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Antecedents and outcomes of work engagement: The role of mindsets.

**Antecedents and outcomes of work engagement: The role of mindsets.**

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**A thesis submitted in partial fulfilment of the requirements for the degree of  
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## Abstract

Antecedents and outcomes of work engagement are of prime interest to scientists and practitioners. Antecedents, such as personal and job resources, explain how work engagement can be leveraged, while observed variance in outcomes are markers of the incremental value of work engagement. Essentially, this thesis investigated the influences of mindsets (as personal resources) on work engagement and on its outcomes. Two discrete mindsets were studied, the incremental mindset of job capability and the incremental mindset of emotion. Each mindset is associated with specific self-regulatory variables: The incremental mindset of job capability with learning goal orientation and avoid performance goal orientation, and the incremental mindset of emotion with adaptive emotion regulation and avoid goal orientation for emotion. Outcomes associated with the incremental mindset of job capability were proactive learning behaviours of proactive learning and development, feedback inquiry, feedback monitoring, and knowledge sharing. Outcomes relating to the incremental mindset of emotion were subjective well-being comprising of happiness, life satisfaction, and psychosomatic complaints.

The effects of each mindset were tested through a sequential process model. In this model, mindset was linked to work engagement through the mediating roles of self-regulatory variables. Furthermore, self-regulatory variables and work engagement were construed as competing predictors of work engagement outcomes. In each mindset model, the self-regulatory variables had the same level of specificity as the outcomes — maximising the highest possible association. Thus, this configuration allowed for a robust test of work engagement's incremental value, specifically given that work engagement and the self-regulatory variables do not share similar conceptual space. This also served to test the hypothesized partial mediating role of work engagement between resources and outcomes. Finally, the complex longitudinal dynamics of the work engagement-outcomes links were also investigated. The mindset models were tested with structural equation modelling (SEM). In the first instance, each model was tested using a convenience sample of employees from an online panel ( $N = 410$ ). These studies served as preliminary investigations to explore and check model specifications as many propositions within the models were novel. Next, the models were tested with another sample of employees from a different online panel. A repeated-measures design was used with a time lag of 3.5 months ( $N = 694$  at Time 1, and  $N = 370$  at Time 2).

At the cross-sectional level, the effect of the incremental mindset of job capability on work engagement through the mediating role of learning goal orientation was supported. Work engagement explained incremental variance in knowledge sharing only, while learning goal orientation explained

variance in all outcomes. Longitudinally the causal nexus between the incremental mindset of job capability and work engagement was not supported. On the contrary, Time 1 work engagement predicted Time 2 leaning goal orientation, supporting a hypothesised alternative model. Time 1 work engagement predicted Time 2 feedback inquiry. Furthermore, Time 1 Knowledge sharing and Time 1 proactive learning and development predicted Time 2 work engagement — supporting the notion that these outcomes are preferably viewed as predictors of work engagement.

Cross-sectional results of the incremental mindset of emotion model supported the effect of the incremental mindset of emotion on work engagement, mediated concurrently by adaptive emotion regulation and avoid performance goal orientation for emotion. However, this mediational nexus was unsupported over time. At the cross-sectional level, controlling for adaptive emotion regulation, work engagement explained incremental variance in happiness and life satisfaction. In the same vein, controlling for avoid performance goal orientation for emotion, work engagement showed incremental variance in psychosomatic complaints. Time 1 work engagement predicted Time 2 happiness and Time 2 life satisfaction, but it did not predict Time 2 psychosomatic complaints. Conversely, Time 1 happiness predicted Time 2 work engagement but support for a reciprocal relationship between work engagement and happiness was not found. Finally, Time 1 life satisfaction did not predict Time 2 work engagement.

The implications of these findings are discussed in terms of (1) a much needed rethink of the incremental value of work engagement and the mediational role of work engagement between resources and outcomes, (2) the approach-avoidance dimension of work engagement and the nature of the UWES scale, (3) the uniqueness of each work engagement-outcome link, and (4) the organisational context in which work engagement is investigated and how this may optimally affect the quality of the work engagement-outcome links.

**Dedication**

To my parents,

And

To this uplifting thought:

J'adore ce credo Japonais: "Le chemin est sous tes pas". J'aime me dire que je provoque les choses.<sup>1</sup>

— Sylvette Herry, "*Journal des Femmes*" (Février, 2013)

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<sup>1</sup>*French to English translation:* I like this Japanese credo: "The path is under your footsteps". I believe I can make things happen.

## Preface

It is often said that — in the natural and physical sciences — scientists are either “lumpers” or “splitters” (Endersby, 2009; Holton, 1995; Porco, 1999). Splitters undertake analytical work, tackling narrow problems. Lumpers synthesize, and delineate the outlines of meta-models to construct a complete picture of the world (Holton, 1995). However, the overall advancement of science depends on the interaction and fusion of the work of these two seemingly opposing communities of scientists. At an intermediate level, this interaction develops and expands the scientific landscape, creating along its path deeply engaging work for each side. At a higher-order level, the gradual perfection of science is dependent on the continual alternation of these two sides.

Lumping ensures progress and splitting ensures correctness (Oersted, 1830, as cited by Holton, 1995), although the two can also alternate roles. A field in which splitting is thought to ensure progress is that of individual differences in reasoning. In this field, there is much splitting work needed between the concepts of rationality and intelligence (Stanovich, 2012). As Stanovich and West (2014, p. 83) put it: “... scientific progress is made by differentiating concepts”. We need both lumping and splitting. Poincaré (1913/1921, p. 212) aptly noted that “Analysis and synthesis have ... both their legitimate roles” in discovery. Thus, the scientific enterprise advances on two feet (Holton, 1995) — often through “fits and starts, and diversions down blind alleys” (Greene, 2010, p. ix) and even “brilliant blunders” that clear the path for new discoveries (Livio, 2013).

The social world around us is less amenable to scientific scrutiny compared to the practicality with which the inanimate world and the living world can be studied. This is well put by Kováč (2007) who states that:

We know much of the inanimate world and of life at the level of molecules, and have a marvellous command over it, due to the advancement of natural sciences. However, our knowledge of the forces that direct human individual behaviour and social dynamics is meagre. Close to zero. (p. 12)

Nevertheless, the social world — particularly the world of work with all its complexity and unpredictability — needs to be studied at all levels, as parts or whole systems. The dual processes of lumping and splitting in the natural and physical sciences are relevant to psychological science and its applied fields (McGuire, 1997; Kanfer, 2009). The main models of work engagement are the works of the lumper psychologists. For example, Kahn (1990) stated that his aim was to “... map across

individuals the general conditions of experience that influence degrees of personal engagement ... to identify psychological conditions powerful enough to survive the gamut of individual differences” (p. 695). In a similar vein, the Job Demands-Resources (JD-R) model used to study work engagement provides a heuristic representation of how job and personal resources influence work motivation, work outcomes, employee health and well-being (Schaufeli & Taris, 2014). General models are a way of organising our ideas, they are useful for describing problems and solutions, but may be insufficient for providing specific answers (Weinberg, 1995). Therefore, to improve “correctness”, the work of the splitter psychologist is often needed so that individual components of open theoretical frameworks can be iteratively improved (Locke & Latham, 2006).

There are fundamental narrow questions that need answering in the work engagement field. Kahn (1990) noted that despite his wish to propose psychological conditions general enough to transcend the effects of individual differences, the latter invariably influence engagement. What are some of those individual differences that have remained unexplored so far? How do these individual differences affect work engagement? How does work engagement fare as a predictor of outcomes when other individual differences variables are included, alongside work engagement, as predictors — specifically when the predictors have a high level of symmetry with the outcomes? What is the nature of the mediating role of work engagement between resources and outcomes? Furthermore, following conservation of resources theory (Hobfoll, 2002), the work engagement-outcomes link is often posited as being mostly reciprocal in nature. To what extent can this claim be generalised, and does it apply to all outcomes? What are the time lags within which resources, outcomes and work engagement influence each other in single or reciprocal ways? Does work engagement lead to good health or is it more appropriate to view a state of good health as one of the causes of work engagement?

These are only some of the many questions investigated within the overarching theme of this thesis on the effects of mindsets on work engagement and outcomes. More precisely, this thesis tackles these types of questions in two discrete explanatory process models linking mindsets, work engagement and outcomes, with the aim of integrating the findings within the heuristic work engagement models of the lumper psychologists. In this sense, this thesis is an exercise in splitting and lumping, focussed on contributing to the progress of work engagement research and practice. It is humbly hoped that lumping, splitting and the combination of these two strategies will become self-evident throughout the thesis as the research agenda unfolds in the early chapters (Chapters One to Four) and is answered and discussed in the remaining chapters (Chapter Five to Seven).

