalyi, 1996; Nakamura et al., 2009). Subsequently, future studies should consider how flow and strength relationships unfold across short and long periods, and what this looks like in the context of broader life development (cf. Tse et al., 2019).

It is also possible that the stability of WRF and SU over time reflect the context in which the study occurred. The school was in the process of implementing a positive education change initiative. It may be that some of the psychological processes were impacted by the events that transpired with the school environment during that period. For instance, we saw that at the last time point, strength use was impacted by prior flow. It could be that after three years, the context was now supportive enough for this association to unfold. It could also simply be due to chance. Hence, whilst we attempted to undertake an empirical examination of key flow processes over time, we acknowledge the need for qualitatively examine how these psychological processes were unfolding over time, in staff within a specific environment. In this vein, there have been calls for positive psychology research to become more contextually accurate (Ciarrochi et al.,

2016), and hence greater incorporation of qualitative and mixed method approaches (Hefferon, Ashfield, Waters, & Synard, 2017; Kern et al., 2019).

5.4.1 Limitations and Future Directions

Translation of these findings should be taken with caution. Whilst there are potentially promising indicators, further studies are needed to test the nature of the relationship between flow at work and strengths use among employees. While we conceptually replicated the Salanova et al. (2006) study, who tested a cross-lagged model of personal and organization variables and work-related flow among teachers across two time points, our study varied in terms of the number of measurement occasions, time between measurements, measures used, and the sample under study. Each of these factors should be investigated as possible reasons for non-replication.

Our study points to several key directions for future research. It would be interesting to examine the moderating impact of profession type and length of time having worked at the school. Qualitative research would be useful to understand the experiences and impact of staff members going through a change process. Future studies will benefit from incorporating multiple assessment methodologies, including both qualitative and quantitative approaches. Such studies would contribute to further knowledge on how flow processes unfold within the context of employee's unique perspective or place within this broader context.

Several positive psychology theories point to positive spiral processes. Yet our results find little support for this. Ceja and Navarro (2009; 2011; 2012) provide evidence that the experience of flow has a chaotic pattern; they also found that sudden changes in one's environment could result in shifts in optimal experiences such as flow. Their prescription of managing flow in an organization was to the development of authentic goals, tasks, and bonds

between employee and their superiors. Similarly, in reviewing the literature on work related flow, we found that supportive leadership was significantly influential in experiences (see chapter 3). Hence, it is important to consider the employee within the process of change. Adding a simple intervention without consideration of contextual and ongoing dynamic processes may have little impact. Future studies should examine the impact of interventions across different contexts and shifting environments, and on other archival datasets.

5.5 Conclusion

Flow at work is a psychological process that occurs dynamically within an unfolding environment (in this case, a well-being initiative). While it correlates with strengths use, it is unclear how strengths and the flow experience impact one another across time and shifting circumstances. The inconsistent results in this study have led us to postulate that situational and contextual factors intersect with associations between work-related flow and strengths use, balancing out growth in ways that make the two sustainable aspects of optimal development. While results need to be replicated and additional work is needed to understand the processes at work, such investigations delve more deeply into how and under what conditions flow at work occurs.

Chapter 6 Overview:

Based on the work undertaken in Study 1 of this dissertation, I began to truly appreciate the significant impact of both contextual and the environmental factors within the relationship between flow at work and strengths use among individuals. Moreover, the meta-analysis of flow at work over 30 years provided evidence for the importance of both psychological and environmental contexts necessary for flow to having a significant relationship wellbeing and job resources. What that meant to me is that if flow among working adults was to be sustained over a period of months and years (and not just a limited period) then they must be occurring alongside other meaningful and virtuous conditions. Consequently, using the same data set as in Study 1, I tested the vital engagement concept described in detail in Chapter 3. Specifically, I tested vital engagement in working adults among a panel of school staff over three years, as a construct comprising of self-realization (i.e., strengths use), optimal arousal (i.e., flow experiences) with a meaningful daily enthusiasm and energy, and general sense of purpose in life (i.e., meaning in life), and thought to be relatively stable over time.

This chapter has been developed as a journal article, structured to facilitate submission to a peer reviewed journal article. The article has been written in collaboration with coauthors Margaret Kern and Lindsay Oades (my contribution = 85%). As such, the chapter uses plural first person. I developed the ideas for the study, set up the data and prepared data for analyses, and led the writing of the manuscript.

Chapter 6

Study 2: Development and testing a model of employee vital engagement over three years: a pilot study.

Abstract

High rates of employee disengagement have been reported worldwide, negatively impacting the workplace experience for both individuals and organizations. It is thus critical to identify processes by which workers bring their full self to work. Nakamura (2001) proposed the concept of vital engagement, characterized by a focused, meaningful relationship between a person and their world. The current study developed and tested a model of vital engagement, which was operationalized as a latent construct comprised of work-related flow experiences, subjective vitality, presence of life meaning, and strengths use. Using a panel of school staff ($N = 327$ measured five times over three years, structural equation modelling was used to evaluate the four-factor model, test stability over time, and examine correlations with related constructs. Results supported the model, which was relatively stable over time. The construct was strongly correlated with but distinct from other wellbeing measures. The theoretical and practical implications for supporting flourishing life trajectories are discussed.

6.1 Introduction

Work – offices, courtrooms, warehouses, home offices, etc. – constitutes a social institution in which we spend a large portion of our lives. While employees worldwide want “good” jobs – steady employment with a consistent pay check, many also want “great” jobs – an occupation that provides a sense of meaning and engagement (Gallup, 2015; Gardner et al., 2001). Yet surveys worldwide indicate high rates of disengagement from work, despite many workplaces working hard to create conditions that purpose engaging their employees. It is thus critical for organizational scholars to understand the process of what Kahn (1990) described as bringing of one’s full self into what is done at work. Nakamura (2001) proposed the concept of vital engagement as an ‘absorbing and meaningful relationship between self and world, [which] can be found in any sphere of life’ (p. 5). Applied to the work domain, we suggest that vital engagement involves employees that are fully present, absorbed, dedicated to the task at hand, and feel a deep sense of meaning and satisfaction with one’s work, which arguably represents optimal functioning for both the individual and the organization.

Numerous studies have examined definitions, operationalization’s, and applications of engagement across the organizational literature (e.g. Bakker & Demerouti, 2008; Schaufeli, & Bakker, 2003; Langford, 2009; Sonnentag, Dormann, & Demerouti, 2010; Stairs & Galpin, 2010). While these studies have clearly documented indicators of engagement – such as in the case of conceptualization of the work engagement construct (comprised of absorption, vitality and commitment; Schaufeli & Bakker, 2003) and benefits and predictors of engagement (e.g., Stairs & Galpin, 2010) -- presently comparatively fewer studies have focused on the process through which workplace engagement unfolds as part of the adult development process, and/or how it can become a virtuous process (cf. Nakamura & Condren, 2018). Vital engagement

incorporates not only the feelings of engagement, but also the conditions under which engagement occurs, which transpire dynamically over time (Nakamura, 2001, 2011, 2014). Vital engagement occurs across multiple inter-related work and values cultural domains (Nakamura, Shernoff, & Hooker, 2009), which unfold as a person navigates their fit between their self and the environment in ways that are meaningful and related to culturally beneficial personhood (Csikszentmihalyi & Nakamura, 2014).

This study proposes one potential model of vital engagement, which attempts to operationalize Nakamura (2001)'s proposal that vital engagement represents a relationship between the self and the world, a volitional investment of energy in maintaining strongly authentic focused and intention, a regular optimal experience during one's days and weeks, and a felt significance and meaning toward virtuous ends. Nakamura highlighted that 'vital engagement is distinct from transient subjective states of being in flow, absorbed, engrossed' but 'a self-object relationship that endures over time' (p. 10). Hence, I propose one way of operationalizing vital engagement as comprised of four factors: the frequent experience of flow at work, a sense of meaning, subjective vitality, and flexible personal strengths application. I test this model using archival data collected from school staff assessed over a three-year period. I aim to advance an understanding of how vital engagement can be fostered in sustainable ways, informing ways of supporting optimal development among adults across their working lives.

6.2 Operationalizing Vital Engagement

The ability to captivate the employee's whole self occurs at the individual level within the person's sense of authenticity and meaning across their careers, as well as at a more macro level in terms of human resource management. Qualitative studies of creativity across the lifespan have found that optimal development is significantly associated with the capacity to stay

(vitality) engaged in a field and domain of work and ethical conduct (Csikszentmihalyi, 1996; Nakamura & Csikszentmihalyi, 2003, Nakamura et al., 2009). Building from existing theoretical and qualitative work, we suggest that vital engagement among working adults contains four specific inter-related components: flow at work, a sense of meaning, subjective vitality, and the use of one's strengths (see Figure 6.1 below).

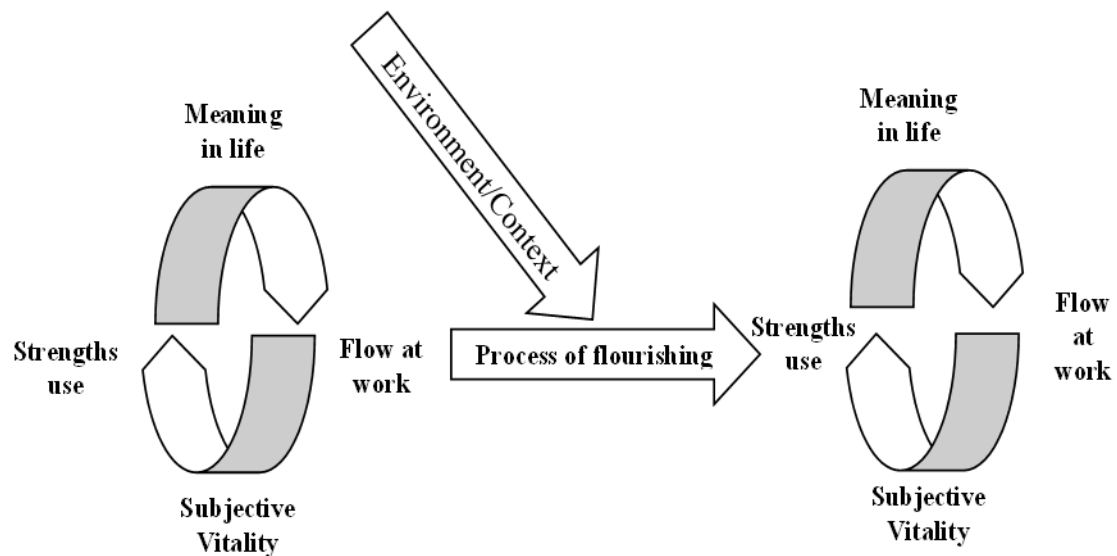


Figure 6.1 The vital engagement model in practice

We acknowledge that most discussions of vital engagement describe it as comprising of flow experience and meaning (Nakamura, 2001; Nakamura & Csikszentmihalyi, 2003).

However, we proposed an expanded model of vital engagement in practice which is additionally informed by the practice based theoretical and research orientations (such as contextual behavioral science, Hayes, 2005) – and subsequently the inclusion about aspects related to daily behaviors and vitality. Consequently, the figure of vital engagement in practice model aims to capture the process of optimal development during typical activities of adulthood, specifically

within the work context. Secondly, the process of optimal experiences within working adults is examined as they engaged in a work situation, and hence the investigation of flow among working adults within this dissertation. Because of the way in which the self is realized via the ‘transaction with the environment’ (Nakamura & Csikszentmihalyi, 2003, p.88), the model proposes that dynamic constructs are used in order to conceptualize this ongoing process.

As shown in the figure 6.1 (above), the inclusion within the vital engagement in practice model as both proximal antecedents and consequences of a set of four positive processes – namely strengths use (antecedent), flow at work and meaning in life (vital engagement) and subjective vitality (consequence/indicator). With regard to the latter, subjective experience is regarded as being in a ‘feedback’ loop with vital engagement – such that both experiences are highly reliant when flow is experienced in a meaningful way. The contribution of this research was to extend the modeling of flow experiences to include not just flow experiences but *meaningful* flow experiences. The difference lies in evidence showing not all flow experiences are beneficial for individuals (Shuller & Nakamura, 2013). Furthermore, Csikszentmihalyi (1990, 2003) argued the centrality of virtuous actions of capacities (which may or may not be virtuous) in flow activities across the lifespan, alongside the ongoing feedback mechanism of subjective vitality. Finally, qualitative accounts among successful workers have been gathered of the complex nature of vital engagement, especially leaders from various organisations (Csikszentmihalyi, 2003; Gardner et al., 2001; Nakamura et al, 2009) – finding that leaders that were most influential were able to create a thriving context of ideas and discoveries among the team, had the capacity to understand the particular strengths and behaviors of promise, to have a deep sense of understanding and deep connection with their professional work, and the daily

enthusiasm and energy to continue their work with vigor - and that this itself was also sought after by these leaders to give them feedback that they were on the a mutually beneficial direction.

At this point we acknowledge that the bulk of theoretical viewpoints of vital engagement are comprised of only two factors (meaning in life and flow at work; Nakamura, 2001, 2014; Nakamura & Csikszentmihalyi, 2003) - however given that vital engagement is dynamic process which one cannot captured easily we argue that a potential first step in modelling vital engagement in a practice setting as comprising the four factors (shown in figure 6.2). Hence, we undertook a pilot study given the limitation of separating out the dynamic aspects of vital engagement (antecedents and consequences) based on snapshots in time.

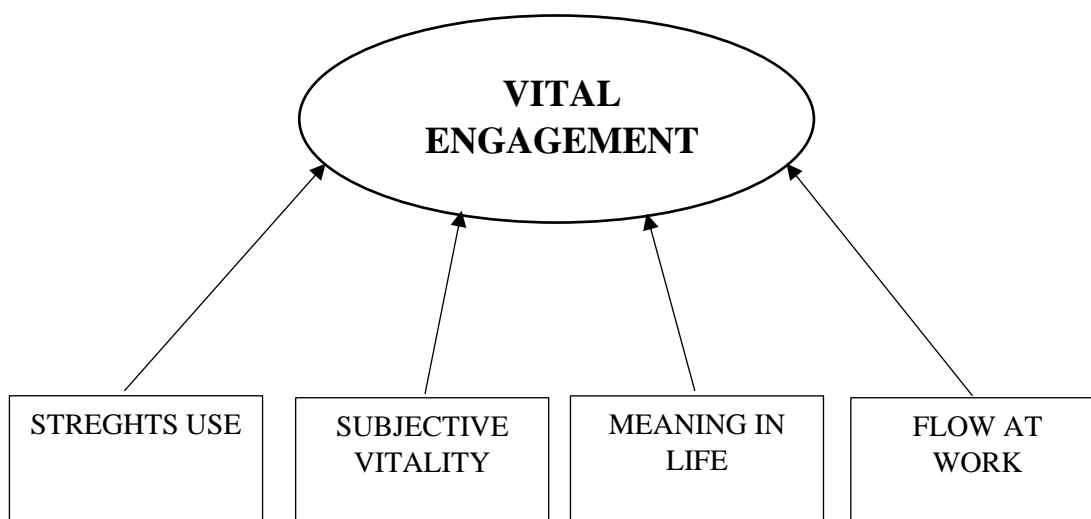


Figure 6.2 Conceptual model of vital engagement among school staff

Consequently, Figure 6.2 illustrates the theoretical model of vital engagement in practice that is tested within this study. The four factors act as reinforcing factors, intersecting and supporting one another within a single assessment period, such that an individual high in one factor would be more likely to be high in the others. As would be expected from a systems

perspective (Csikszentmihalyi, 2014; Kern et al., 2019; Meadows, 2008; Rathunde & Csikszentmihalyi, 2006), the environment and context interact with the vital engagement elements, balance these reinforcing factors over time to create homeostasis, such that without major changes in the environment or context, vital engagement is expected to remain fairly stable over time.

6.2.1 Flow at work. Among a number of relevant positive constructs, flow at work has been suggested as being core to optimal functioning and complex personhood (Csikszentmihalyi & Rathunde, 2014; Delle Fave et al., 2011; Rathunde & Csikszentmihalyi, 2006; Nakamura, 2001, 2011, 2014). Flow is commonly suggested as being a largely cognitive construct (i.e., effortless attention; Csikszentmihalyi & Nakamura, 2010) around which affective, motivational, and volitional experiences occur, depending on the contextual factors present (Delle Fave et al., 2011; see also chapter 3). Nakamura and Csikszentmihalyi (2003) practically termed the flow experience ‘enjoyed absorption’ (p. 88). While there are numerous ways of conceptualizing and measuring flow at work, we follow Bakker’s (2005) definition: a ‘short-term peak experience at work that is characterized by absorption, work enjoyment, and intrinsic work motivation’ (p. 27). This conceptualization of flow has frequently been used in studies over the past nearly 15 years (see chapter 3 for a review) and has shown adequate reliability and validity across cross-cultural populations. Hence, the relevant items from the work-related flow measure (WOLF; Bakker, 2005, 2008) were available within the archival dataset used in the current study.

Existing evidence supports the influential impact of flow at work on employee performance, sense of personal growth and expansion, and their sense of wellbeing (cf. chapter 3). It thus becomes important to consider how flow can be supported and cultivated. The flow

experience creates ‘psychic energy’ (Csikszentmihalyi, 1990), but also requires energy and investment, in activities that provide graduated opportunities for self-development (Debus, Sonnentag, Deutsch, & Nussbeck, 2014; Demerouti, Bakker, Sonnentag, & Fullagar, 2012; Nakamura & Csikszentmihalyi, 2005). Rathunde (1997) examined the family context and parent-child interactions over a two-year period, finding that family units that provided developmentally-appropriate mixtures of both challenging and supportive relationships reported greater flow experiences. This study highlighted the complexities that arise from both the dynamic and contextually bounded experiences of life. Over 25 years of research has shown that work often has the necessary conditions for flow to occur, and some of life’s most optimal experiences occur at work (Fullagar & Delle Fave, 2017), significantly more often than in free time or leisure (LeFevre & Csikszentmihalyi, 1989; Baumann & Scheffer, 2011).

The experience of flow can also impact upon others, depending on the nature of the work itself. For instance, within the work context Bakker (2005) showed that flow among teachers increased their motivation and enjoyment in the learning of their students. Relatedly, Salanova et al. (2006) found evidence that flow at work had a longitudinal impact (over 8 months) on personal and organizational resources. Further, personal and organizational resources impacted flow at work, indicating a bidirectional relationship (see also Rodriguez-sanchez et al., 2011). These studies suggested that schools that provided resources to staff, such as opportunities for social support and increased self-efficacy, have a longer-term impact on these school employees. Additionally, Ceja and Navarro (2012) showed that the nature of experiences is imperative for daily wellbeing experiences among employees and suggested that organizations provide assistance and support of employee to view challenges as ‘opportunities’ rather than ‘threats’ (p. 1120). An implication of these findings is that increasing the capacity of employees to negotiate

challenges is likely to facilitate greater enjoyment and flow experiences at work. Moreover, these studies suggest the significant impact of environmental conditions on flow experiences over time.

Despite the benefits of flow states, too much can become addictive (Delle Fave et al., 2011) and have negative consequences (Schuler & Nakamura, 2013). Experiencing flow frequently in and of itself does not necessarily result in positive experiences or outcomes in all contexts. Indeed, Csikszentmihalyi (1990) noted that flow can have an amoral character. For instance, LeFevre (1988) showed that within a sample of engineers, periods of intense involvement representative of flow were sometimes stressful. Other studies have shown that flow-like states can be experienced during the process of warfare among soldiers (Harari, 2008), during the process of stealing among homeless individuals (Delle Fave & Massimini, 2005), in recreational and pathological gamblers (Wanner, Ladoiuceur, Auclair, & Vitario, 2005), and among drug using individuals (Delle Fave et al., 2011). Over the past decade, concern has been raised around excessive use computer technology, in which the games (and social media) can mimic the underlying elements of flow in ways that can impede optimal engagement (Chen, 2006; Hawi & Samaha; 2016, Lemmens, Valkenburg, Peter, 2011). These outcomes are counter to what would commonly be considered optimal development. We claim that vital engagement includes the positive process of sustaining flow experiences in sustainable and ethical ways, not the potentially addictive and negative aspects that flow can entail. We suggest that this occurs in part due when flow extends from a sense of meaning and purpose in life.

6.2.2 Meaning in life. Meaning is distinguishable on the ‘basis of its *origins*, including enculturation, the push of confronted problems, and the pull of enjoyment’ (Nakamura & Csikszentmihalyi, 2003, p. 95) – with the suggestion that the pull of enjoyment of meaningful

activities resulting in optimal development across the lifespan. Similarly, meaning in life occurs when an individual perceives that ‘life and existence feel important and significant’ (Steger & Frazier, 2005, p. 579). The process of meaning making (see Kegan, 1982) has the capacity to creating resilient cognitive structures and conditions that drive human development towards greater complexity (see also Delle Fave et al., 2011, Ighilleri, 2014). Hence, the process of meaning making is a process that is viewed as powerful way to restructure previous (unhelpful) cognitions, beliefs, or schemas about the self and other people, and environmental conditions, including the process of psychological selection and differential investment of attention (Csikszentmihalyi & Massimini, 1985; Csikszentmihalyi & Nakamura, 2010; Delle Fave & Massimini, 2003). The presence of meaning in life is predictive of satisfaction with life, hedonic and eudaimonic self-appraisals, and the behavioral expression of meaning and virtue (Steger, 2006; Steger & Frazier, 2005).

According to optimal experience theory, the process of experiencing a sense of meaning in an individuals’ life involves engaging in activities that are often commonplace, yet autotelic (Csikszentmihalyi, 1990; Nakamura & Csikszentmihalyi, 2005; Rathunde & Csikszentmihalyi, 2006). Ongoing commitment and energy are required to continue to persist on an optimal trajectory over a person’s working career (Gardner et al., 2001; Nakamura, 2014; Nakamura et al., 2009), such that an ongoing relationship occurs between meaningful or ‘good work’ and optimal experience over the working career among successful individuals (Csikszentmihalyi, 2003; Gardner et al., 2001; Salanova et al., 2006). That is, meaning is not simply something that occurs, but rather evolves on a moment-to-moment and daily basis, which unfold to powerfully impact on the person and their culture (Delle Fave, 2009).

6.2.3 Subjective vitality. When engaged in intense and meaningful flow experiences, surgeons showed they could engage in surgery for tirelessly for long hours and enjoyed their profession for the opportunities for optimal experience over the status and financial benefit it provided (Csikszentmihalyi, 1975/2000). Other individuals can withstand long hours at work without a break, giving positive reports on the experience and feeling a sense of being alert and alive (Demerouti et al., 2012). Given the primarily cognitive nature of flow experiences, the individual is said to facilitate and maintain high levels of *psychic energy* which result from meaningful, absorbing and enjoyable activities (Csikszentmihalyi, 1990; Csikszentmihalyi & Nakamura, 2010). However, this process both requires (Debus et al., 2014) and sustains (Demerouti et al., 2012) energy for the working adult on a daily basis. We thus argue that vital engagement involves an ongoing subjective sense of vitality, which is sustained over time, supporting and facilitating experiences of flow.

We characterize subjective vitality as a sense of alertness, feelings of ‘aliveness’, and energy for one’s self (Ryan & Frederick, 2001). Vitality is a dynamic and evolving construct, like flow, that is highly phasic in nature. It involves a process of continuously balancing, integrating, and differentiating modes of information processing, as the person navigates the environments and experiences of life (Nakamura & Csikszentmihalyi, 2005; Rathunde & Csikszentmihalyi, 2006; Tse, et al., 2019). That is, vitality arises through a combination of seeking novelty (i.e., differentiation mode) and creating order (i.e., integration mode), within the continuous interaction that occur with one’s context and environment. For instance, Rathunde and Csikszentmihalyi (2003) found that prominent individuals were able to maintain meaningful endeavors within the creative and scientific fields through very later parts of life by managing their energy and enjoyment levels whilst interacting with the ever-changing environmental

landscape of their lives. A scholar might at times hide away in the library to complete their writing and at other times their office door is open to interaction with many others, managing social and cognitive energy to maintain a sense of vitality (Rathunde & Csikszentmihalyi, 2006). Consequently, we suggest that vital engagement emerges as subjective vitality frequently occurs over extended periods of time alongside ongoing experiences of flow, through opportunities that allow a person to apply their strengths and values in everyday working life (Nakamura, 2001; Nakamura & Csikszentmihalyi, 2003; see also Figure 6.1).

6.2.4 Strengths use. Aristotle considered a virtuous action as a one that balances the demands of the context and the character strengths which are employed (Aristotle, 1976; Csikszentmihalyi, 1990). Similarly, a ‘strength is a pre-existing capacity for a particular way of behaving, thinking, or feeling that is authentic and energizing to the user, and enables optimal functioning, development and performance’ (Linley, 2008, p. 9). We suggest that optimal development occurs as a person flexibly ‘fits’ themselves to their environment in virtuous ways (Csikszentmihalyi & Rathunde, 2014; Nakamura & Condren, 2018), applying one’s best self – or one’s strengths – to manage the processes required of the developing adult in their life and work – both during periods of growth and losses of skills (Tse et al., 2019). A central argument made herein is that frequently harnessing one’s character strengths within a meaningful path and with a sense of enjoyment and enthusiasm, can create the capacity for an individual to optimally negotiate everyday challenges whilst applying the best of oneself (cf. Nakamura & Condren, 2018).

Importantly, benefit arises from the process of applying strengths, rather than simply knowledge of one’s capabilities (see Linley, 2008; Peterson & Seligman, 2004). The diverse and unique ways of applying one’s strengths appears to influence wellbeing not only in the short, but

also across longer time periods (Linley, Nielson, Gillet, & Biswas-Diener, 2010; Wood, Linley, Maltby, Kashdan, & Hurling, 2011). Other studies find that having opportunities to use one's strengths at work correlated with perceiving that one's job is a highly meaningful experience, and more likely to be perceived as a calling, rather than simply as paid employment (Harzer & Ruch, 2012; Wrzesniewski, McCauley, Rozin, & Schwartz, 1997). The use of strengths requires firstly knowing oneself, including strengths and weaknesses, secondly to understand the situation, and thirdly to identify and how those strengths fit or do not fit within a given context. The capacity to create fit between the self and the environment represents the successful use of strengths. The optimal use of strengths involves a broad dialing up and down of different strengths, depending on the context and needs at the time (cf. Linley, 2008).

6.3 The Fluid and Contextual Nature of Vital Engagement. Bringing these four elements together, we conceptualize vital engagement as a eudaimonic developmental process that emerges over time and across contexts. Flow theory is embedded within the psychological selection model, in which optimal development includes meaning, harnessing our best selves, and frequent flow experiences in order to contribute to evolution of the human species (Csikszentmihalyi & Massimini, 1985; Delle Fave et al., 2011). The process of experience frequent flow experiences at work, effectively harnessing one's strengths, a sense of energy, and a sense of purpose in daily life dynamically influence and impact upon one another. Moreover these four factors are arguably synergistically reinforcing one another, and providing multiple pathways to successfully navigate changing contexts. Due to this dynamic nature of the vital engagement construct, across brief time periods correlations amongst the four underlying factors (i.e. subjective vitality, meaning in life, flow at work, and strengths use) might be expected to

vary, especially given different contexts and personal experiences, but across longer time periods, the balancing nature of the construct of vital engagement would result in relative stability. Thus, we expect that vital engagement is a relatively stable construct that emerges repeatedly over time from the combination of these four factors, despite change in the environment, as individuals select and manage themselves in ways that use their strengths well, provide a sense of energy, give meaning, and provide flow at work.