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## Chapter One

### Overview of research agenda

#### 1.00 General overview

This introductory chapter provides an overview of the programme of research undertaken in this thesis. The research examines the effects of mindsets on work engagement and on its outcomes. More precisely, the influences of two discrete mindsets — the incremental mindset of job capability and the incremental mindset of emotion — on work engagement and on its outcomes are investigated. The chapter begins by introducing the main constructs of mindsets and work engagement after which the research agenda is presented.

#### 1.01 Introduction

In his 1994 book *Pale Blue Dot: A Vision of the Human Future in Space*, the late Carl Sagan wondered whether we will, one day, venture to the stars to settle other planetary systems. He stated that it will not be we who will do so, but another species because time, prostheses, genetic engineering, and necessity will have changed us. Sagan envisioned that this new species will have more of our strengths and fewer of our weaknesses. He perceptively noted that necessities will have changed us, precisely because we are an adaptable species. Adaptability is one of the most treasured aggregate characteristics we have as a species — it explains our past and current triumphs in the struggle for survival. Adaptability is mostly about change (Cullen, Edwards, Casper, & Gue, 2013; Dweck, 2012; Pulakos, Arad, Donovan, & Plamondon, 2000; Van den Heuvel, Demerouti, Bakker, Schaufeli, 2013). A necessary mental condition for triggering adaptive behaviour is the core belief that an attribute (e.g., intelligence, job capabilities, personality, and emotion) is changeable and controllable (Dweck, 2011; Martin, Nejad, Colmar, Liem, 2013). This core belief, about the malleability of human attributes, has been termed mindsets<sup>2</sup> in psychological science and it has been the subject of much empirical enquiry over the past 30 years leading to applications in various life domains (Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2012).

Essentially, the research in this thesis applies mindsets to work engagement and its outcomes. Sections 1.02 to 1.07 below give overviews of mindsets, work engagement, outcome variables, and

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<sup>2</sup> Early research used the “implicit theories” terminology, underscoring the fact that these beliefs are often unarticulated in the minds of those who holding them. Main recent papers (e.g., Burnette et al., 2012; Dweck 2006; VandeWalle, 2011) have used the mindset terminology. This thesis follows this lead, although, as will be seen in some of the quotes used, the implicit theory terminology is still used.

potential links between mindsets and work engagement. Then, building on these descriptions and explanations, the research agenda tackled in this thesis is presented.

### 1.02 Mindsets and self-regulatory variables

Mindsets refer to the lay beliefs that individuals hold regarding the extent to which attributes such as intelligence, personality, and various forms of abilities can be conceptualised as malleable versus fixed (Dweck & Leggett, 1988). For example, individuals might hold the belief that each person has a certain fixed amount of intelligence which cannot be changed or that each person has a certain personality or moral character that cannot be altered however hard the person tries (Dweck, 2012). Those who believe an attribute is fixed have an entity mindset with regard to that attribute; conversely those who believe an attribute is malleable have an incremental mindset vis-à-vis the attribute. As Dweck (2011) states, those who hold an incremental mindset do not consider that everyone starts out with the same level, potential or talent in life, or that any individual can become anything. Instead, individuals with an incremental mindset have the unflinching belief that each person has the ability to grow, make progress and achieve success, given the proper motivation, guidance, instruction, right strategies and opportunities. The lay beliefs associated with incremental mindsets are about control and change, not stability (Dweck, 2011).

Empirical studies show that individuals readily endorse either an entity or an incremental mindset when tested in various domains, with each mindset represented with roughly equal frequency in most samples (Dweck, Chui, & Hong, 1995). However, individuals can concurrently hold an incremental mindset in one domain and an entity mindset in another, although incremental mindsets across different domains can also be positively correlated (Burnette et al., 2012; Burnette, 2013). Even though mindsets are conceptualised at a dispositional level across all domains, they can be successfully induced following carefully designed interventions. This is what makes the concept useable and consequential (Blackwell, Trzesniewski, & Dweck, 2007; Burnette et al., 2012; Burnette & Finkel, 2012; Robins & Pals, 2002). More generally, across all investigated domains, mindsets are largely unrelated with the Big Five lexical traits (extraversion, neuroticism, agreeableness, openness, and conscientiousness) self-esteem, educational level, general cognitive ability, confidence in intellectual ability, optimism or confidence in other people, or socio-political attitudes (Burnette & Pollack, 2013; Dweck et al., 1995; Furnham, 2014; Spinath, Spinath, Riemann, & Angleitner, 2003; Tabernero & Wood, 1999).

The various mindsets that individuals hold in different domains (e.g., academic, social relationships, emotional and physical health, stress, athletics, and the workplace) influence domain-specific achievements through associated self-regulatory processes. Therefore, in most instances, mindsets do not directly determine behaviour, but they rather activate goals, strategies and behaviour by creating the frameworks for interpreting and responding to events that an individual experiences. The most illustrative examples of the effects of mindsets are found in the academic domain with the mindset of intelligence (Dweck & Leggett, 1988). Seminal longitudinal studies conducted with school children (Blackwell et al., 2007; Robins & Pals, 2002) have shown that, under the context of challenges and failure, holding an incremental mindset leads one to: (1) Adopt learning or mastery-oriented goals<sup>3</sup>, (2) make attributions for failure that are focussed on lack of effort, (3) persevere in light of difficulties by trying different strategies, (4) view effort as a necessary and normal condition to achieving success and (5) view mistakes as a tool for learning and improvement. On the other hand, under the same condition of challenges and failure, those who endorse an entity mindset of intelligence tend to: (1) Adopt performance-oriented goals and strategies, namely performance prove and performance avoid goals, (2) attribute failure to lack of innate ability, (3) demonstrate low persistence in the wake of setbacks, (4) view the necessity of making effort as a sign of low ability, and (5) treat mistakes as an objective confirmation of low ability level. In both mindsets, goals are the key self-regulatory mechanism linked to achievement. It is fitting to note that in the domain of mindset of intelligence, neither the incremental nor the entity mindset is related to the ability level of respondents (Dweck et al., 1995).

The most important of the self-regulation approaches discussed above are goals as they massively influence the other processes. Goals are known to mobilize physical and mental effort, optimise information processing capabilities and catalyse processes related to achievement. Learning goal orientation denotes strong dispositional mastery needs, intrinsic motivation and curiosity for learning new things. It relates to the incremental development of competence in relation to one's own past progress or standards. On the other hand, performance-oriented goals denote a need for gaining favourable approvals, preference for easy tasks, outperforming others and avoiding negative judgements from others in the context of learning. Although research shows that both learning and performance goals are associated with achievement, there are fundamental differences that characterise these relationships. Learning goal orientation has a positive relationship with adaptive motivational processes and related outcomes while performance goals have an irregular pattern of relations — a mix

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<sup>3</sup> These two terms are equivalent.

of adaptive, neutral and predominantly maladaptive relationships (Hulleman, Schrager, Bodmann, & Harackiewicz, 2010; Payne, YOUNcourt, & Beaubien, 2007). Mindsets can also have direct influences on achievement although the effect sizes of these relationships are small (Burnette et al., 2012).

In a certain sense, incremental mindsets represent the hallmark of human nature: the capability to adapt, change and grow (Dweck, 2011; 2012). Another defining aspect of incremental mindsets relates to conquering one's weaknesses rather than maintaining a focus on consolidating strengths. However, for a balanced view on mindsets, it must be emphasised that incremental mindsets do not relegate other predictors of achievement to the extent that these can be totally ignored. The domain of intelligence illustrates this point well. Achievement in a school setting is a function of a whole set of variables, ranging from ability to non-ability factors (Romero et al., 2014). In this sense, mindsets are one of the set of non-ability factors affecting achievement and performance.

Although research on the application of mindsets to the workplace setting has progressed over the last ten years (Heslin & VandeWalle, 2009), there is scope for more inquiry. Specifically, mindsets have particular relevance in the broad field of work motivation and job attitudes, one of the most widely studied topics in I-O psychology (Mitchell & Daniels, 2003). Work engagement, as an affective-motivational construct, is increasingly used as the main framework to study work motivation and job attitudes in the workplace. Using the distinct incremental mindsets of job capability and emotion, this research investigates their potential effects on work engagement and on outcomes of proactive learning behaviours and subjective well-being. The mindset of job capability relates to whether a worker believes his or her job capabilities are malleable or fixed (Van Vianen et al., 2011) and, the mindset of emotion refers to one's beliefs about the malleability of core emotions (Tamir, John, Srivastava, & Gross, 2007).