We further suggest that vital engagement is a fluid and contextually bounded construct (cf. Nakamura, 2014). Individuals are continually interacting with, and learning from, the contexts surrounding them through their experiences and moment-to-moment perceptions – with the possibility of a unique positive contribution of individuals to workplaces and colleagues due to the existence of various strengths profiles (see Linley, 2008). Thereby, every individual has a unique contribution to make to the group or system of practice or knowledge in which they reside (Csikszentmihalyi, 2014). Furthermore, Ceja and Navarro (2011) suggested that leaders are best positioned to continually re-evaluate the goals being set for the employee and ensure that these are contextually dependent, due to the highly variable nature of flow. The process of ‘strengths use’ highlights an ongoing application of the best parts of a person (i.e., the expression of virtue, Nakamura & Condren, 2018), within the constantly changing constraints of one’s environment and experiences. Practically, this implies that individuals who regularly experience vitality in work activities are likely to be involved across contexts and experiences, with the ability to meet challenges that arise and address situations in an authentic manner, even amidst developmental losses (cf. Tse et al., 2019). We thus argue that the capacity of individuals to apply their strengths in a psychologically flexible way is a crucial component of vital engagement.

In contrast to constructs such as work engagement (Bakker & Demerouti, 2007; Stairs & Galpin, 2010), we suggest that vital engagement incorporates the impact of important work experiences occurring over months, years, or even impacting upon future generations (Csikszentmihalyi, 1996; Nakamura et al., 2009). Nakamura et al. (2009), for instance, utilized qualitative methods to demonstrate that mentors that exhibit (vital) engagement over their working careers can be influential not only to the field of science but also subsequent scientists for up to two generations later. Thus, while we'd expect vital engagement to correlate with subjective markers of wellbeing and job satisfaction, we expect the measurable impact on objective measures of success would be equivocal. Vital engagement is more about the experience and subjective perception of one's work that enables an employee to enjoy and be committed to their work (Nakamura & Csikszentmihalyi, 2003), rather than being about one's performance or achievements at work. The former involves the intense engagement in virtuous behavioral repertoires that are guided by the experiential process of meaningful interaction between the self, the context, and the environment.

6.3.1 Vital Engagement in School Staff

In the current study, we consider vital engagement within school staff. Evidence supports the frequent experiences of flow at work among educators and the positive impact this has at micro-levels, including student learning (Bakker, 2005) and staff performance (Salanova et al., 2006), and at macro-levels, such as school-wide impact on student learning and development (Csikszentmihalyi & Schneider 2000; Csikszentmihalyi et al., 1997; Rathunde, 2015). Basom and Frase (2004) suggested that support from a leadership team (via feedback on work) and a sense of self- and team-efficacy supported beneficial conditions for teachers.

The bulk of research on the developmental impact of flow experiences has occurred among adolescent and early adult years (Csikszentmihalyi et al., 1997; Csikszentmihalyi & Shneider, 2000) and among individuals in the later part of their careers (Csikszentmihalyi, 1993; Gardner et al., 2001) – with very few focusing on the middle adulthood period of work (cf. Rathunde & Isabella, 2017). Supportive evidence does exist regarding the impact of a school or learning context (e.g., adequate challenges in concordance with autonomy support; Rathunde 2001), mentorship (Nakamura et al., 2009), on experiencing and sustaining flow over a period of years (Csikszentmihalyi & Shernoff, 2001; Csikszentmihalyi, Rathunde & Whalen, 1997) and decades (Csikszentmihalyi, 1996), and by both by mentor and mentees (Nakamura et al., 2009). These studies suggest that school staff create a culture that impacts their co-workers and students (see also Bakker, 2005; Delle Fave et al., 2011; Massimini & Delle Fave, 2003) – when flow is experienced by a teacher, student’s enjoyment of learning increases, and the teachers’ own ability to lose themselves in their work (Bakker, 2005, Caouette, 1995). Examples exist where educational employees with opportunities for action, adequate training, and resources to meet the challenges that arise within these opportunities appear to facilitate a sense of vitality and involvement that can sustain their optimal functioning over time (Salanova et al., 2006) and the required conditions for optimal learning and development (Nakamura, 2011; Nakamura et al., 2009). Rathunde (2015) described that educational staff which implicitly ascribed to the Montessori seek a sense of meaning in their lives and pursue identity whilst performing work tasks and frequently experiences flow during the process (see Rathunde & Isabella, 2017).

While studies have examined flow among teachers, to our knowledge, no studies have examined strengths use in educational staff in relation to the flow experience, and intersections with a sense of meaning and subjective vitality. Teachers that report having a love of learning as

a strength (Delle Fave & Massimini, 2003) – which may help capture students’ attention – and gives the teacher a sense of efficacy and energy as they teach (Caouette, 1995; Rathunde, 2015). Arguably, the behavioral expression and flexibility in execution of virtue and strengths is a highly meaningful part of the transfer of knowledge to younger generations (Csikszentmihalyi & Schneider, 2000; Nakamura et al., 2009) of future working adults. Studies have found that a teachers’ capacity to perceive themselves as efficacious resulted flow experiences over time (Basom & Frase, 2004), and that prior levels of self-efficacy could predict flow experiences over an eight-month period (Salanova et al., 2006).

However, in situations which an employee cannot utilize one’s strengths, it can have a deleterious impact on their sense of motivation at work (Moneta, 2012). Teachers, and the educational community, perceive their work as meaning but also overwhelmingly stressful and challenging. Basom and Frase (2004) argued that the widespread use of ‘mechanized models of management’ (p. 242), has taken much of the morale from teachers, undermining a sense of meaning, vitality, the use of strengths, and opportunities to experience flow, and emphasizing the need to understand when and under what conditions vital engagement does occur, along with ways to foster vital engagement.

6.3.2 Conceptualising vital engagement in practice

The nomological framework underpinning the conceptualization of vital engagement in this study is also informed by practice-based perspectives (cf. Linehan, 1993; Hayes, 2005). The overall aim of developing and testing the model of this optimal development construct is undertaken with an overall objective of attempting to be useful practically. Hence, I incorporate proximal antecedents and consequences of vital engagement. Subjective vitality is indicated,

vital engagement flow & meaning, and strengths use antecedent. Practice based implications for facilitating vital engagement in social environments, cognizant of the contextual factors.

Introducing a behavioral component as a condition or contextual factor.

The Vital engagement construct developed from primarily qualitative interviews with individuals that had a longstanding history of completing work that is virtuous and cutting edge (Nakamura et al., 2009). Extending to flow experiences that are meaningful, in the context of virtuous actions of capacities (which may or may not be virtuous), with ongoing feedback mechanism of subjective vitality. Captured well in the study of good leadership and mentorship (Csikszentmihalyi, 2003; Nakamura, 2014)

6.4 The Current Study

In the current study, we used an archival dataset consisting of five measurement occasions collected over a three-year period from a group of school staff to test this four-factor vital engagement model.¹ While some studies have demonstrated the importance of fitting different strengths to the context and sustaining flow experiences (e.g., Csikszentmihalyi & Schneider, 2000), few studies have examined the general capability to use one's strengths in diverse contexts and the impact of the process of vital engagement among working adults over periods of several years. This limitation is addressed in the current study by modelling the four-factor model of vital engagement and testing among a sample of school staff. The school was implementing an organizational development initiative aimed at embedding positive psychology principles throughout the school's policies, procedures and ways of teaching. As the

¹ Theoretically, these four factors together comprise the vital engagement factor. Unfortunately, meaning in life was not included until the third time point. We thus model this as three factors at the first two time points and four factors at latter time points.

measurement occasions occurred at six- to 12-month intervals, we expected that the vital engagement factor to be relatively consistent over time, despite the changes occurring at the school.

In addition, as preliminary consideration of the nomological network surrounding vital engagement, at each measurement occasion, we examined associations between the latent vital engagement and available measures of wellbeing, passion, work climate, and work engagement.² We expected vital engagement to strongly correlate with (but still be distinctive from) wellbeing, passion, and work engagement, with weaker correlations with work climate.

6.5 Method

6.5.1 Participants

Between 2011 and 2013, a private K-12 school in Sydney Australia purposely aimed to sustainably increase the wellbeing of students, staff and parents through a series of programs and interventions. To assess impact and change over time, school staff were asked to complete a survey over five occasions across a three year period. Participants were assessed twice per year for the first two years (T1-T4) and once at the end of the third year (12 months later, T5).

The current study included 327 staff who completed the work-related flow and strengths use measures at least once across the five occasions. This included 31 participants that completing all five time points, 68 completing four time points, 119 participants responded to three time points, and 178 completed two time points. To consider potential effects of missing measurement occasions, we compared individuals who completed three to five assessments with those who completed one or two, using independent sample t-tests for continuous variables and

² While full consideration of convergent and divergent associations would be useful for establishing this construct, we were constrained by the measures available within the archival dataset.

chi-square for categorical variables. No significant differences appeared between the two groups on levels of flow experience ($t(196) = 0.92, p = 0.36$), strengths use ($t(195) = 0.23, p = .08$), subjective vitality ($t(196) = .87, p = .32$), and meaning in life ($t(196) = .29, p = .03$), type of profession ($X^2(6) = 6.81, p = .34$), time of employment at the school ($X^2(6) = 10.29, p = 0.11$), gender ($X^2(2) = .37, p = 0.83$), or age group ($X^2(8) = 12.08, p = 0.15$).

6.5.2 Measures

Participants completed a self-report survey at each occasion; the current study focused specifically on questions related to work related flow, subjective vitality, meaning in life and general strengths use. We also included measures of work engagement, passion for work, mental well-being and working climate for comparison. Most measures were included at each measurement occasion. However, meaning in life and work engagement were later additions, such that meaning in life was only available at T3-T5, and work engagement was only available at T4 and T5.

Work-Related Flow scale (WRF). The Work-Related Flow scale (Bakker, 2008) includes 13 items that measure the frequency that employees experience flow at work. The scale has three subscales: absorption (4 items), work enjoyment (4 items) and intrinsic work motivation (5 items). Considering the past two weeks, participants indicated on a 7-point scale (1 = never and 7 = always) the extent to which statements such as ‘I am totally immersed in my work’ (absorption), ‘I do my work with a lot of enjoyment’ (work enjoyment), and ‘I get motivation from the work itself, and not from the reward for it’ (intrinsic work motivation) describe their experiences. In the current study the reliabilities (Cronbach’s alpha) for the scales ranged from .71 and .88 for absorption, .81 and .93 for work enjoyment, and .61 and .75 for intrinsic motivation.

Strengths use Scale (SUS). The Strengths Use Scale (Govindji & Linley, 2007) includes 14 items that measure the extent to which participants use their strengths in various situations and challenges both on a daily basis and over time (1 = strongly disagree, 7 = strongly agree), with items such as: ‘I am able to use my strengths in lots of different situations’ and ‘Most of my time is spent doing things that I am good at doing’. Internal consistency was high: $\alpha = .97$ at time 1, $\alpha = .97$ at time 2, $\alpha = .94$ at time 3, $\alpha = .89$ at time 4, and $\alpha = .96$ at time 5.

Meaning in Life Questionnaire (MLQ). The meaning in life questionnaire is a 10-item measure that assesses both the presence of (5 items) and search for (5-items) meaning in life (Steger, Frazier, Oishi, & Kaler, 2006). Participants responded to questions such as ‘makes your life and existence feel important and significant to you’, on a 7-point scale (1 = absolutely untrue, 7 = absolutely true). In the current study, we used the presence of meaning sub-scale. In the current sample Cronbach’s alphas ranged from .82 to .88 between times 3 and 5 (within the MLQ scores for time 1 and 2 not available due to no being administrated during the occasions of data collection)

Subjective Vitality Scale (SVS). The subjective vitality scale was originally developed by Ryan and Fredrick (1997), and was subsequently refined by Bostic, Rubio, and Hood (2000). Six items assess a person’s subjective experience of being full of energy and alive and a 7-point scale (1= not at all, 7 = very true) on statements such as ‘I have energy and spirit’ and ‘I look forward to each new day’. In the current study, the Cronbach alpha for the 5-time points ranged between .83 and .87.

Warwick-Edinburgh Mental Wellbeing Scale (WEMBS). The Warwick-Edinburgh Mental Wellbeing Scale (Tennant et al., 2007) was developed to enable the monitoring of mental wellbeing in the general population and the evaluation of projects, programs and policies which

aim to improve mental wellbeing. 14 items assess general wellbeing over the past two weeks on a 5-point scale (1 = none of the time, 5 = all of the time), on items such as ‘I’ve been feeling useful’, ‘I’ve been feeling close to other people’ and ‘I’ve been interested in new things’. In this sample, the Cronbach’s alpha ranged between 0.86 and 0.91.

Voice Climate Survey- Passion Subscale (VCS-P). The Voice Climate survey is an opinion survey that measures work practices and outcomes (Langford, 2009) across 7 domains: purpose, property, participation, people, peace, progress and passion. The survey consists of 102 items, rated on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The current research utilized only the 10-item passion subscale, which included the combination of organizational commitment (i.e. “I feel a sense of loyalty to this organization”, job satisfaction (“Overall I’m satisfied with my job” and intention to stay (“I can see a future for me in this organization”). In the current study, the internal consistency ranged between $\alpha = .71$ and $\alpha = .82$.

Work Climate Questionnaire (WCQ). The WCQ assesses the sense of managerial support within a working context (Baard, Deci, & Ryan, 2004). Long (15-items) and short (6-items) versions are available, with participants indicating their agreement on a 7-point scale (1 = not at all true, 7 = very true). The current study used the 15-item version. Items include ‘I feel that my manager provides me choices and options’, ‘my manager conveyed confidence in my ability to do well at my job’, ‘my manager made sure I really understood the goals of my job and what I need to do’. The internal consistency of was shown to be to range between $\alpha = .80$ and $\alpha = .86$ for the five time points.

Utrecht Work Engagement scale (UWES). The Utrecht Work Engagement scale (Schaufeli & Bakker, 2003) includes 17 items designed to measure how an employee feels about their work. The scale measures the three underlying dimensions of work engagement. It consists

of 3 subscales which are; vigor (six items), dedication (five items), and absorption (six items) Items are rated on a 7- point Likert scale ranging from 0 (never) to 6 (every day). Which The scale is comprised of positively worded items and made up of 3 factors including vigor ('When I get up in the morning, I feel like going to work'), Dedication ('To me my job is challenging'), and absorption ('When I'm am working, I forget everything else around me'). The internal consistency ranged between .82 and .90 in this sample.