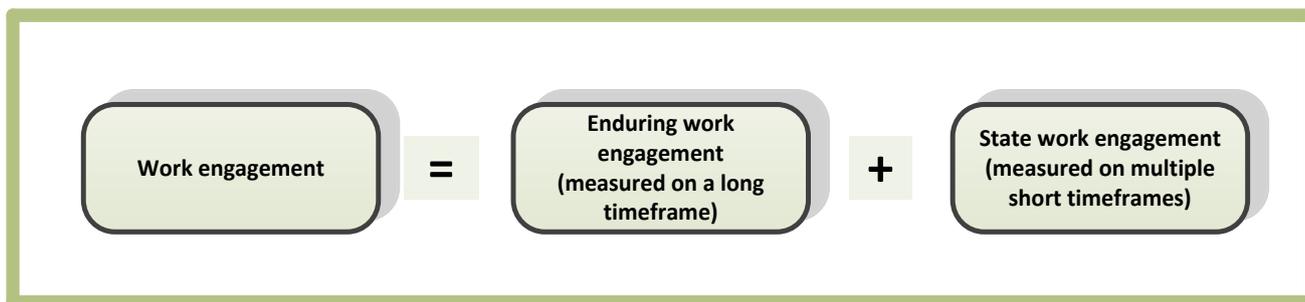
Importantly, in this research, the mindsets of emotion and job capability correspond, respectively, with the affective and motivational components of work engagement. It will be argued that these mindsets can potentially influence the affective and motivational dimensions of work engagement in both direct and indirect ways.

### 1.03 Work engagement

Work engagement represents the psychological connection workers have with work. It is defined as a relatively enduring work-related state of mind related to the simultaneous holistic investment of personal energies (physical, cognitive and emotional) in the experience of work tasks (Christian, Garza, & Slaughter, 2011). Work engagement is measured at the between and within person level. Research looking at why some individuals are more engaged than others investigates enduring work engagement (Hultell & Gustavsson, 2010), and research on the dynamic and temporal dimensions of work engagement investigates how and why work engagement varies within a worker (Sonnentag, Dormann, & Demerouti, 2010).

This research measures enduring work engagement, but it acknowledges that this motivational construct has non-erratic oscillations from a baseline value. Work engagement is an additive function of enduring work engagement and oscillating (within-person) state engagement (Christian et al., 2011; Dalal, Brummel, Wee, & Thomas, 2008). This is represented below in Figure 1. Although work engagement refers to the sum of enduring and state work engagement it is often referred to as a “state”. This is slightly misleading as it obscures the distinct nature of state engagement (Dalal et al., 2008) and does not reflect the simultaneous co-existence of the state and trait properties of this construct. Work engagement is characterised by an enduring dimension with some regular fluctuations from a baseline value. This is a practical definition that has been useful in engagement research. Sonnentag et al. (2010) liken the trait and state differentiation of work engagement with that of positive and negative affect, these latter two can be seen from both a trait and state a standpoint. However, although this approach is intuitive, it does raise the question of whether engagement, as a trait, is really a core endogenous factor of one’s personality. As McCrae et al. (2000, p. 173) point out; personality traits are factors which are “endogenous dispositions that follow intrinsic paths of development essentially independent of environmental influences”. For this reason the term enduring work engagement is more preferable to terms such as “trait” or “trait-like work engagement” and work engagement is more accurately represented as having simultaneous state and enduring dimensions as represented below in Figure 1 (Christian et al., 2011; Dalal et al., 2008; Hultell & Gustavsson, 2010). Enduring work engagement is posited to possess situational and temporal stability, although these stabilities are somewhat less than that of the lexical traits of personality.

Figure 1. Work engagement as a function of enduring and state work engagement.



Work engagement depends on a host of antecedents, which can be classified broadly into organisational and dispositional factors (more on this shortly). Some work factors are more important than others depending on the nature of the work activity, i.e. antecedents may vary from workplace to workplace (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010). Research has also looked at how work engagement is predicted within an interactionist framework whereby dispositional factors interact with organisational factors. For example, Liao et al. (2012) found that personality factors of extraversion, neuroticism and conscientiousness moderated the relationship between team member exchange, as an antecedent of work engagement, and work engagement.

Furthermore, longitudinal research indicates that the relationships between antecedents and work engagement may be reciprocal (i.e., with some antecedents functioning as outcomes of work engagement). For example, social support at work is both an antecedent and an outcome of work engagement. Engaged workers who gain their work engagement from a myriad of factors including social support are known to mobilise further social support from their work environment leading to more work engagement increases over time (Weigl et al., 2010). This is known as the “gain cycle” within work engagement research (Llorens et al., 2007) and is underpinned by the conservation of resources theory (COR) which posits that when not facing stress and threats, individuals strive to obtain, retain and protect their resources (Hobfoll, 2002). That is, once resources are obtained, they are reinvested again in the pursuit of new resources, hence the gain cycle.

The diversity of antecedents resources reveals the difficulty of research in work engagement research. Schaufeli and Taris (2014) provide a long list of such resources. For example job resources include: advancement, appreciation, autonomy, craftsmanship, financial rewards, goal clarity, information, innovative climate, job challenge, knowledge, leadership, opportunities for development, participation in decision making, performance feedback, positive spillover from family to work, professional pride, procedural fairness, quality of relationship with supervisor, safety climate, safety

routine violations, social climate, social support from colleagues, social support from supervisor, skill utilisation, strategic planning, supervisory coaching, task variety, team cohesion, team harmony and trust in management. Likewise, personal resources include: emotional and mental competencies extraversion hope intrinsic motivation, low neuroticism, need satisfaction (autonomy, belongingness and competence), optimism, organisational-based self-esteem, regulatory focus (prevention and promotion focus), resilience, self-efficacy, value orientation (intrinsic and extrinsic values), and authenticity.

Therefore work engagement research is nested within inescapable complexity with respect to its causal and predictive nature. Leveraging these predictors enables one to influence work engagement in the workplace. It cannot be overemphasised enough that work engagement is a function of a large number of antecedents. This is probably one of the main reasons that make this topic difficult to study. In fact, empirical research focussing on the role of any particular specific antecedent of work engagement, or researching the influence with any other variable within any research agenda, has to make a reasonable assumption that the work engagement level observed and measured is, in part, a result of the presence of other unmeasured key organisation and personal resources that are not modelled (see Bakker, Tims, & Derks, 2012; Bakker & Xanthopoulou, 2009; Bal, Cooman, & Mol, 2013; Kassing, Piemonte, Goman & Mitchell, 2012; Bakker, Demerouti, & Brummelhuis, 2011; Halbesleben, Harvey, & Bolino, 2009; Inceoglu & Warr, 2011; Lo Bue, Taverniers, Mylle, & Euwema, 2013). This assumption of unmeasured variables is possible because although resources vary from workplace to workplace according to the needs of the work setting (Hakanen, Bakker, & Demerouti, 2005), there are key generic job and personal conditions that are common across all workplaces (Hakanen & Root, 2010). More importantly, among these key job resources, there are some resources that are indispensable, for example distributive fairness (George, 2011; Kahn, 1990, 1992), financial rewards, skill utilisation and so on.

#### 1.04 Predictors of enduring work engagement: beyond lexical traits of personality

Work engagement arises through a large number of organisational and personal predictors. Independently and jointly, these initiate a motivational pathway through which personal energies are channelled into work tasks, enabling workers to become emotionally and cognitively connected to their work (Bakker, 2011; Kahn, 1990, 1992; Macey & Schneider, 2008). Recent research on predictors of work engagement has focussed mostly on work-related conditions, giving less attention to the potential

dispositional predictors of the construct (Inceoglu & Warr, 2012). Practitioners in the work engagement field, agree that within any organisation one can find workers who are: (1) highly engaged, (2) moderately engaged, and (3) quite disengaged (Macey, Schneider, Barbera, & Young, 2009). Anecdotal reports suggest that there are workers who manage to stay engaged even when work conditions are disengaging (Macey et al., 2009; Van Rooy, Whitman, Hart, & Caleo, 2011; Wefald, Reichard, & Serrano, 2011) — they demonstrate resiliency in their work engagement, and have a high level of enduring work engagement, measured at the between-person level.<sup>4</sup> These workers have high levels of positive affectivity, defined as the propensity to experience positive emotions and moods across situation and time (Watson, Clark & Tellegen, 1988), and they tend to regain their usual work engagement level more efficiently than those with low levels of positive affectivity after facing negative events at work (Bledow, Schmitt, Frese, & Kuhnel, 2011). The general notion that some individuals are able to maintain cognitive, motivational and behavioural focus despite setbacks is not an unfamiliar proposition in psychology. For example, a stream of research under the label of hardiness explains how and why some individuals thrive under chronic stress while their counterparts (the less hardy ones) suffer detrimental effects (Maddi, 2013). Following a similar reasoning, it is argued that “By their nature, engaged individuals have stores of personal and job resources and enhanced cognitive and behavioral repertoires as a function of their positive emotions” (Kane-Frieder, Hochwarter, & Ferris, 2013, p. 2).

Explaining the reported stability of work engagement, researchers have proposed that it is located within the upper right hand quadrant of the circumplex model (Bakker, 2011; Warr & Inceoglu, 2012). The circumplex model, shown below in Figure 2, represents core affect. This model proposes that all affective states originate from two neurological systems, that of pleasure/displeasure and arousal/deactivation, giving rise to four quadrants: High pleasure-high activation; low pleasure-high activation; high pleasure-low activation; and low pleasure-low activation. Each emotion depicted can be understood as representing varying degrees of the combination of pleasure (displeasure) and arousal (deactivation).

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<sup>4</sup> The same can be said about job satisfaction. As Roe (2008, p.44) notes: “some people must have a constant (high, average, or low) level of satisfaction, as the dispositional view of satisfaction suggests (Judge, 2001)”. Indeed, this between-individuals stability is to be found over long interval of times as opposed to short periods.

## Antecedents and outcomes of work engagement: The role of mindsets.

Figure 2. The circumplex model, adapted from Warr et al. (2013)

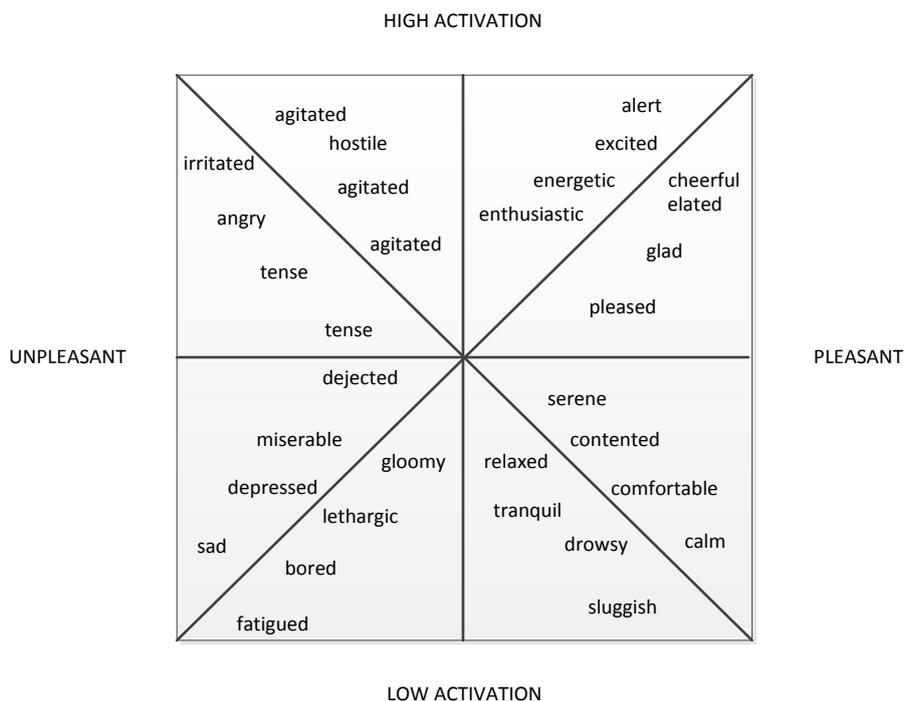


Figure 2. The circumplex model, adapted from Warr et al. (2013)

Placing work engagement within the upper right quadrant of the circumplex model implies that some workers are able to maintain their level of work engagement, they may have a set-point or a stable baseline which underpins their engagement. That set-point needs to be mapped (see also Warr and Inceoglu, 2012). As Seppala et al. (2009) noted, the high long-term stability of work engagement raises an interesting question with regard to how much influence personal factors have on work engagement. Furthermore, a large-scale study<sup>5</sup> (Inceoglu & Warr, 2011), based on samples from different countries, has reported moderate to strong zero-order correlations between work engagement and activated sub-traits of conscientiousness (achievement orientation – active industrious), emotional stability (optimism) and extraversion (social potency – proactivity in influencing others). Extending the question of Seppala et al. (2009) further, the list of personal potential factors that form the basis of enduring work engagement needs to be broadened, we need to understand how and why these factors contribute to the dispositional basis of work engagement.

Current research on the dispositional basis of work engagement is based lexical traits of the Big Five model of personality. These lexical traits are the most dominant means of representing and

<sup>5</sup> See also Halbesleben, 2010; Langelaan, Bakker, Van Doornen, & Schaufeli, 2006) who have investigated the bivariate association of work engagement with conscientiousness, emotional stability, extraversion and self-efficacy.

investigating personality, representing the most significant progress in personality research (McCrae & Costa, 1997). However, personality cannot be fully captured by these lexical traits and their facets, lexical traits alone are insufficient in explaining the full gamut of human behaviour in all its complexity (Nilsson 2014, Mayer, 2005; Dweck, 1996). This is because personality aspects such as social cognitive motivations (Mischel & Shoda, 2008), personal projects (Little, 2005), life narratives (McAdams, 2008) and worldviews (defined as an individual's current belief systems, values, goals, and subjective meanings) and beliefs (Dweck, 2011) are simply not encompassed through the trait approach (Nilsson, 2014). In a study in the educational domain on the relationship between the Big Five factors, goal orientations and learning behaviours, Zweig and Webster (2004) noted that “... the Big Five do not account for all outcome variance ... suggesting that more focused combinations of personality traits might be better than more global traits at predicting outcomes” (p. 1705). There are other important, personality factors such as beliefs and goals that are not represented within the Big Five framework and these factors have important dynamic influences on motivation and work performance (Dweck & Leggett, 1988; see also Bartone et al., 2013). Mindsets represent a social-cognitive approach to motivation and personality in that it involves the association of beliefs, values and goals that people hold about themselves. Mindset research has demonstrated that beliefs can consistently shape our experiences and influence our action towards specific purposeful goals resulting in stable individual behaviour patterns (Dweck, 2011). This stability implies that beliefs are central to the overall framework of personality (Dweck, 2008). They are critical for understanding the full gamut of behaviour. As Burnette et al. (2011) note:

This assumption — that personal beliefs are critical for understanding human behavior — has been influential in psychology for many decades. Piaget, for example, suggested that the development of meaning systems is just as important as logical thinking in shaping behavior (Piaget, 1928/1964; Piaget & Garcia, 1991). Similarly, Kelly (1955, pp. 8-9) suggested that “man looks at his world through transparent patterns or templates which he creates and then attempts to fit over the realities of which the world is composed (p. 3).

Dweck (2008) makes a perceptive point on the utility of beliefs over broad personality traits:

Focusing on people's beliefs, as opposed to their simple preferences and habits or broad personality traits, helps us answer in more precise ways questions like: What personality factors allow people to function well in their lives — that is, to grow and learn, sustain satisfying

relationships, achieve well in school and careers, be caring toward others, or recover from setbacks? This is because beliefs can typically be defined very precisely, measured very simply, and altered through interventions to reveal their direct impact. In contrast, broad personality traits can be assessed, but they contain no implications for how you might change them. Beliefs are not necessarily easy to change<sup>6</sup>, but they tell you where to begin. (p. 392)

Building on mindset research (Burnette et al., 2011; Dweck, 2011) this series of investigation goes beyond the approach of using lexical traits, which are deemed fixed and unchangeable, as predictors of work engagement. Therefore, this research opens the possibility of investigating the effects of malleable dispositional predictors of work engagement.

#### 1.05 Outcomes of work engagement: proactive learning behaviours and subjective well-being.

Work engagement is potentially linked with desirable outcomes at the individual and organisational level (Bakker, 2011; Harter, Schmidt, & Hayes, 2002). Indeed, its practical value is due to the range of outcomes that it is purported to explain and predict (Christian et al., 2011). Nevertheless, work engagement itself has been treated as an outcome in its own right (Halbesleben, 2010) with the results that the exploration of outcomes have been limited to bottom-line outcomes mostly (e.g. Harter et al, 2002). This research focusses on two sets of work engagement outcomes. These are proactive learning behaviours (Noe, Clark, & Klein, 2014) and subjective well-being (Warr, 2012; Busseri & Sadava, 2011). For the purpose of this research, proactive learning behaviours comprise of (a) Proactive learning and development, (b) feedback seeking behaviours (feedback inquiry and feedback monitoring) (c), and knowledge sharing. Likewise, subjective well-being consists of (a) Happiness, (b) life satisfaction and, (c) psychosomatic complaints (a marker of subjective physical health). These two sets of outcomes are discussed in more detail in Chapter Four.

#### 1.06 The incremental mindset of job capability and work engagement

The mindset of job capability relates to the beliefs workers hold regarding the malleability of their job capabilities, defined as the job-related knowledge, skills, and mental abilities one has (Maurer,

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<sup>6</sup> Dweck makes a crucial point here that achieving successful change in behaviour is challenging. According to Arkowitz and Lilienfeld (2007) some of the forces that impede change are: (1) The status quo is familiar and predictable whereas change is unpredictable and a potential source of anxiety, (2) people fear failure should they not succeed in their efforts to change, this could make them feel worse, (3) people have faulty beliefs that can impede change – e.g., some individuals believe one needs to be successful at 100 percent.