6.5.3 Data Analysis

The current study took advantage of existing archival data collected across five measurement occasions over a three-year period. Participation varied across assessments periods, resulting in a considerable number of missing values. To take advantage of all available data, we included the 327 participants with at least WRF and SUS scores on at least one measurement occasion and imputed missing values, using multiple imputation by chained equations (Raghunathan et al., 2001; Van Buuren, 2007). Multiple imputation allows all participants to be included, avoiding bias that occurs in using only complete cases, and accounts for the statistical uncertainties that occur with imputing missing values (Azur, Stuart, Frangakis, & Leaf, 2011; Schafer, 1999). As we found no significant differences between those who completed different numbers of assessments, we assumed data to be Missing at Random (MAR), and imputed values using the mice package (version 2.9, van Buuren & Dudshoorn, 2010) in R. We generated 10 multiply imputed datasets, using predictive mean matching.

Using the imputed data, we then tested a structural equation model using the lavaan package (Roseel, 2012), with the runMI() function available through the mice package. Essentially, this function runs the structural model with each of the 10 imputed datasets, and then pools the results together, providing both the model estimates as well as an indication of the

variability of those estimates. For our primary model, we tested vital engagement as a latent factor comprised of WRF, SUS, SVS, and (at T3-T5 only) MLQ across the five measurement occasions. We evaluated model fit with the Root Mean Square Error of Approximation (RMSEA), the Tucker Lewis Index (TLI), and the Comparative Fit Index (CFI), with good fit indicated by an RMSEA δ .06, and TLI and CFI values greater than .90 (Hu & Bentler, 1999).

We then examined correlations between vital engagement (as a latent factor) with the wellbeing (WEMBS), passion (VCS-P), work climate (WCQ), and work engagement (UWES, T4 and T5 only) measures. As our purpose was to consider the extent to which vital engagement overlaps with these other constructs rather than predictive validity, we considered correlations separately by measurement occasion.

6.6 Results

Table 6.1 summarizes descriptive information across the measures for the imputed and non-imputed data. We first tested our hypothesized vital engagement model, with a latent vital engagement factor for each time point, comprised of 3 or 4 observed variables and as correlated factors over time. The model demonstrated good fit to the data: RMSEA = .020 (95% confidence interval = .000, .034), CFI = .993, TLI = .992. As illustrated in Figure 6.2 the vital engagement factor was relatively stable over time, with about 70% of the variance carried to each subsequent time point. All four factors loaded significantly on their expected factor, with MLQ having the weakest loadings, and WRF and SUS tending to have the strongest loadings.

We then considered associations between vital engagement with wellbeing, passion, work climate, and for the latter two times points, work engagement. Table 6.2 (see below) summarizes correlations at each measurement occasion. Vital engagement was very strongly related to both wellbeing and work engagement. The extent to which vital engagement was indeed distinctive

from work engagement, as measured by the Utrecht work engagement scale, was unclear, as correlations were quite strong ($r = .88$). As expected, the weakest correlations occurred with work climate, suggesting that the factor is capturing a psychological process than aspects of the environment.

Table 6.1*Descriptives for the non-imputed and imputed data across five measurement occasions.*

Variable	Original dataset						Combined Imputed Data					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
Strengths use T1	197	5.67	0.72	5.86	2.85	7.00	327	5.65	0.70	5.81	2.85	7.00
Strengths use T2	131	5.65	0.88	5.86	3.36	7.00	327	5.66	0.86	5.83	3.36	7.00
Strengths use T3	90	5.74	0.88	5.93	3.07	7.00	327	5.63	0.97	5.90	3.07	7.00
Strengths use T4	113	5.75	0.85	5.93	3.00	7.00	327	5.69	0.88	5.92	3.00	7.00
Strengths use T5	132	5.81	0.73	5.93	3.43	7.00	327	5.79	0.70	5.90	3.43	7.00
Work-related flow T1	198	4.73	1.02	4.85	2.54	7.00	327	4.71	0.99	4.77	2.54	7.00
Work-related flow T2	132	4.82	1.03	4.92	2.62	6.83	327	4.81	0.99	4.87	2.62	6.83
Work-related flow T3	90	4.90	0.96	4.96	2.62	6.85	327	4.80	1.00	4.80	2.62	6.85
Work-related flow T4	114	4.99	0.95	5.08	2.50	7.00	327	4.92	0.99	5.01	2.50	7.00
Work-related flow T5	133	4.85	0.94	5.00	2.77	6.62	327	4.83	0.93	4.92	2.77	6.62
Meaning in life T3	95	5.70	1.01	6.00	2.60	7.00	327	5.64	1.06	5.94	2.60	7.00
Meaning in life T4	103	5.03	0.65	5.00	2.00	6.20	327	4.95	0.67	5.02	2.00	6.20
Meaning in life T5	122	5.06	0.67	5.20	1.60	6.00	327	5.01	0.68	5.08	1.60	6.00
Subjective vitality T1	197	5.01	1.29	5.17	1.00	7.00	327	4.98	1.28	5.12	1.00	7.00
Subjective vitality T2	114	5.10	1.28	5.33	1.50	7.00	327	5.09	1.18	5.23	1.50	7.00
Subjective vitality T3	87	5.11	1.30	5.33	1.67	7.00	327	4.87	1.26	4.88	1.67	7.00
Subjective vitality T4	110	5.17	1.27	5.33	1.00	7.00	327	5.10	1.21	5.22	1.00	7.00
Subjective vitality T5	112	5.16	1.24	5.50	1.67	7.00	327	5.14	1.19	5.32	1.67	7.00
Wellbeing T1	207	3.77	0.56	3.86	1.64	4.93	327	3.76	0.55	3.84	1.64	4.93
Wellbeing T2	139	3.83	0.56	3.93	1.50	4.86	327	3.83	0.54	3.92	1.50	4.86
Wellbeing T3	97	3.80	0.56	3.86	2.21	4.86	327	3.76	0.52	3.78	2.21	4.86
Wellbeing T4	122	3.84	0.47	3.93	2.50	4.93	327	3.85	0.47	3.90	2.50	4.93
Wellbeing T5	146	3.75	0.57	3.86	1.93	4.93	327	3.73	0.55	3.80	1.93	4.93
Passion T1	200	4.16	0.66	4.20	2.20	5.00	327	4.16	0.59	4.21	2.20	5.00

Variable	Original dataset						Combined Imputed Data					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
Passion T2	130	4.29	0.65	4.40	2.00	5.00	327	4.29	0.52	4.34	2.00	5.00
Passion T3	89	3.93	0.75	4.00	1.30	5.00	327	3.94	0.56	4.00	1.30	5.00
Passion T4	120	4.05	0.65	4.00	1.70	5.00	327	4.06	0.53	4.07	1.70	5.00
Passion T5	136	4.16	0.81	4.30	1.50	5.00	327	4.18	0.66	4.25	1.50	5.00
Work engagement T4	117	5.81	0.70	5.88	3.59	7.00	327	5.77	0.68	5.86	3.59	7.00
Work engagement T5	133	5.78	0.78	5.94	2.82	7.00	327	5.77	0.72	5.89	2.82	7.00
Work climate T1	206	5.33	1.45	5.79	1.14	7.00	327	5.35	1.44	5.77	1.14	7.00
Work climate T2	137	5.04	1.72	5.43	1.00	7.00	327	4.98	1.68	5.38	1.00	7.00
Work climate T3	94	5.24	1.55	5.50	1.00	7.00	327	5.17	1.56	5.47	1.00	7.00
Work climate T4	122	5.23	1.61	5.79	1.00	7.00	327	5.08	1.58	5.51	1.00	7.00
Work climate T5	145	5.03	1.79	5.50	1.00	7.00	327	4.97	1.73	5.37	1.00	7.00

Note. Imputed values are the pooled average estimates across 10 imputed datasets. T = time point

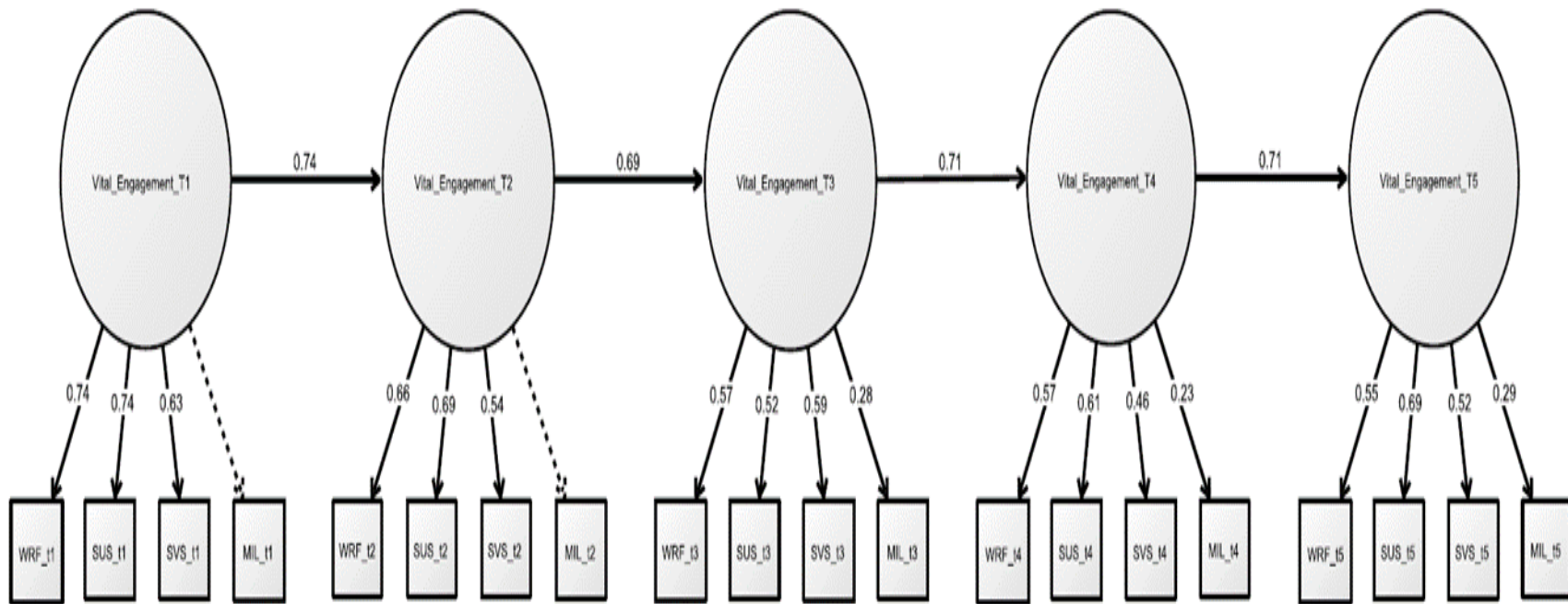


Figure 6.3 Vital engagement structural model across five measurement occasions. Standardized loadings are provided, based on the fitted model ($N = 327$, with missing data imputed using multiple imputation with chained equations). WRF = work related flow, SUS = strengths use survey, SVS = subjective vitality scale, MIL = meaning in life questionnaire

Table 6.2

Correlations between vital engagement (VE; as a latent factor) and wellbeing, passion, work climate, and work engagement, across five time points.

	Time 1 VE	Time 2 VE	Time 3 VE	Time 4 VE	Time 5 VE
Vital engagement	--				
Wellbeing	.73	.73	.84	.60	.76
Passion	.62	.57	.29	.21	.57
Work climate	.32	.27	.25	.23	.38
Work engagement	--	--	--	.88	.88

6.7 Discussion

The current pilot study proposed and empirically tested a model of vital engagement in a practice setting, operationalized as the experience of work-related flow, subjective vitality, and strengths use, and meaning in life that extends over time among working adults. We expected to find a four-factor model that is relatively stable over six to 12-month periods, which correlates but is distinctive from wellbeing, work engagement, passion, and work climate constructs. We drew on an existing dataset of 327 school staff, in a school that was in the process of incorporating positive psychology into its policies and practices.

Our model generally fit the data, although flow, strengths use, and subjective vitality were much more strongly correlated than meaning in life. There are several possible explanations for the weaker correlations. First, a sense of meaning arguably is a contextualized construct (Delle Fave, 2009; Nakamura & Csikszentmihalyi, 2003). The questions that were included in the measure asked about general meaning in life, rather than meaning specific to the work context. It is possible this factor would be relevant if it asked about meaningful work, rather than general meaning in life. Second, it may be that meaning is not a part of the construct, and we

simply are capturing work engagement using different items and constructs than the Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003) does. Alternatively, this could speak to the nature of the constructs themselves. We tested the model as a reflective model, in which a latent construct results in several correlated factors. Alternative (and aligned with the theoretical arguments described in Chapter 2), vital engagement may be an emergent factor, arising from the reinforcing combination of the four elements. The pattern of loadings speaks more to an emergent factor, in which although the items are not strongly correlated the construct only appears when all four components are present (Bollen & Lennox, 1991; Nakamura, 2001). That is, vital engagement could arguably be a type of ‘emergent motivation’ that drives virtuous action over extended periods of time, resulting from ‘emergent long-term goal setting’ (Nakamura & Csikszentmihalyi, 2005, p. 91). Based on existing studies and theoretical explanations of the vital engagement construct (see chapter 2), we support the latter explanation, although additional studies are needed to replicate results and determine which explanation might be correct.