Wren, Pierce, Tross & Collins, 2003; Maurer & Lippstreu, 2008; Van Vianen, Dalhoeven, and De Pater, 2011). Research shows that the incremental mindset of job capability has positive implications for workplace learning. For example, it is directly linked with participation in employee development activity following multi-source feedback (Maurer, Mitchell, & Barbeite, 2002). It also buffers the negative effects of age on skill acquisition: Van Vianen et al. (2011) found that although aged workers tend to have low willingness to participate in training and development activities this relationship is moderated by the mindset of job capability such that aged workers with an incremental mindset of job capability are more likely to participate in training and development activities than their same-aged peers who endorse an entity mindset of job capability.

Research on the mindset of job capability and its relationship with work motivation is scarce. On the other hand, there is more information on the value of job capability for work motivation. Research on the interaction between job capability and work motivation suggests that an optimum level of work motivation is most effective when workers have the requisite capability and skill to accomplish the task in the first place. This suggests that job capabilities are of paramount importance for work motivation. Thus, going one step backwards, the incremental mindset of job capability is potentially a dispositional predictor of work engagement as the belief that job capabilities can be improved is necessarily linked with the proactive acquisition of job-related capabilities of workers (Maurer & Lippstreu, 2008). Without the beliefs that job capabilities are malleable no efforts are directed towards the lengthy and difficult processes of skill acquisition and mastery. It is often said that workers display less motivation for self-development when the latter is not mandatory (Sankey & Machin, 2014), yet the evolving nature of most jobs require workers to engage in self-development through their own initiative (Molloy & Noe, 2008).

The role of ability in workplace motivation theories has been surprisingly neglected, except for goal setting technique (Locke & Latham, 2006) which includes ability as one of the key variables between the goal and achievement link. Interestingly, general theories of motivation applied in areas other than the workplace (e.g., in school setting) have placed a strong emphasis on capabilities or abilities. For example, self-determination theory (Deci & Ryan, 2000) holds that motivation and optimal functioning is a partly a function of intrinsic motivation which is about "...doing an activity for its own sake, because one finds the activity inherently interesting and satisfying" (Gagné & Forest, 2008, p. 225). Intrinsic motivation is itself a function of the satisfaction of three fundamental basic psychological needs of: (1) Competence (feeling effective), (2) autonomy (sense of volition and

psychological freedom) and (3) relatedness (feeling loved, valued and cared for). The need for competence is defined as the inborn desire to feel effective in interacting with one's environment, to be engaged in challenging tasks and extend one's skills (Deci & Ryan, 2000). Satisfying the need for competence enables individuals to develop adaptability. On the other hand, a state of frustration due to not meeting competence needs leads to helplessness and lack of motivation (Broeck, Vansteenkiste, Witte, Soenens, & Lens, 2010). In a similar way, the motivational technique of goal-setting holds that specific goals predict performance when the conditions of goal commitment, capability and self-efficacy, defined as the context-specific assessments regarding one's capability to successfully perform specific tasks and behaviors in a given domain in prospective situations are present (Bandura, 2011).

Thus, capability is a fundamental variable alongside work motivation theories. The absence of "knowledge and skill" and their resulting "adaptive behaviours" within the nomological network of work engagement were noted very early on when the construct first came under scrutiny in academia (e.g., Burke, 2008), although the model of engagement of Kahn (1990, 1992), which will be discussed in Chapter Two, makes direct reference to job capability as antecedents to engagement. However, no studies have looked at the job capability-work engagement link in more detail.

Self-efficacy, as a proxy to job capability, has been modelled as a key antecedent of work engagement. Self-efficacy determines how much effort and persistence is mobilised in overcoming challenges. However, self-efficacy does not address job capability directly. More importantly the incremental mindset of job capability is potentially a more critical antecedent of work engagement than specific self-efficacy. Specific self-efficacy cannot be developed if a worker does not believe in the malleability, control, and growth of job capabilities in the first place. Research on academic remedial action has shown that when students with incremental and entity mindsets are under the same conditions of low self-efficacy, those with entity mindsets report less interest in the desire to take a highly recommended course compared to those with incremental mindsets (Hong et al., 1999). In this sense, mindsets may precede self-efficacy (Kanfer, 1990; Tamir & Mauss, 2011; Plaks & Chasteen, 2013). As Plaks and Chasteen (2013) explain:

Whereas self-efficacy beliefs ... and control beliefs ... are beliefs regarding one's own ability to perform an upcoming task, implicit theories (mindsets) have been defined as general assumptions about human abilities that, in turn, lay the groundwork for more specific beliefs about the self. (p. 948)

Self-efficacy and mindsets are thus related but separate constructs (Maurer et al., 2003; Van Vianen et al., 2011).

Overall, as Burke (2008) noted, knowledge and skills need a prominent place in work engagement models. This requires investigation. More broadly, the mindset of job capability as an antecedent may fill an important gap in the nomological network of work engagement. In a review on the conceptual status of work engagement, Parker and Griffin (2011) argue that work engagement, at least as defined by Schaufeli et al. (2002), is in a strange position where the scale used to measure the construct seems to be defining the latter. Thus, there is a need to investigate how work engagement relates to other constructs so as to gain a deeper understanding of the nomological network of work engagement.

Recently Heslin (2010) proposed theoretical links between mindsets and work engagement in view of expanding the potential antecedents of the latter. This research adapts and expands on this framework<sup>7</sup>. In his theoretical framework Heslin (2010) chose the mindset of intelligence as a dispositional predictor of work engagement. Intelligence, as basic cognitive ability, is however more related to the academic setting than to work-related tasks (Van Vianen et al., 2011). Mindsets are domain specific. Thus, this research adapts and expands on this framework<sup>8</sup> by using the mindset of job capability as it is more conceptually related to the work context and proactive learning variables. For now, Heslin's (2010) framework, with the mindset of intelligence, is briefly explained. The framework is revisited again in Chapter 4, where it is modified with the mindset of job capability and is expanded further with the inclusion of the outcomes of proactive learning and development variables: proactive learning and development, feedback inquiry and monitoring, and knowledge sharing.

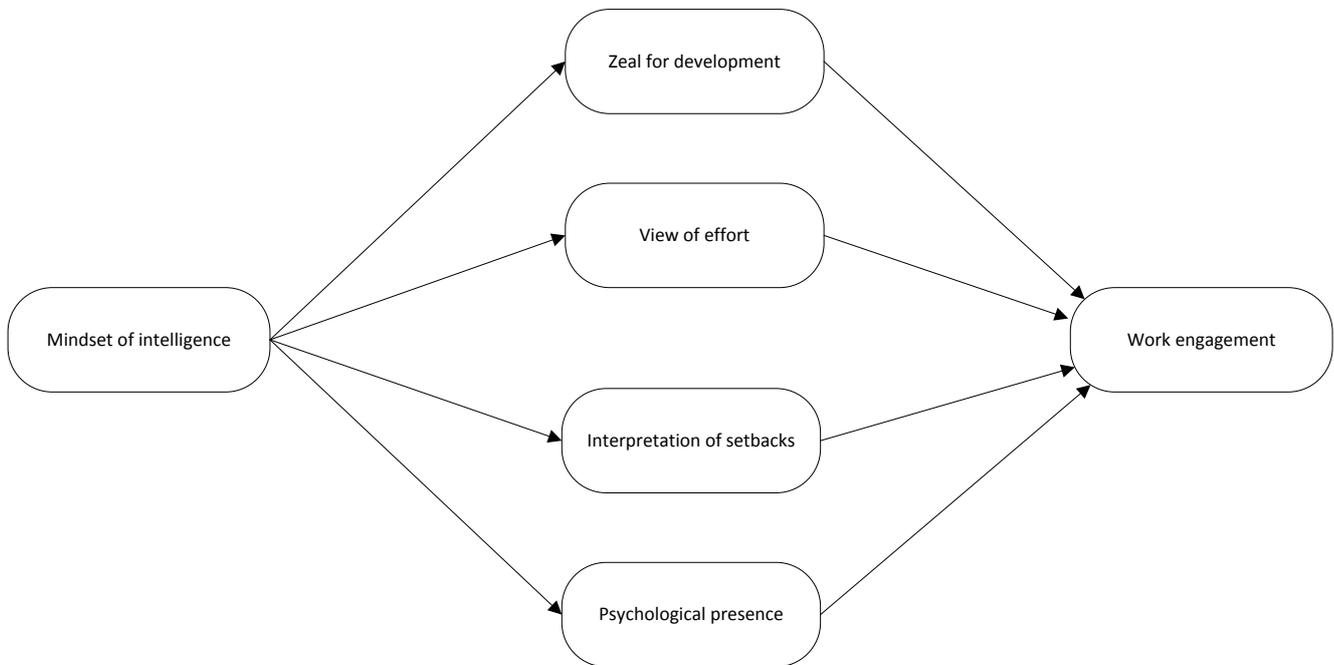
Introducing the framework, Heslin (2010) notes that work engagement depends on a large number of personal and work conditions. Importantly, he states that regardless of these conditions, there are workers who are more engaged than others, and that their work engagement is, in part, a function of their incremental mindset of intelligence. Heslin (2010) next proposes his theoretical model linking the mindset of intelligence to work engagement through the standard self-regulatory

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<sup>7</sup> To the best of my knowledge, this model has not been tested empirically.

mechanisms found in the mindset of intelligence domain, mainly building on these self-regulatory mechanisms (as listed in section 1.0) he lists four key mediators that link incremental mindset of intelligence and work engagement through discrete processes: zeal for development, view of effort, interpretation of setbacks, and psychological presence. The framework is represented below in figure 3. As psychological presence was not discussed in section 1.03 it is explained in the next paragraph below (it also explained in Chapter Two). Following this, all the mediating processes between work engagement and the incremental mindset of intelligence are briefly explained below.

Figure 3. Incremental mindset of intelligence and work engagement adapted from Heslin (2010)



Psychological presence (mental alertness) is an interesting variable as it is independently associated with both work engagement (this is discussed in chapter 2) and mindsets. Experimental evidence from the academic domain suggests that the different goal orientations (learning goal orientation v/s performance prove goal orientation and performance avoid goal orientation) that result from the endorsement of mindsets (incremental versus entity) are related to different patterns of attention in the brain. More specifically they influence where attention is biased and what type of mental processing is used on information that is attended to. Mangels et al. (2006) conducted an event-related potential study in which they monitored the brain waves of undergraduates as they took a

general level test with questions from a variety of domains (e.g., literature, art, music and others). The results showed that students with an entity mindset had their attention focused, after each question, and on whether they had the right or wrong answer and did not focus on what the right answers were even if they had wrong answers. This is prototypical of the behaviours associated with performance prove and performance avoid goals. On the other hand, in common with the entity mindset students, those with an incremental mindset focussed attention on finding whether they had the right or wrong but then they also focused on finding out what the correct answers were to their wrongly answered questions. Further testing on incorrect items only showed that those with incremental mindset of intelligence scored higher than those with entity mindsets. These findings confirm that individuals with incremental and entity mindsets differ in their (1) appraisal of performance, (2) curiosity for attending to learning-related resources, and interpretation of setbacks. Those with entity mindsets view negative feedback as a threat to their self-perception about their ability level leading them to devote less energy to effortful mental processing. More importantly this study confirmed all the previous findings of studies based on self-reports, which may be subject to response and method bias, through a covert technique that mapped how basic beliefs have a directional effect of attention on a moment-to-moment basis.

According to Heslin (2010) the self-regulatory variables (zeal for development, view of effort, interpretation of setbacks, and psychological presence) triggered by an incremental mindset are direct antecedents of enduring work engagement. These mediators are now discussed below.

**Zeal for development:** Zeal for development (a mastery orientation) is the basis for the adaptive motivational process that characterise engaged workers in their pursuit of continual self-improvement under demanding work conditions, leading them to maintain their job-related capabilities (Engelbrecht, 2006). As mentioned previously, a sense of competence has a positive facilitating effect on optimum levels of work motivation which then in turn is related to job performance.

**View of effort:** Viewing effort as a necessary condition for goal achievement rather signalling lack of competence enables engaged workers to make and sustain efforts leading to resiliency. This also leads them to the exploration of new strategies involving creative and innovative behaviours. Although Heslin (2010) does not expand his arguments further it can be posited that viewing effort as a means of reaching goals is what characterises the effort-related behaviours of engaged workers in all

aspects of their work and task performance. Indeed, effort is a hallmark of work engagement, it is the primary channel through which motivation is converted into tangible work deliverables.

Interpretation of setbacks: Maintaining a consistent level of performance at work is often a challenge. Failures are expected in the workplace especially as work requirements and demands keep changing. Even learning and the acquisition and application of new skills are subject to errors. Therefore, the correct meaning ascribed to setbacks and its associated feedback (provided the latter is informative and actionable) has implications for learning and job performance. Those with an incremental mindset tend to view the occurrence of setbacks as a normal stage of the learning experience and use the information to devise new strategies to meet challenging unfulfilled goals. On the other hand, workers with an entity mindset view failure as diagnostic information of their ability level highlighting the limits of their capabilities. Thus, these two different responses to setbacks have important implications for work engagement: workers with an incremental mindset are more likely to display resilience in work-related learning, their daily work tasks, and delivery of job performance. The correct interpretation of setbacks is potentially at the heart of the resiliency of engaged workers. Most researchers and practitioners agree that engaged workers are resilient and show persistent efforts in the face of difficulties or failure (Bakker, 2011).

Psychological presence: As discussed above, individuals with an incremental mindset of intelligence focus their attention on where improvement is needed when their performance falls short of expectation. When this attentional focus is complemented with the sustained level of attention that is characteristic of engaged workers (Saks, 2008) it potentially allows engaged workers to channel their sustained attention in such a way that it is directed at recovering from expected and unexpected failures during long moments of attention needed in task delivery.

Jointly, these four mediators explain the proposed theoretical link between incremental mindset of intelligence and work engagement. As Heslin (2010, p. 221) puts it: “... a growth mindset generally increases – and a fixed mindset undermines – employee’s zeal for development, belief in the utility of effort, attentiveness to corrective information, and likelihood of construing “failures” as challenging and energizing, rather than undermining and debilitating”. This research model will be expanded in Chapter Four, where outcome variables will be added to address the other research questions raised in this research.

A crucial feature of theoretical modelling in the behavioural sciences is the examination of plausible alternative models (MacCallum, Wegener, Uchino & Fabrigar, 1993; Williams, 2012). This involves the possibility that an alternative model can be rearranged differently to explain alternative causal processes between the variables. Thus, while the direction of causality from learning goal orientation to work engagement suggested by Heslin's (2010) model needs to be tested empirically, the model affords the test of an alternative theoretical possibility. As discussed above, Heslin's (2010) model portrays zeal for development — learning goal orientation — as an antecedent of work engagement. However, there is also an alternative proposition for a causal relationship from work engagement to learning goal orientation. In the first ever diary study in the field of work engagement, Sonnentag (2003) tested a research model showing that recovery predicts work engagement which in turn predicts behaviours of trait pursuit of learning. Sonnentag (2003) argues that the causal link of work engagement to proactive learning and development is underpinned by a deep desire of work passion: The engaged worker is enthusiastic, cares about work, is absorbed with it and consequently has the willingness to persistently expend effort in continuously improving the general work situation and task outputs, hence he or she is a continuous and committed learner. This is in line with studies reporting high correlations between work engagement and intrinsic motivation (e.g., Gagné and Deci, 2005; Stone, Deci, & Ryan, 2009, Van Beek et al., 2012) and between intrinsic motivation and participation in non-mandatory training and development (Sankey & Machin, 2014).

Sonnentag's (2003) study is notable for one reason: Proactive learning and development was measured through the learning goal orientation construct and termed as "trait pursuit of learning". Usually, researchers make a clear distinction between trait motivational constructs such as learning goal orientation, which represents one's purpose in an achievement situation, an intention (or a desire) and the actual undertaking of learning behaviours (Maurer, 2001; Maurer et al., 2003; Hurt & Williams, 2009; Payne et al., 2007). Moreover various workplace-related learning scales are used to measure different forms of work-related learning<sup>9</sup> (e.g., Porath, Spereitzer, Gibson, & Garnett, 2011; Noe, Tews, & Marand, 2013; Di Milia & Birdi, 2010; Xander, Dam, & Henk, 2010). Learning goal orientation is a complex motivation construct (a will-do factor). It denotes a deep need for mastery associated with an adaptive response pattern resulting in sustained effort in the face of challenges and failure in the learning context. It is an antecedent of proactive learning behaviours (Parker & Collins, 2010) rather than a manifestation of these, therefore, it does not fully capture the universe of behaviours associated

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<sup>9</sup> The same applies in educational research, see Zweig and Webster (2004) for an excellent example of how learning goal orientation is related with different modes of learning activities.

with actual learning such as acquiring knowledge through new technologies. However, Sonnentag (2003) did not make this distinction and measured the construct of learning goal orientation as an outcome, finding a positive link between work engagement and learning goal orientation at both the between-person and within-person level. Thus this raises the question of the potential directional link between work engagement and learning goal orientation: Is work engagement, as an enduring construct, one of the many antecedents of learning goal orientation?

Various antecedents of learning goal orientation have been proposed, including cognitive ability, need for achievement, personality traits, general self-efficacy, and self-esteem (Payne et al., 2007). Recent evidence shows that the multi-dimensional concept of self-determination theory is a strong antecedent of learning goal orientation in the educational domain, implying that those who have intrinsic motivation for learning value learning activities for their own sake, demonstrating enjoyment and interest in the activity (Ciani, Sheldon, Hilpert, & Easter, 2011).