Unlike other engagement constructs, vital engagement includes not only cognitive and attentional elements, but also a deeper sense of why one is engaging at work, namely an overall sense of meaning. The word *professional*, according to Csikszentmihalyi (1982) and from lifespan developmental point of view, can be defined as a strong allegiance to a body of information or knowledge and behavioral expression of professing this knowledge for the benefit of others across the career lifespan. A sense of meaning adds an element of sustainability and reason to keep engaging in work, despite changes that might occur within the work context or circumstances that arise that otherwise make work feel less engaging. Engagement research has primarily devoted attention to the structure of the activities that promote optimal experiences,

often defined as feelings (e.g., excited, interested), and the goal pursuits they facilitate), but miss the longer term process of meaning making that is necessary for such experiences to be perceived as optimal to one's developmental narrative and capabilities (Bauer, McAdams, & Pals, 2008; Delle Fave, 2009; McAdams & Olsen, 2010; Tse et al., 2019). Our results suggest that hedonic sides of wellbeing and behavior that work needs are needed but not enough, lacking the deeper "why" when considering involving the 'full self' (Kahn, 1990) of the employee. In other words, organizations know about how do you get people to complete tasks and understand the 'what' and 'how' of completing daily tasks. Yet these models lack the question of 'why engage' - on a broader level and in which other positive individual wellbeing and passion factors of work are also a key part (see Lavinge et al., 2012).

The vital engagement construct as conceptualized in this study adds the recognition and use of one's strengths to navigate the work environment (see Nakamura, 2014 for several case studies of authentic alignment in other domains and fields of practice fostering vital engagement over a number of years). A sense of engagement may be experienced at a state in time, but unfolds over time, impacted upon by aspects and perceptions of the person combined within shifting workplace contexts (see also Csikszentmihalyi, 2003; Gardner et al., 2001). Multiple components might interact with and balance one another to create stability over time, especially through periods of change that might be occurring in one's environment. Some support for this appeared in the relative stability of the vital engagement factor across the five time points, despite the number of changes that were occurring within the school environment during the course of the study.

6.7.1 Limitations and Future Directions

In this current study, we proposed and provided an initial test of a four-factor model of vital engagement. While we benefited from panel data collected over five measurement occasions, which is quite rare, we were also limited by the data that were available. That is, we used secondary data as a first step to provide evidence for the 4-factor Vital engagement concept. Furthermore, we acknowledge that we weren't testing vital engagement per se, but rather vital engagement in practice. Instead our model is actually a dynamic system of vital engagement which we can't capture with the archival data available to us. Hence, we suggested that vital engagement in practice was comprised of four factors co-occurring, repeatedly across a 3 year period. However, our study was not able to separate out the dynamic aspect based on cross-sectional *snapshots*. However our results find evidence for our vital engagement in practice model (comprising of the factors of strengths use, flow at work, meaning in life, and subjective vitality). Irrespective of these promising findings, the next steps in research would be collecting new data that can be analysed using systems dynamic modeling approaches.

Furthermore, meaning in life questionnaire focused on meaning in general, not meaning specific to the work context, and were only collected at the three latter time points, limiting a full test of the four-factor model. Correlations with other variables similarly were limited to the data that were available. Future studies should consider specific measures of vital engagement, greater consideration of what factors should be included in the broader factor, the extent to which the model may be reflective or emergent in nature, and the impact of assessing constructs on briefer or longer time scales.

Future research might benefit from additional investigations into the experiences and impact of staff members going through a change process, and the potential moderating impact of profession type and length of employment at the school. Moreover, future studies will benefit

from incorporating multiple assessment methodologies. Such studies would contribute to further knowledge on how vital engagement unfolds within the context of a working adults' unique perspective or place within the broader context.

6.8 Conclusion

Our study of vital engagement makes progress in empirically modelling the process of involving individuals in a 'good work life' in a sustainable way. Our study provided initial support for a model of engagement that is characterized by personal strengths use, feelings of intense absorption and interest (flow), a sense of energy (subjective vitality), and a sense of broader sense of purpose and meaning (meaning in life). These findings points to a type of whereby the result is a continuous inter-relationship between the best of the individual towards virtuous ends both at work and life in general. The model and initial test provides one step towards understanding the processes involved in optimal functioning within the workplace environment.

Chapter 7 Overview:

In this final chapter, I draw together the central content and key contributions of the thesis. I delve deeper into the findings and underscore the implications for research and practice. Finally, the chapter summarizes the theoretical and practical contributions and concludes by articulating ways in which the vital engagement model can contribute to optimal human development both individually and contextually.

Chapter 7

Overall Discussion and Conclusions

7.1. Introduction

This chapter provides an overall summary, discussion, implications for theory and practice, and conclusions of this dissertation. The overall aim of this PhD was to take a systems-informed, positively-oriented, lifespan developmental perspective in exploring one aspect of flourishing among school staff over a three year period. This body of work contributes to theory, research and practice in proposing an alternative way to consider adult flourishing, namely the process of sustained flow experiences within a meaningful context – or vital engagement at work. In doing so, this dissertation integrates aspects of evolutionary systems perspectives, lifespan positive human development, and optimal experience theory.

In the sections that follow, I begin with a summary of the thesis approach and findings. I discuss the findings, identifying how they fit within the theoretical frame underlying this thesis (see chapter 2). I then consider implications for theory, research, and practice, and acknowledge limitations. I end with a identifying the key conclusions arising from this work, positioning the current thesis within the larger context of developmentally oriented positive and organisational research.

7.2 Summary of dissertation approaches and findings

Table 7.1 summarizes the approaches and findings of this dissertation. First, Chapter 2 identified the main theoretical perspectives underlying the approaches used in this dissertation. The process of flourishing among working adults was conceptualised as a process that an individual can experience through an optimal relationship with daily work, along with the

experience of authentic opportunities for vital self-expression and sense of purpose in broad areas of life.

To provide background on relevant literature, Chapter 3 presented a systematic review and meta-analysis of the existing empirical literature over the past 30 years on flow at work. Combining the results of 54 independent samples comprising over 16,000 participants, flow at work was found to be strongly correlate with a variety of job-related factors ($r = .43$) and wellbeing factors ($r = .39$). The strength of associations depended on the how flow was operationalized, the job-related or wellbeing factor under consideration, study design, and the population used. Associations were stronger for longitudinal, within person designs compared to cross-sectional between person designs. The review highlighted why flow matters – it plays an important role in supporting workplace wellbeing – and potential conditions that support flow among working adults – job-related factors, such as social support, skill development opportunities and autonomy.

Building from these theoretical and empirical foundations, I then conducted two studies, using archival data that followed a group of school staff across five measurement occasions over a three-year period. Using cross-lagged models, chapter 5 examined cross-sectional and prospective associations between flow at work and general strengths use. Although flow and strengths use were generally correlated within measurement occasions, they were not associated over time, after accounting for the other variable (i.e., the best predictor of flow was prior flow, and the best predictor of strengths use was prior strengths us). Work-related flow and strengths use were significantly correlated within most time points across the three years. These results may indicate that flow at work and general strength use may be manifestations of underlying optimal experience. Another possible explanation was that the findings may indicate a dynamic

coupling of the two constructs, such that they rise and fall together, with other factors balancing out and redirecting that rise and fall, preventing ongoing growth. Still, the inconsistent results led me to postulate that situational and contextual factors intersect with associations between work-related flow and strengths use, balancing out growth in ways that make the two sustainable aspects of optimal development, which I expand further in chapter 6. As a whole, the findings suggest that flow at work functions differently over long time periods (i.e., months) than cross-sectionally or over brief periods (i.e., days). It is possible that workplace factors also matter, balancing otherwise reinforcing associations between experiences of flow and strength use.

Within the above in mind, Chapter 6 developed and tested a model of vital engagement, a construct comprising of flow at work experiences, general strengths use, subjective vitality and the presence of meaning in life, using the same panel of school staff followed over three years. Data demonstrated adequate fit, although it is questionable whether vital engagement is a reflective or emergent factor. Vital engagement was relatively stable over time and related to workplace wellbeing, suggesting that it may be an important contributor to good work.

Table 7.1 Key thesis content and contributions to theory and research.

Chapter	Aim	Approach	Findings and Contributions
2	Establish theoretical foundations for dissertation and the rationale for methodologies utilized	Evolutionary, systems perspective, lifespan positive human development, optimal experience theory	<ul style="list-style-type: none"> • From an evolutionary systems perspective, a person is a socially constructed entity, dependent upon the ongoing interaction of the self and their environment. From this perspective, optimal development is more likely when this interaction – which is dynamic and ongoing in nature – is navigated well. • The investigation of shorter-term and daily experiences has been frequently guided by systematic phenomenological approaches such as the ESM. The perspective underscores both the proximal and distal impact of daily optimal experiences – with most studies on flow using the ESM to date have been undertaken over a short-term period. One of the disadvantages of the ESM as a measure over months and years is that it is impractical and time and resource consuming. • While flow at work literature has advanced our understanding of positive human functioning, the work has focused primarily on flow states, rather than considering the role they play in longer developmental trajectories. A lifespan development perspective suggests a need to consider flow within the broader human experiential profile and contextual factors, and how the person authentically finds alignment as they navigate times of stability and change. • Optimal experience theory emphasizes the benefits that arise from finding a balance between individual and contextual factors. That is, the high self-environment match, with self often being conceptualized as ‘skills of the individual’, which in the current dissertation is operationalized as the use of general strengths. • Bringing these perspectives together, adult flourishing is defined as a positive developmental process which occurs when an adult frequently experiences an optimal relationship with their daily work, together with vital self-expression and sense of purpose in broad areas of life over time.
3	Systematically review and meta-analyze literature relating flow at work with wellbeing, and job-related factors. Examine moderators of effects.	Empirical literature review, synthesis and meta-analysis of 49 studies (54 independent samples, N = 16,171) participants)	<ul style="list-style-type: none"> • Flow at work was strongly correlated with job-related factors ($r = .43$) and wellbeing factors ($r = .39$). • Effects were fairly consistent across type of job-related factor, with stronger effects for social support, skill development opportunities, job resources, and autonomy. • Social support effects were stronger when support came from leaders than by colleagues. This suggests that leaders may be particularly important for facilitating flow experiences. • Employees benefitted from skill-development opportunities and having resources available in their job, which can help deal with environmental demands. • Effects were consistent across hedonic and eudaimonic wellbeing domains. • Job satisfaction and positive affect had similar associations, whereas life satisfaction showed a weaker relationship than job satisfaction ($r = .28$ vs. $r = .42$), pointing to the contextual nature of associations.

Chapter	Aim	Approach	Findings and Contributions
5	Examine reinforcing relationships between flow at work and strengths use over a 3- year period.	Panel of 327 school staff, 5 occasions of measure administration over a 3-year period. Structural equation model testing cross-lagged associations between self-reported flow at work and strengths use.	<ul style="list-style-type: none"> • Self –efficacy and adaptive mindset were both moderately strongly related to flow at work. This implies that employees benefit from perceiving that contextual challenges can be successfully negotiated. • Associations were stronger for longitudinal, within person designs compared to cross-sectional between person designs, pointing to the benefits of incorporating analytic strategies that consider within person change over time rather than between-person comparisons. • Effects were stronger when flow was operationalized as core flow or as the nine factor model, compared to challenge-skill balance, suggesting that high challenge combined with high skill may be an important condition for flow to occur, but is not the experience itself. • The reviews pointed to why flow matters (important for workplace wellbeing) and potential conditions that support flow among working adults (job-related factors).
6	Propose and empirically test a model of vital engagement. Examine relationships between vital engagement and other wellbeing and	Panel of 327 school staff, 5 measurement occasions over a 3-year period. Structural equation modelling tested vital engagement as a reflective latent	<ul style="list-style-type: none"> • A theoretical model of vital engagement was proposed, consisting of work-related flow, subjective vitality, and strengths use, and meaning in life. Unlike other engagement constructs, vital engagement includes not only cognitive and attentional elements, but also a deeper sense of why one is engaging at work, namely an overall sense of meaning. Vital engagement includes the question of ‘why engage’ - on a broader level and in which other positive individual wellbeing and passion for work are also a key part. • The proposed vital engagement model adequately fit the data, and was relatively stable over 6 to 12-month periods.

Chapter	Aim	Approach	Findings and Contributions
work-related constructs.	factor across the five occasions. Tested correlations between the latent vital engagement construct and other available measures.	<ul style="list-style-type: none"> • Flow at work, strengths use, and subjective vitality were much more strongly correlated than meaning in life within the vital engagement model across all 5 time points. Vital engagement may function better as an emergent rather than reflective factor. • The extent to which vital engagement is a distinctive construct, versus capturing existing engagement constructs is unclear. The study was limited by the available data and needs to be tested further in the future, with measures specifically designed to capture each of the four elements. • Vital engagement was very strongly related to wellbeing. This points to the idea that individuals that are able to have vital engagement, which contributes and overlaps substantially with a sense of wellbeing which can be sustained over months and years. • Adds to previous work to this work by empirically deriving a vital engagement model, measured over multiple time points. 	

7.3 Theoretical contributions

The current dissertation presents several contributions that add to knowledge of possible positive developmental pathways. Among the central contribution was the modelling and testing of the postulated ‘bi-directional’ relationships between flow and constructs related to self-development; namely providing evidence that strength use and flow at work are occurring at the same time during short periods. Moreover, we detailed an initial empirical attempt to operationalize vital engagement among working adults. The next sections of this chapter unpack further the findings and possible theoretical contributions of this dissertation.

7.3.1 Systems perspectives on optimal development

First, this dissertation incorporates systems perspectives and lifespan development theories to frame the approaches and findings. Whereas a widespread amount of research focuses on facilitating flow experience among working adults (Csikszentmihalyi et al., 2017) adopting a systems perspective (cf. Kern et al., 2019; Meadows, 2008) provided a more complete understanding of the complexity of flow at work process, explicitly identifying multi-level factors that influence sustainable flow at work experiences and the dynamic processes between them and the contextual factors also present. Supportive evidence was provided by the meta-analysis, which showed that factors such as social support, skill development opportunities, job resources and autonomy contribute to the experience of flow in one’s work.