Importantly, Meyer and Gagné (2008) have compared work engagement to intrinsic motivation calling these two constructs equivalent (see Macey & Schneider, 2008; and Van Beek et al., 2012, on how intrinsic motivation is embedded within work engagement). One of the underlying mechanisms of intrinsic motivation is the need for competence. This approach places work engagement as a potential antecedent of learning goal orientation. Therefore the alternative possibility to Heslin's (2010) model, that work engagement might be an antecedent of learning goal orientation rather than an outcome of the latter, deserves investigation.

#### 1.07 The incremental mindset of emotion and work engagement.

The mindset of emotion relates to the belief that emotions are either malleable or fixed (Tamir et al., 2007). In common with mindsets in other domains, the mindset of emotion triggers domain-specific self-regulatory processes. These regulatory processes are termed emotion regulation, defined as the various strategies individuals use to decrease, increase or maintain the magnitude or duration of their emotional response (Gross, 2015). Emotion regulation may take many forms and there are several alternative classifications of these (Gross, 2015). According to a widely used classification by Parkinson and Totterdell (1999), deliberate emotion regulation strategies can be organised around two

central factors: (1) engagement<sup>10</sup> and (2) mode of regulation. Engagement refers to whether an affective experience is attended to or is avoided, whereas mode of regulation relates to how the affective experience is regulated, either by cognitive or behavioural means. Therefore, with the above two dimensions a two by two matrix is obtained consisting of four categories: Cognitive-engagement, cognitive-disengagement, behavioural-engagement, and behavioural-disengagement. An example of cognitive-engagement is cognitive reappraisal, defined as an emotion regulation strategy involving attention deployment towards changing the subjective interpretation of an emotion-eliciting situation (Gross, 2015). An example of an emotion regulation strategy in the behavioural-disengagement category is expressive suppression, defined as the deliberate inhibition of expressive behaviour whilst one is emotionally aroused by either positive or negative affect (Gross, 2015). These four categories of emotion regulation are content and process oriented variables in that they focus on which emotions individuals' value, what emotion goals individuals opt to pursue and how they change their emotions (Tamir & Mauss, 2011). Furthermore, another important angle through which emotion regulation strategies can be viewed is by looking at the temporal order of the processes. For example, Gross and John (2003) have proposed, through their process model of emotion regulation, that emotion regulation strategies can be divided as antecedent or response orientations. Cognitive reappraisal for example affects the assembly of an emotion before it is experienced, emotion suppression on the other hand is a response strategy in that it is activated after the emotion is experienced.

Emotion regulation is an independent field of research, distinct from mindset of emotion research. Emotion regulation has progressed steadily over the last fifteen years (Gross, 2015). Findings in this area show that cognitive-engagement and behavioural-engagement strategies generally lead to adaptive responding in terms of psychosocial functioning, mental and physical health, and work performance; whilst cognitive-disengagement and behavioural-disengagement are linked with maladaptive responding, including poor health (Brans, Koval, Verdyun, & Lim, 2013). Research on the mindset of emotion and on its link with emotion regulation is still in its infancy, with very few empirical studies. However, this small body of research has clearly indicated that the incremental mindset of emotion is predictive of emotion regulation self-efficacy and the emotion regulation strategy of cognitive reappraisal (Tamir et al., 2007). The incremental mindset of emotion together with emotion regulation strategies have potential implications for work engagement with regard to its affective dimension.

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<sup>10</sup> Engagement here is synonymous with approach motivation – it must not be conflated with the specific construct of work engagement.

As discussed previously, researchers in the work engagement field have argued that enduring work engagement is a function of core emotions situated in the high activation and high pleasure quadrant of the affective-circumplex model (Bakker, 2011). That is, engaged workers are dispositionally alert, excited, energetic, enthusiastic, cheerful, elated, happy, and pleased. This hypothesis would imply that engaged workers are potentially adept at emotion regulation, effectively navigating through most negative events in the workplace to maintain their positive emotional state, and in turn enabling them to maintain their work engagement at a more or less constant level. As noted in section 1.04, research suggests that emotional stability is strongly associated with work engagement, with empirical evidence showing that workers with high levels of dispositional positive affectivity regain their typical work engagement level more efficiently than those with low levels of dispositional positive affectivity after they are all confronted with the same negative events (Bledow et al., 2011). Thus this calls for a deeper investigation into the potential antecedent role of emotion regulation with regard to work engagement.

Therefore, more comprehensively, the belief about the malleability of emotion and its related processes of emotion regulation have potential antecedent roles in explaining, in part, the dispositional basis of work engagement and its link with outcomes. Figure 4 below gives a schematic representation of the emotion model that will be developed in Chapter Four (it is analogous to the Heslin model discussed above). In Chapter Four the model will be expanded to include outcomes of subjective well-being that are also intrinsically related with emotion regulation. Emotion regulation can shed more evaluative light on the work engagement-subjective well-being link, with respect to measuring the incremental contribution of work engagement in predicting subjective well-being outcomes over and above the direct effects that emotion regulation can potentially explain.

Figure 4. Incremental mindset of emotion and work engagement



### 1.08 Preamble to the research agenda

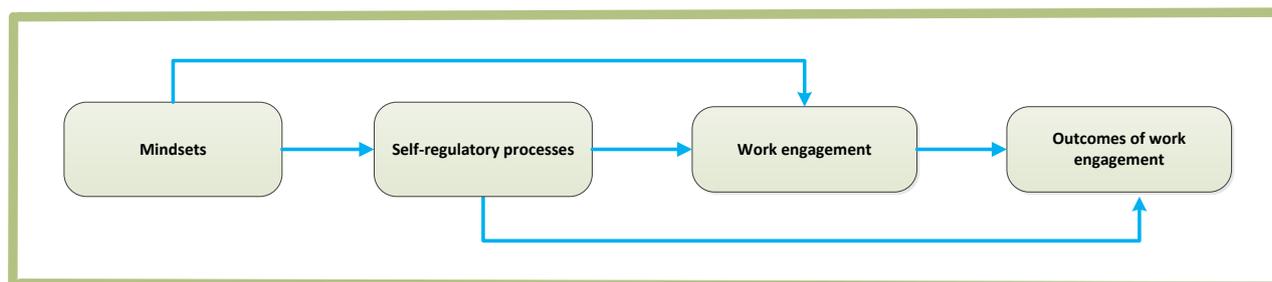
An incremental mindset is related to attributes such as effort exertion, persistence behaviours in the wake of setbacks, learning from mistakes, the pursuit of different strategies after setbacks and zeal for development. In sum, an incremental mindset is a powerful source of positive individual difference in judgements and reactions (Dweck et al., 1995). As mindsets are dispositions that can be modified and activated (Burnette et al., 2012; Dweck 2008), they potentially have practical value in fostering work engagement. The construct of mindsets and their associated self-regulatory variables provides the possibility of studying novel dispositional predictors of work engagement, as well as extending engagement's nomological network. This enables deeper insights into the meaning of work engagement and its relationships with antecedents and outcomes (see Parker & Griffin., 2011, for such research calls). The remaining sections that follow survey the set of research rationales and questions addressed in this thesis.

Figure 5 below is a general representation of the research agenda: it links all the main variables of the research in a causal chain (the rationales behind all these links are developed in the six sections). Figure 5 represents (a) mindsets as direct and indirect predictors of work engagement, (b) the direct links between self-regulatory processes and outcomes of work engagement, (c) the direct and hypothesized incremental effect of work engagement over outcomes. Of note here is that although the model below in Figure 5 implies an indirect effect of mindsets on outcomes of work engagement, this distal chain link is not the primary interest in this research as distal predictors have small effects on outcomes and thus the intervening proximal predictors are the ones that are important with regards to outcomes (Edwards & Christian, 2014).<sup>11</sup> This is discussed again in Chapter Four. For now, a more detailed diagram is presented again in Section 1.14, listing the self-regulatory processes associated with each mindset and work engagement outcomes.

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<sup>11</sup> See Laland et al. (2011) for similar arguments in the biological sciences with regard to the distinction between distal and proximal causes.

Figure 5. The overall research agenda of the thesis.



### 1.09 Processes underpinning the instigation and maintenance of enduring work engagement

Despite the growing corpus of research on work engagement, there is little theorising and empirical work on the processes that underpin its maintenance and instigation. An updated evaluation of the J-DR model — on which most work engagement research is based (this model is discussed in detail in Chapter 2) — indicates that the J-DR model is more descriptive than explanatory (Schaufeli & Taris, 2014).