This research adds to the recent calls for a lifespan development and systems perspectives on optimal experiences and virtue (Csikszentmihalyi, 2014; Kern et al., 2019; Nakamura & Condren, 2018; Tse, Nakamura, Csikszentmihalyi, 2019). The theoretical framework focused specifically on the interaction between the employee’s self and their context, suggesting that the individual’s development trajectory can only be understood when considered within the

environment and context in which the person resides, which is ever evolving and shifting. In the studies described, for instance, the school was in the process of attempting to shift the culture of the school, such that experiences of flow, opportunities for strength use, and other positive characteristics, as well as how these constructs subsequently relate to broader constructs such as wellbeing and workplace engagement most likely are significantly impacted by other changes in the environment. I also included an inquiry into the concordant impact of a deeper sense meaning and purpose, and extend studies that conceptualize engagement as a ‘static’ construct to those that consider engagement as a ‘fluid’ construct (see Sonnentag et al., 2010). This current dissertation arguably extends ideas and viewpoints on engagement models among working adults. Whilst the engagement concept has historically been theorized as being highly contextually oriented, the empirical validation of a vital engagement constructs gives further indications about nature and crucial aspects of maintaining this process over time among working adults.

This dissertation contributes to developmental and positive psychology conceptions of flourishing across adulthood (e.g., Friedman & Kern, 2014; Kern, Della-Porta, & Friedman, 2014; Vaillant, 2012), pointing to the need to consider functioning over significant periods of time and with consideration of the context in which development occurs, not only as states in time or ignoring contextual factors – hence mapping the fluid nature of flow and vital engagement experiences. The specific information of the nature and direction of relationships provided the ability to validate theoretical specifications of flourishing as a positive developmental process which occurs when an adult frequently experiences an optimal relationship with their daily work, together with vital self-expression and sense of purpose in broad areas of life over time.

7.3.2 The why and how of flow at work

Second, this dissertation contributes to an understanding of the importance of flow experiences at work, as well as identifying job related factors that are supportive of such experiences. The findings provide specific information on why flow matters (important for workplace wellbeing) and potential conditions that support flow among working adults (job-related factors). Moreover, the findings pointed to the largely state-based nature of flow experiences and the popular ways that flow at work had been conceptualized.

7.3.3 The flow at work and strength use relationship

Third, this dissertation adds to this body of work by considering associations between flow at work and strengths use – not only within a short period of time, in which the two have often been studied – but over much longer, 6 to 12-month periods. Importantly, while the factors were correlated within a time period, prospective associations did not appear. Several positive psychology theories suggest positive spirals that would be reinforcing over time (see Salanova et al., 2006). Existing ESM research has provided indications of patterns between flow and other key developmental processes across days and weeks. However, according to a systems perspective, there are often limits to growth. Other factors will enter in and balance out these reinforcing relationships. In this case, contextual or other factors most likely enter into the ‘relational experience’ of the flow state (Delle Fave & Massimini, 2003, p. 335).

While studies have provided support for holistic nine factor model of flow (e.g., Beard & Hoy, 2010; Quinn, 2005), a deeper understanding of specific facets, along with how these facets relate to and interact with other key developmental theoretical constructs over adult developmental periods is still in its infancy. The current dissertation takes a first step in this

regard, further clarifying the fluid nature of flow at work, and the facilitative nature of behavioral, energetic, and meaning based processes on optimal developmental trajectories.

7.3.4 The development and testing of a vital engagement model.

A core contribution of this thesis is the development and testing of a vital engagement model. I propose that vital engagement at work is characterized by a combination of flow at work, strengths use, subjective vitality and the presence of meaning in life. This builds upon the foundational work of Mihaly Csikszentmihalyi and Jeanne Nakamura, in their studies of optimal development across the working careers (Csikszentmihalyi, 1996; Gardner et al., 2001; Nakamura & Csikszentmihalyi, 2003; Nakamura et al., 2009), adding a specific operationalization of what vital engagement could be and providing an initial test of that model, taking a theoretical construct (specified in Nakamura, 2001) and making it more accessible and practically accessible.

The model brings together the positive organizational psychology and human development literatures, which are often studied separately. Yet their integration might best address the complex influences on working adults and the flow experiences during their daily tasks and over time. The model itself extends current thinking about workplace engagement, considering both cognitive, behavioral, affective, and motivational elements that come together to represent engagement at any given point in time, as well as placing engagement with longer term patterns of development. I suggested that within a given time point, the affective experience of flow at work, a cognitive understanding of the current context combined with the appropriate behavioral application of one's strength, a sense of subjective vitality, and driven by a sense of purpose come together to enable an individual to be vitally engaged at work. These elements play a reinforcing role with one another. Indeed, the four components correlate within each time

point. But rather than leading to uninhibited positive spirals, aspects of the environment act to balance the elements, resulting in relative stability over time. From this perspective, optimal functioning at work is sustained as internal and external factors balance one another out.

An interesting finding arising in study 2 was that meaning in life, which theoretically is a central factor of sustainable flow experiences and optimal development, was the weakest contributor to the vital engagement model, whereas a sense of subjective vitality and flow experiences were strong contributors. Subjective vitality and flow capture more immediate or daily experiences ('I look forward to each new day'; Bostic, Rubio & Hood, 2000), whereas a sense of meaning is longer term and reflective in nature. As such, in proposing the vital engagement construct, I suggest that it arises from a combination of everyday feelings and experiences (operationalized as experiences of flow and feelings of subjective vitality), ongoing behaviors (operationalized as general strengths use) that occur within evolving contexts (operationalized as a school undergoing a positive change intervention), combined with longer term reflections and sense making of those experiences (operationalized as meaning in life). Based on systems theory (Meadows, 2008), virtue-based perspectives (Nakamura & Condren, 2018), such latent constructs as vital engagement are perhaps better conceptualized as an emergent phenomenon, rather than a reflective construct, which represents optimal work.

I argue that the findings of this research mark the need to understand how people thrive across life, with a particular focus on the role that work plays in thriving. In the modern world, work plays an important part of the flourishing life, considering the time and energy that is spent working. The findings of this dissertation underscore the importance of vital engagement model – indicating that being authentically aligned with one's profession is based on the internalization and practice of the values of the domain and meeting the requirements of the profession (Gardner

et al., 2001). Optimal experience theory has postulated that flow experiences have strong evolutionary advantage (Csikszentmihalyi & Massimini, 1985; Csikszentmihalyi, 2014; Delle Fave et al., 2011; Rathunde & Csikszentmihalyi, 2006), however specific understanding of the conditions has been lacking. Relatedly, behavioral specification of how ‘the authentic self’ can be operationalized has been provided herein – namely a dynamic and virtuous application of one’s character strengths both at work and in life more broadly. This dissertation thus broadens the understanding of flow experiences to fit within broader developmental patterns.

7.4 Practice contributions

There are several significant practice contributions for working adults that arose from this dissertation, which potentially could inform interventions in the workplace focused on building engagement and wellbeing in the workplace. Firstly, the bi-directional relationship between flow at work and general strengths use during proximal periods suggests a coupling between strengths use and flow at work, such that having opportunities to know and use one’s strengths in a virtuous way may increase flow experiences. Although flow experiences can be described, and many have experienced or could imagine experiencing flow in their work, manager’s report difficulty applying flow principles (Moneta, 2010). The prospect of supporting employees to use one’s strengths toward virtuous ends may be a more accessible way to achieving flow over time. That is, the current dissertation provides one way that specific actions that the individuals and workplaces can take – namely learning about character strengths and how to apply them in multiple life domains (especially work), learning to understand the contextual nature of the situation (s) as they occur in the moment and how psychological and behavioral flexibility may be achieved (cf. Hayes, 2005) and identifying specific strategies for matching the right set of strengths to the context (cf. Linely, 2008; Niemiec, 2017). In other words, the finding that

strengths use strongly linked to flow at work experiences, and vice understanding something particularly abstract (i.e. the ephemeral nature of optimal states) and makes them more tangible (i.e. the concordant behavior indicator of strengths application during these optimal states). At the same time, structuring environments in ways that foster flow experiences could also support the use of strengths.

The vital engagement model proposed in this dissertation extends notions of workplace engagement. Going beyond traditional taxonomies of work engagement that tend to emphasize either affective or behavioral factors, the empirical model of vital engagement proposed and tested highlights the need adopt a systems perspective to optimal development across the working career by addressing factors inside the employee (namely levels of self-efficacy, strengths knowledge) and outside (namely changes in opportunities to use one's strengths), in their work context. The positive consequence for an organization is facilitating 'the hundred-year managers' (Csikszentmihalyi, 2003, p. 12); namely leaders that frequently experience an optimal relationship with one's daily work environment, together with vital self-expression and sense of purpose in broad areas of life over time. The concept is clearly not just a job but a desire for 'good work' (Gardner et al., 2001) and a 'good work life' (Salanova et al., 2006).

The vital engagement model suggests that flow at work, which has been traditionally considered a psychological resource within organizations, should be considered alongside other developmentally appropriate processes. Historically, flow experiences have been examined alongside with, and mutually beneficial to, such process of clear goals, challenge-skill balance, unambiguous feedback (Nakamura & Csikszentmihalyi, 2005). The current study provided empirical evidence for a way of sustaining these processes among working adults, providing evidence that strengths use, meaning in life, subjective vitality, and flow at work are collectively

indicators of vital engagement. Furthermore, results provide further knowledge about the specific type of ‘skills’ which can sustain flow at work and the relevance of meaning and purpose on both proximal and distal levels. In the case of the former it seems that the character strengths use in diverse contexts and the sense of a clear sense of an ‘authentic why’ on the daily, weekly, monthly and yearly basis is necessary for sustained flow experiences among working adults.

7.5 Implications for theory, research, and practice

The empirical findings from this thesis have a number of implications for theory, research, and practice. Firstly, the examination of both short – and – long term developmental processes – in this case how flow works at different time scales – points to the importance of considering longer-term modelling and testing when considering flourishing as more than a state, but rather as part of the ongoing process of the developing adult.

The meta-analysis highlighted the importance of facilitative contexts of flow experiences, namely the need for social support and opportunities for skills development, alongside individual factors such as self-efficacy and adaptive mindset. This points to the need to a multi-dimensional intervention that influences both personal agency and context if flow experiences are to be experienced. In fact, Study 1 hinted at the importance that considering contextual factors surrounding work experiences is important. The sample was drawn from a school that was in the process of creating a positive culture. The findings point to the impact of contextual factors of flow at work experiences, namely much can be done to develop facilitative psychological and environmental conditions (cf. Tse et al., 2019). One potential implication is that condition are needed which facilitate social support and skills development of individuals’ selves, and autonomy and job resources in order to flourishing at work.

The theories described and findings of the current dissertation inform an understanding of the pathways needed to create flow at work for their staff through a model that adopted an evolutionary systems approach to creating change in the individual and their cultures. Work places are arguably important sub-components of wider culture, and its impact, given the longer periods individuals are spending at work, is very substantial. Schools, like most modern workplaces, are complex dynamic systems in which many inter-connecting factors influence the wellbeing of both students and staff (Kern et al., 2015), and arguably community and even evolution of life on earth. Given the amount of time and energy expended by working adults, the current work contributes to understanding how working adults can ‘live at the maximum of their energy’ (James, 1917; see also Rathunde & Csikszentmihalyi, 2006), in a sustainable and virtuous manner (Nakamura & Condren, 2018). It is hoped that the vital engagement model, with greater research and knowledge, will assist primarily schools, but also perhaps all organizations, in understanding the multiple levers for change that are available and need to be accessed if flow experiences are to be sustained.

Many of the challenges and complexities that face schools in fostering flourishing among their workers also face other organizations. Fostering vital and meaningful engagement in work and life in schools operating environment requires a school wide (culture wide) intentional and strategic interventions that aim to impact on different practices within organization system. We now have initial evidence that in order to increase a vital engagement in a sample of professionals, there needs to be both agentic and cultural change processes. It is hoped that vital engagement model may provide the road map for taking such systems approaches in a practice and ecologically valid way. Moreover, we hope that organizations will find it useful and relevant in creating their own road map to influencing the vitally engaged among their employees.

7.6 Limitations and future research

The studies included in this thesis have a number of limitations, as detailed in the respective chapters (Chapter 3, 5, and 6), but here I briefly reconsider some of the main aspects that limit the generalizability of the results and conclusions described. One of the greatest limitations involves the measures that were incorporated into the studies. Some research exists on Bakker's (2005, 2008) measure of work-related flow (WOLF measure) that suggests that other flow measures be strongly considered due their findings of poor reliability and validity statistics. Given that the data was archival in nature this was not possible. The position taken on this limitation is similar to Hektner et al., (2007), that studying human experiences in ecologically valid contexts is a 'good' (ethical) practice as it can yield social benefit even if the measures available are far from ideal when undertaking empirical investigations undertaken in this dissertation (cf. Gardener et al., 2001; Nakamura et al., 2009). Hence the evidence, whilst significant, should encourage further research to build on these initial efforts undertaken herein.

While this dissertation benefited from data collected over five measurement occasions, it was also limited by data that were available. The meaning aspects focused on meaning in general, not specific to the work context, and were only collected at the three latter time points, limiting a full test of the four-factor model. Correlations with other variables similarly were limited to the data that were available. The data provided a way of examining flow, strengths use, vital engagement, and associations with workplace wellbeing and functioning over a three-year period. Such data are hard to collect, and valuable to use, even if the measures available added additional noise to the analyses. These studies have identified some intriguing findings, which will benefit from replication, across other samples and using measures specifically

designed to measure the relevant constructs. Future studies should consider specific measures of vital engagement with a greater consideration of what factors should be included in the broader factor, the extent to which the model may be reflective or emergent in nature, and the impact of assessing constructs on briefer or longer time scales. Future research should seek to test this model in various contexts in order to both replicate and further current findings.

Future studies might examine the moderating impact of profession type and length of time having worked at the school. Research would also be useful to understand the experiences and impact of staff members going through a change process. Future studies will benefit from incorporating multiple assessment methodologies, including both qualitative and quantitative approaches. Such studies would contribute to further knowledge on how flow processes unfold within the context of employee's unique perspective or place within this broader context.

The development of the vital engagement model was based on previous work of Nakamura (2001), for which there is currently no validated measure. While this study provided one way of operationalizing the model, further testing of Nakamura (2001)'s vital engagement model and the development of a psychometrically strong measure of the model is needed in the future.

In terms of construct development for Vital engagement, future studies may consider the following. Firstly the process of undertaking a basic test of Vital engagement as work-related flow and meaning in life (a two factor model) as a predictor of other well-being outcomes. A comparison to using models that include only flow or meaning (looking at model fit and standardized predictors) would be a starting spot. Secondly, the next stage of testing may then compare the 2 and 4 factor model (which would help support the idea of the other pieces being

antecedent & subjective vitality being a feedback mechanism). The data would be there to test it to see if the four-factor structure offered better predictive value.

7.7 Conclusion

Working adults are a very important focus of study on positive human development, given that many adults spend considerable amount of time and energy across adulthood in one or more forms of employment. Social institutions, such as schools and workplaces, are increasingly more complex operating environments. Individuals within them are faced with a broad array of challenges on a daily basis. Schools in particular are dynamic complex systems in which a wide variety of contextual factors, both internal and external to the individual, can potentially influence how the person feels and functions at work. Within these environments, workplaces worldwide are facing high levels of disengagement. Many employers are seeking ways to increase engagement. The focus is often on the temporary experience of being mentally engaged in one's work.

The proposed vital engagement model broadens the understanding of what engagement entails, recognizing the central role that engagement plays not only in the work that an employee engages in, but also as part of the broader developmental trajectory that an employee follows across their working lives. From this perspective, understanding and cultivating is crucial in supporting a flourishing workforce. This thesis provides an initial framework for future research on vital engagement, helping to identify and unpack these influential factors to a model that arguably contributes to ethical personal and environmental development. I hope that these findings provide further impetus for schools and organizations to consider more holistic,

systems-based perspectives to fostering the process of flourishing in an effective and sustainable trajectory across adulthood.

Supplementary Analysis and Appendices

Appendix A: Supplementary Exploratory analyses for Chapter 3: Meta-analyses study of flow at work over last 30 years

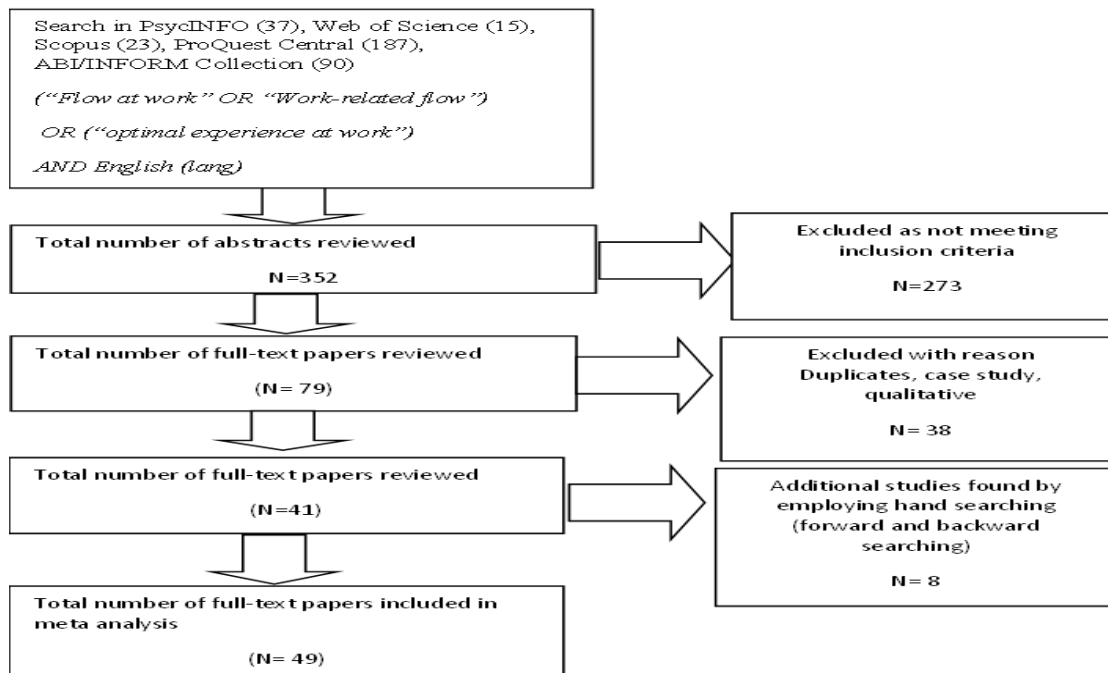


Figure A1. Overview of search strategy and selection process for the systematic review

Table A1.*Study Characteristics of studies used in meta-analysis*

Citation	Sample type	N	Age	%Male	Sample Origin
Bakker, 2005	Teachers	178.00	41.00	42.00	Europe
Bakker, 2008	Heterogeneous	1007.00	37.02	48.50	Europe
Bassi & Dell Fave, 2012a	Teachers	14.00	45.40	57.10	Europe
Bassi & Dell Fave, 2012b	Teachers	184.00	49.10	19.00	Europe
Bauman & Scheffer, 2001a	Trainees	51.00	24.26		Europe
Baumann & Scheffer, 2001b	Army personnel	33.00	23.60		Europe
Beard & Hoy 2010	Teachers	260.00		11.50	Nth America
Bricteux et al., 2017	Heterogeneous	58.00	38.00	46.60	Europe
Bringsen et al., 2011	Nurses	31.00	40.00		Europe
Burke & Mathiesen, 2005	Journalists	211.00		67.00	Europe
Bryce & Haworth, 2002	Insurance worker's	144.00		43.10	Europe
Ceja & Navarro, 2009	Heterogeneous	20.00	38.00	55.00	Sth America
Ceja & Navarro, 2011	Heterogeneous	60.00	38.00	47.00	Sth America
Chu and Lee 2012	Teachers	150.00		32.00	Asia
Colombo & Zito, 2014	Nurses	197.00	42.00	6.60	Europe
Csikszentmihalyi & LeFevre, 1989	Heterogenous	78.00	36.50	37.00	Nth America
Datu and Mateo, 2015	Counsellors	133.00	34.06	15.70	Asia
Debus et al., 2014	Software professionals	121.00	35.50	81.80	Europe
De Fraga & Moneta, 2016	Heterogenous	177.00	37.33	37.90	Europe
Demerouti, 2006	Heterogenous	83.00	41.86	41.00	Europe
Demerouti et al., 2012	Heterogenous	113.00	40.00	54.00	Europe
Eisenberger et al., 2005a	Retail	365.00			Nth America
Eisenberger et al., 2005b	Retail	260.00		72.00	Nth America
Engeser & Baumann, 2014	Heterogenous	100.00	39.00	31.00	Europe
Fagerlind et al., 2013	Heterogenous	3667.00	47.00	33.00	Europe
Fullagar & Kelloway, 2009	Architectural students	40.00			Nth America
Geysner et al., 2015	Heterogenous	415.00		43.20	Other
Ghani & Deshpande, 1994	Managers	149.00	36.00	59.00	.00
Illies et al., 2017	Heterogeneous	114.00	43.50	26.00	Nth America
Lan et al., 2017a	Service personnel	219.00		52.10	Asia
Lan et al., 2017b	Manufacturing	208.00		93.30	Asia
Lavigne et al., 2012a	Heterogeneous	113.00	29.43	29.20	Other
Lavigne et al., 2012b	Heterogeneous	325.00	44.80	47.10	Other
LeFevre, 1988	Heterogeneous	107.00	36.50	37.00	Nth America
Llorens et al., 2013	Teachers & Tile workers	957.00	36.80	47.00	Europe
Maeran & Cangiano, 2013	Heterogeneous	105.00	39.20	40.90	Europe
Makikangas et al., 2010	Employment agency	335.00	30.00	30.00	Europe
Martin & Jackson, 2008	School personnel	637.00	43.77	32.00	Other
Moneta 2012	Heterogeneous	367.00	33.50	46.30	Europe
Moneta 2017	Heterogeneous	492.00	37.52	58.50	Europe
Nielson & Cleal, 2010	Managers	58.00	41.00	42.00	Europe
Olcár et al., 2017	Teachers	480.00		.00	Europe
Peters et al., 2014	Heterogeneous	1017.00	40.00	52.00	Europe
Quinn, 2005	Knowledge workers	120.00			Nth America
Rodriguez-sanchez et al., 2011a	Teachers	258.00	41.80	35.00	Europe
Rodriguez-sanchez et al., 2011b	Heterogeneous	100.00	40.20	36.00	Europe
Salanova et al., 2006	Teachers	258.00	40.00	43.00	Europe
Smith et al., 2012	Heterogeneous	121.00	47.20	20.80	Nth America

Tobert & Moneta, 2013	Heterogeneous	152.00	39.00	46.00	Europe
Trevino & Webster, 1992	Heterogeneous	287.00	36.00	57.00	Nth America
Webster, Trevino, & Ryan 1993	Accounting	43.00	38.00	44.00	Nth America
Zito et al., 2015	Heterogeneous	188.00	41.11	38.90	Europe
Zito et al., 2016	Heterogeneous	279.00	42.00	38.00	Europe
Zubair & Kamal, 2105	Software professionals	532.00	32.53	61.50	Other

Note: N refers to the number of participants in the study. Sample origin was grouped in five different categories (Europe, North America, South America, Asia and Other). Age and Percentage male recorded in accordance to what was reported in reviewed studies.

Table A2.

Code sheet utilized to categorizing studies

Design

- 1 Survey design (one point)
- 2 Repeated measures design
- 3 Experience sampling

Within-Between

- 1 Within-Studies design
- 2 Between-Studies design

Correlational versus Longitudinal

- 1 Correlational
- 2 Longitudinal

Correlate

- 1 Challenge-Skill balance
- 2 Supportive leadership
- 3 Supportive colleagues
- 4 Job Autonomy
- 5 Sense of control
- 6 Valence (affect, work and life satis)
- 7 Adaptive behaviours(plan,tmgmt,pers)
- 8 Positive activation
- 9 Ill-being
- 10 Job resources
- 11 Performance feedback
- 12 Concentrated
- 13 Work performance
- 14 Task involvement
- 15 Job demands
- 16 Goal clarity
- 17 Adaptive Mindset(SE,valu*,mastO)
- 18 Skill development opportunities

Eudaimonic WB Vs Hedonic WB Vs ill-Being

1= Eudaimonic WB

3 = Hedonic WB

3= Ill-being

Eudaimonic WB-work

Work-performance

Adaptive mindset

Adaptive behaviour

Involvement

Sense of control

Hedonic WB

Positive Activation

Valence

Ill-being

Negative Activation

Exhaustion

Job related factors

1 Social Support (leader & social support, performance feedback)

4 C-S balance

5 Job-Demands

6 Skill development Opportunities

5 Job resources

3 Job autonomy

Gender

1 Male

2 Female

Age

1 20-30

2 30-40

3 40-50

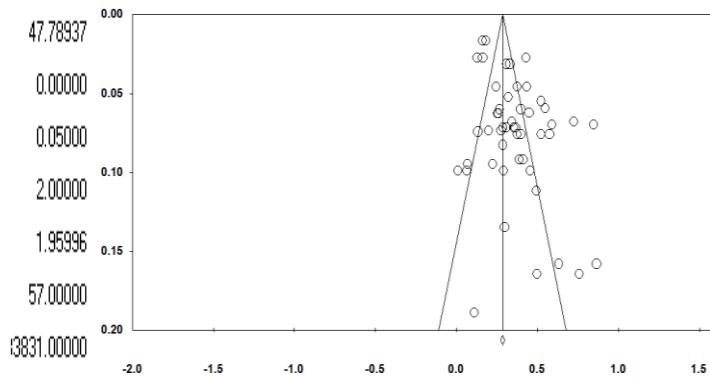
7 50+

Figure A2. Fail Safe N and Scatterplot results for Flow at work Meta analyses

Job overall

Classic Fail Safe N

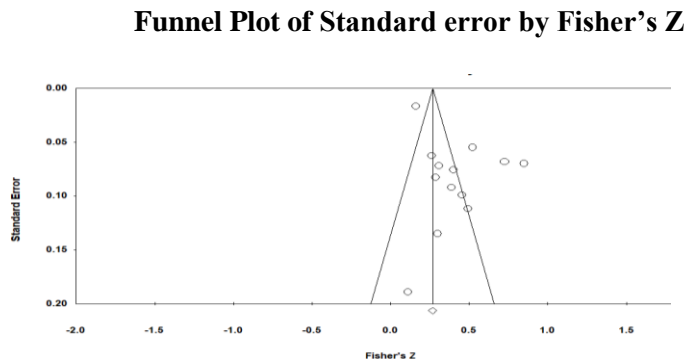
Z-value for observed studies
 P-value for observed studies
 Alpha
 Tails
 Z for alpha
 Number of observed studies
 Number of missing studies that would bring p-value to > alpha



Job resources moderator

Classic Fail Safe N

Z-value for observed studies
 P-value for observed studies
 Alpha
 Tails
 Z for alpha
 Number of observed studies
 Number of missing studies that would bring p-value to > alpha

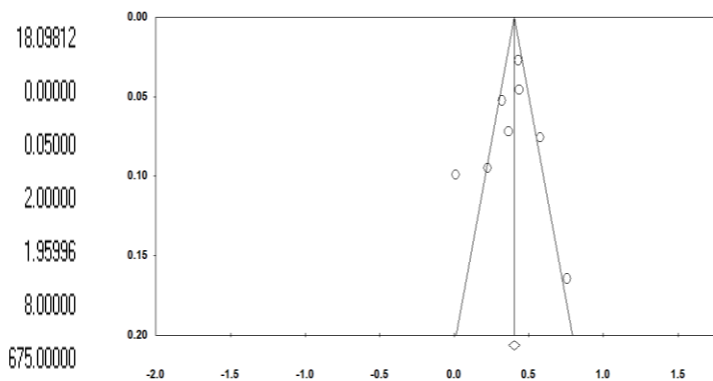


Skill development moderator

Classic Fail Safe N

Funnel Plot of Standard error by Fisher's Z

Z-value for observed studies
 P-value for observed studies
 Alpha
 Tails
 Z for alpha
 Number of observed studies
 Number of missing studies that would bring p-value to > alpha

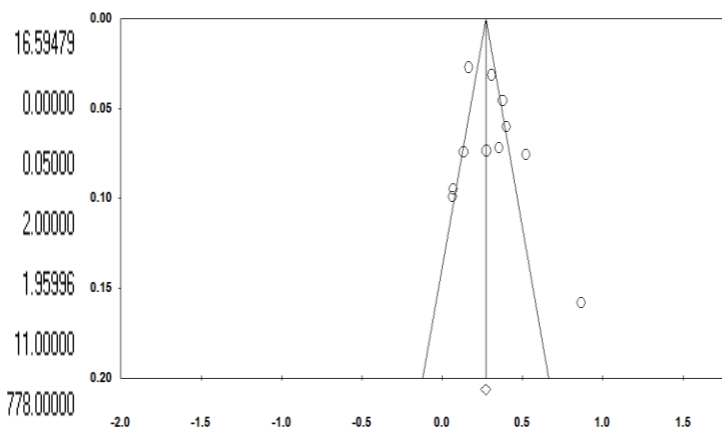


Job autonomy moderator

**Classic Fail Safe N
 Z**

Z-value for observed studies
 P-value for observed studies
 Alpha
 Tails
 Z for alpha
 Number of observed studies
 Number of missing studies that would bring p-value to > alpha

Funnel Plot of Standard error by Fisher's

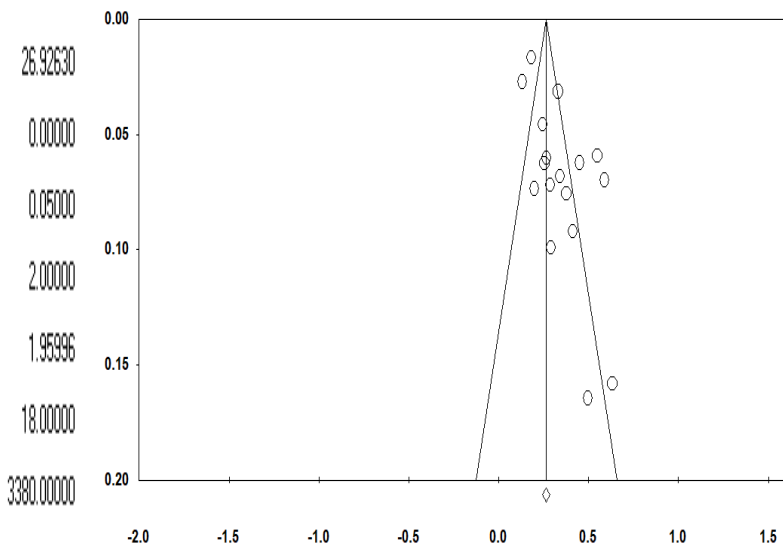


Social Support moderator

**Classic Fail Safe N
 Z**

Funnel Plot of Standard error by Fisher's

Z-value for observed studies 26.32630
 P-value for observed studies 0.00000
 Alpha 0.05000
 Tails 2.00000
 Z for alpha 1.95996
 Number of observed studies 18.00000
 Number of missing studies that would bring p-value to > alpha 3380.00000

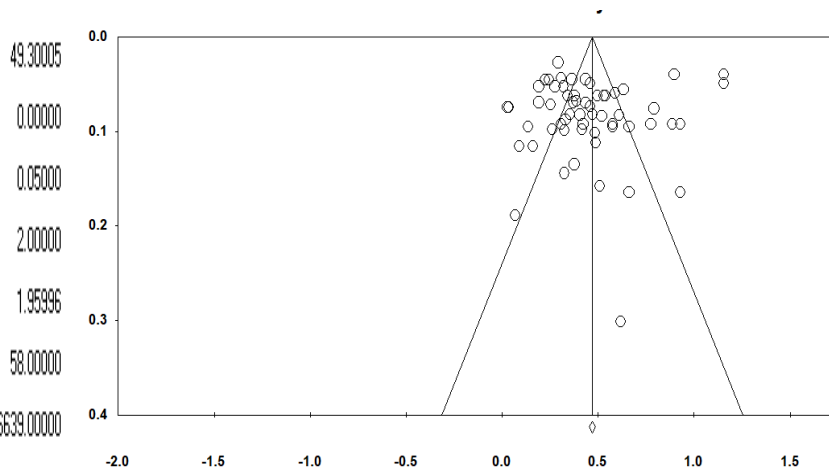


Wellbeing overall

Classic Fail Safe N

Z-value for observed studies 49.30005
 P-value for observed studies 0.00000
 Alpha 0.05000
 Tails 2.00000
 Z for alpha 1.95996
 Number of observed studies 58.00000
 Number of missing studies that would bring p-value to > alpha 16639.00000

Funnel Plot of Standard error by Fisher's Z

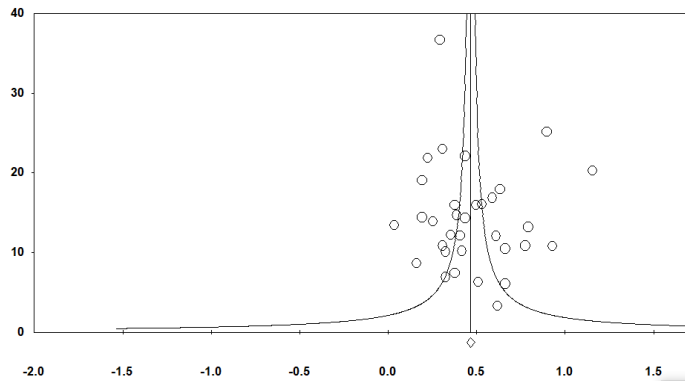


Eudaimonic Well-being moderator

**Classic Fail Safe N
Z**

Z-value for observed studies 38.95573
 P-value for observed studies 0.00000
 Alpha 0.05000
 Tails 2.00000
 Z for alpha 1.95996
 Number of observed studies 33.00000
 Number of missing studies that would bring p-value to > alpha 3004.00000

Funnel Plot of Standard error by Fisher's Z

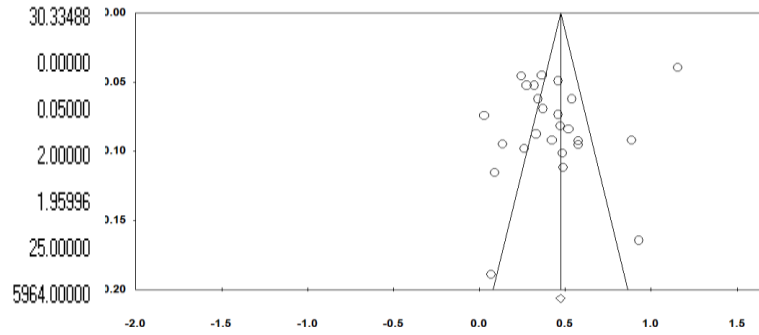


Hedonic Well-being moderator

Classic Fail Safe N

Z-value for observed studies
 P-value for observed studies
 Alpha
 Tails
 Z for alpha
 Number of observed studies
 Number of missing studies that would bring p-value to > alpha

Funnel Plot of Standard error by Fisher's Z

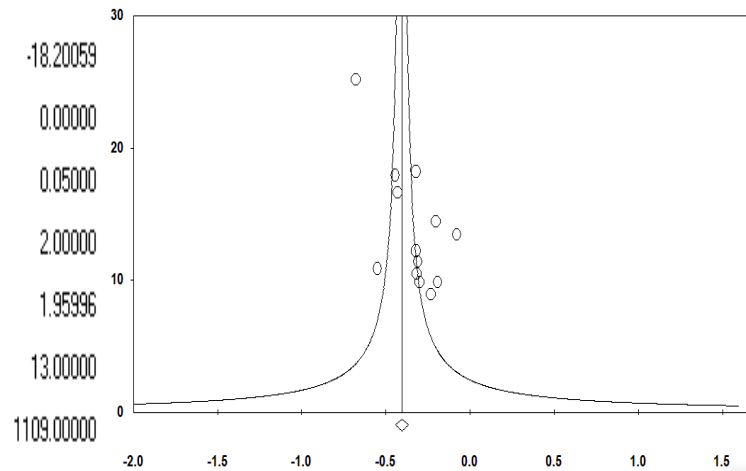


Ill-being moderator

**Classic Fail Safe N
Z**

Z-value for observed studies
 P-value for observed studies
 Alpha
 Tails
 Z for alpha
 Number of observed studies
 Number of missing studies that would bring p-value to > alpha

Funnel Plot of Standard error by Fisher's Z



Appendix B: Survey Batteries for Study 1 and Study 2

WORK-RELATED FLOW INVENTORY (WOLF; Bakker, 2005)

The participants were asked to indicate how often they had each of the experiences during the preceding week (0 = *never*, 6 = *every day*) on the scale items below;

1. When I am working, I think about nothing else
2. I get carried away by my work
3. When I am working, I forget everything else around me
4. I am totally immersed in my work
5. My work gives me a good feeling
6. I do my work with a lot of enjoyment
7. I feel happy during my work
8. I feel cheerful when I am working
9. I would still do this work, even if I received less pay
10. I find that I also want to work in my free time
11. I work because I enjoy it
12. When I am working on something, I am doing it for myself
13. I get my motivation from the work itself, and not from the reward for it

STRENGTHS USE SCALE (SUS; Govindji, & Linley, 2007)

Respondents are asked to about their strengths, that is, the things that they are able to do well or do best. 14 items that measure the extent to which participants use their strengths in various situations and challenges both on a daily basis and over time (1=strongly disagree, 7=strongly agree). Respondents were asked to rate the statements below:

1. I am regularly able to do what I do best
2. I always play to my strengths
3. I always try to use my strengths
4. I achieve what I want by using my strengths
5. I use my strengths everyday
6. I am able to use my strengths in lots of different situations
7. I use my strengths to get what I want out of life
8. My work gives me lots of opportunities to use my strengths
9. My life presents me with lots of different ways to use my strengths
10. Using my strengths comes naturally to me
11. I find it easy to use my strengths in the things I do
12. Most of my time is spent doing things that I am good at doing
13. Using my strengths is something I am familiar with

14. I am able to use my strengths in lots of different ways

THE MEANING IN LIFE QUESTIONNAIRE (MLQ Steger, Frazier, & Matthew (2006).

In the MLQ, respondents are asked to think about what makes your life feel important to them and respond were asked to respond to the statements on a 7-point scale (1 = absolutely untrue, 7 = absolutely true) on the items below;

1. I understand my life's meaning.
2. I am looking for something that makes my life feel meaningful.
3. I am always looking to find my life's purpose.
4. My life has a clear sense of purpose.
5. I have a good sense of what makes my life meaningful.
6. I have discovered a satisfying life purpose.
7. I am always searching for something that makes my life feel significant.
8. I am seeking a purpose or mission for my life.
9. My life has no clear purpose.
10. I am searching for meaning in my life.

SUBJECTIVE VITALITY SCALE (SVS; Bostic, Rubio, & Hood, 2000)

Six items assess a person's subjective experience of being full of energy and alive and a 7-point scale (1=not at all, 7=very true) on statements below;

1. I feel alive and vital
2. Sometimes I am so alive I just want to burst
3. I have energy and spirit
4. I look forward to each new day
5. I nearly always feel awake and alert
6. I feel 192rganizat

UTRECHT WORK ENGAGEMENT SCALE (UWES; Schaufeli & Bakker (2004)

Respondents were asked to read the 17 statements (see below) about how they felt at work and decide if they ever felt this way about their job. They were asked to rate the questions below to: 1) indicate if they never had this feeling, cross the '0' in the space after the statement; and 2) indicate if they have had this feeling, and how often they felt it by crossing the number (from 1 to 6) that best describes how frequently they felt that way

1. At my work, I feel bursting with energy
1. I find the work that I do full of meaning and purpose
2. Time flies when I'm working
3. At my job, I feel strong and vigorous
4. I am enthusiastic about my job

5. When I am working, I forget everything else around me
6. My job inspires me
7. When I get up in the morning, I feel like going to work
8. I feel happy when I am working intensely
9. I am proud on the work that I do
10. I am immersed in my work
11. I can continue working for very long periods at a time
12. To me, my job is challenging
13. I get carried away when I'm working
14. At my job, I am very resilient, mentally
15. It is difficult to detach myself from my job
16. At my work I always persevere, even when things do not go well

WORK-CLIMATE QUESTIONNAIRE (WCQ; Baard, Deci, & Ryan, 2004)

The 15-items prompting participants to indicate their agreement on a 7-point scale (1=not at all true, 7=very true) are presented below;

1. I feel that my manager provides me choices and options.
2. I feel understood by my manager.
3. I am able to be open with my manager at work.
4. My manager conveyed confidence in my ability to do well at my job.
5. I feel that my manager accepts me.
6. My manager made sure I really understood the goals of my job and what I need to do.
7. My manager encouraged me to ask questions.
8. I feel a lot of trust in my manager.
9. My manager answers my questions fully and carefully.
10. My manager listens to how I would like to do things.
11. My manager handles people's emotions very well.
12. I feel that my manager cares about me as a person.
13. I don't feel very good about the way my manager talks to me.
14. My manager tries to understand how I see things before suggesting a new way to do things
15. I feel able to share my feelings with my manager

VOICE CLIMATE SURVEY- PASSION SUBSCALE (VCS-P; Langford, 2009).

Respondents are asked to rate their level of agreeance with the items below on a Likert scale ranging from strongly disagree to strongly agree, on the items below;

1. I feel a sense of loyalty and commitment to this 193rganization.
2. I am proud to tell people that I work for this 193rganization.
3. I feel emotionally attached to this 193rganization.

4. I am willing to put in extra effort for this 194rganization.
5. My work gives me a feeling of personal accomplishment
6. I like the kind of work I do.
7. Overall, I am satisfied with my job.
8. I am likely to still be working in this 194rganization in two years time.
9. I would like to still be working in this 194rganization in five years time.
10. I can see a future for me in this 194rganization.

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