This is because it focuses on specifying relations between groups of variables and does not explain the potential different psychological processes involved within work engagement (Schaufeli & Taris, 2014). Recently, Saks and Gruman (2014) noted that:

It is questionable if it [the JD-R model] is really is a theory of engagement or just a framework for classifying job demands and job resources. The basic premise of the model is simply that the more resources an employee has, the more engaged he/she will be. It does not, however, explain what resources will be most important for engagement or why some resources might be more important than others for facilitating engagement. Clearly, we need to know much more about what resources are most important for engagement as well as when and why they will be related to engagement. (p. 163)

Schaufeli and Taris (2014) also make similar remarks noting that:

The JD-R model specifies what kind of job and personal characteristics lead to what kind of psychological states and outcomes but does not tell us why this would be so. The fact that the model only provides limited insight into the psychological mechanisms involved might be

considered an important limitation. At the same time, this lack of explanatory power can easily be remedied by drawing upon alternative theoretical frameworks. (p. 55)

As mentioned in section 1.02, mindsets generate frameworks within which events are perceived and interpreted, activating domain-specific self-regulatory processes. Self-regulation refers to psychological processes involved in attaining and maintaining goals across changing circumstances (Diefendorff & Lord, 2008), hence it is a tool for explaining relative uniformity in motivated behaviours. Mindsets are well entrenched in self-regulation theory (Burnette et al., 2011; Dweck & Leggett 1988; Tamir & Mauss, 2011) and together with their associated self-regulation processes they form a coherent causal chain that can explain successful goal striving. Applied to the motivational and affective components of work engagement, the mindsets of job capability and emotion and their respective associated self-regulatory processes can potentially explain some of the key processes that underpin the maintenance and instigation of work engagement.

With a view to unravelling how engaged workers stay engaged on their own initiative, Bakker, Demerouti and Xanthapoulou (2012) have presented some initial explanations. These are based on previous work engagement findings, other theories applied in work engagement studies (e.g., conservation of resources theory, social cognitive theory, broaden-and-build theory) and the key assumption that engaged workers work in workplaces that have engaging work conditions such as autonomy and control. Bakker et al. (2012) argue that principally, engaged workers maintain their work engagement through: (1) Proactivity (goal directed behaviours that are self-initiated, anticipatory and change-oriented), (2) job crafting (“resources seeking”, “challenges seeking” and “demands reducing”) and (3) the reciprocal effects that work engagement has on its resources as it reinforces the latter which in turn influence engagement creating a gain cycle over time. Bakker and colleagues also reiterate that engaged workers have high positive affectivity levels, are alert, excited, elated and are happy individuals emphasising that work engagement is situated within the upper-right hand corner of the circumplex model (Bakker, 2011). Although the three theoretical explanations of Bakker et al. (2012) are a step in the right direction, that is, they relate to processes that mediate behaviours and outcomes, positive affectivity and the variables in the upper right quadrant of the circumplex model are not process variables in themselves. The mechanisms through which these variables mediate work-motivated behaviours are not fully specified in work engagement models. Thus these variables need to be encapsulated within explanatory frameworks in explaining how these allow the maintenance of work engagement.

The proposition of testing the work engagement to self-regulation links in the job capability and emotion models addresses the question of how engagement might be maintained as it investigates the ‘causal’ or directional link between work engagement and adaptive self-regulation. These questions allow the stringent testing of the association of work engagement with positive affectivity and its place within the upper right quarter of the circumplex model. Additionally, on a theoretical level, the hypothesised links between work engagement and self-regulatory variables are another means of expanding the investigation of the nomological network of engagement.

#### 1.10 Fitting work engagement within the approach and avoidance motivation framework.

To advance the research agenda described above (section 1.08), the relationship between work engagement and self-regulation also needs to be investigated within a theoretical framework. We are currently at an exciting cross-road in dispositional work motivation research in that a strand of innovative research (e.g., Johnson, Chang, Meyer, Lanaj, & Way, 2012; Ferris et al., 2011; Ferris, Johnson, Rosen, Djurdjevic, & Chang, 2013; Van Beek, Kranenburg, Taris, & Schaufeli, 2013) has just begun to investigate work motivation processes and outcomes within the paradigms of approach-avoidance motivation (Elliot & Trash, 2002). This strand of research is clarifying how distal and proximal motivational constructs influence outcomes of work performance and other affective job attitudes.

In analysing motivated behaviours, approach and avoidance motivation are very useful as these are one of the oldest explanatory systems that can be applied to the understanding of human psychology (Elliot, 2006). Approach and avoid motivation originate at the neurobiological levels and are the two basic dimensions of personality (Carver & Scheier, 1998). It has been shown that various perspectives on approach (e.g., extraversion, positive affectivity, and behavioural activation system sensitivity) and avoid (e.g., neuroticism and negative affectivity, and behavioural inhibition system sensitivity) phenomena can be integrated within higher order approach and avoid temperaments (Johnson et al., 2013). Lately, within these related but distinct lower-order phenomena of approach and avoid temperament, the behavioural activation system (BAS) and behavioural inhibition system (BIS) as proposed by Gray’s Reinforcement Sensitivity Theory (Gray & McNaughton, 2003) has been most prominently used as antecedents in explaining motivated behaviours with the approach and avoid motivation framework. The BAS controls appetitive motivation in that it responds to stimuli associated with rewards, stimulating action towards positive outcomes (Gray & McNaughton, 2003). On the other

hand, the BIS responds to anxiety-provoking stimuli and it is geared towards the avoidance of threats (Gray & McNaughton, 2003). While the BAS and BIS systems are temperaments, explaining individual differences, they operate at a reactive and broad level. These give rise to motives in the form of general approach and avoid motivation that can be further transformed into domain specific goals which can be directed towards concrete aims (Elliot, 2006). Thus, although the BAS and BIS measures have been used in predicting motivated-work behaviours general or domain specific approach and avoid motivation goals are considered more proximal predictors of outcomes (Ferris et al., 2013).

As such, recently the compound personality construct of core self-evaluation (CSE), defined as the fundamental assessments individuals make about their capabilities, worthiness and competence (Judge, Locke, & Durham, 1997) has been encapsulated within an approach and avoid motivation framework (Ferris et al., 2011). This has been proposed to explain how CSE is linked to outcomes. The core finding is that CSE represents both approach motivation and avoidance motivation through which it is linked with indicators of work performance and job attitudes (Ferris et al., 2012). This is not surprising since, in general, success in achievement situations is a joint function of advancing approach motivation and inhibiting avoidance motivation (Janoff-Bulman & Brickman, 1982). This implies that during successful goal-striving in achievement situations, where the effects of approach motivation dominate heavily, avoidance motivation is also present in the background and its effects are effectively dampened by the dominance of approach motivation (Gable, Reis, & Elliot, 2003). The combination of high approach and low avoidance is generally the most effective motivational profile in most achievement situations. Both approach and avoid motivation are needed in achievement situations, with avoidance motivation fulfilling an adaptive function in some instances where acute vigilance is needed (Roskes, Elliot, Carsten, & De Dreu, 2014) or when one is under time pressure that requires goal prioritisation (see Beck & Schmidt, 2012). However, the habitual use of avoidance motivation is mostly detrimental as it is exclusively focussed on avoiding negative stimuli and it depletes energy (Oertig, Schuler, Brandstatter, Roskes, & Elliot, 2013). Therefore, avoidance motivation is only for survival, not for enabling thriving at work (Elliot, 2006).

Interestingly, Yagil (2012) reported a negative (but insignificant) zero-order correlation ( $r = -0.14$ ) between work engagement and surface acting. Surface acting is the purposeful modification of emotional displays without altering inner feelings, it is a form of maladaptive avoid motivation which is moderately to strongly related to anxiety and stress (Grandey, Rupp, & Brice, 2015). In the same vein, another recent study (Beek et al., 2013) shows that BIS and study engagement (closely

operationalised with a work engagement scale) are unrelated despite the strong correlation between the BIS and avoid motivation (Johnson et al., 2013). So these findings prompt for further investigations into the relationship between work engagement and avoidance motivation since work engagement represents thriving and not surviving, which is the hallmark of avoidance motivation. More specifically, this requires a longitudinal approach for more robust interpretations. It is of note that approach and avoid motivations load on latent factors of approach and avoidance temperaments respectively (Gable, Reis, & Elliot, 2003; Johnson et al., 2013). So, given that work engagement is positively related to positive affectivity and negatively related to negative affectivity, the same pattern can be expected between work engagement and approach and avoid motivation. This pattern can be expected because work engagement is potentially an optimum work motivational variable that represents thriving (as opposed to survival) at work.

### 1.11 How is work engagement instigated?

The J-DR model offers explanations as to how work engagement is instigated through job and personal resources. Since this thesis is on the dispositional basis of work engagement, the focus here is on personal resources. So, in the main, as far as the instigation of motivation is concerned, it is argued that personal resources such as self-efficacy and optimism predict work engagement because these variables are essentially synonymous with active coping and the resilient expenditure of effort. However, this is a descriptive level explanation and is not firmly rooted in an explanatory framework. With reference to both the capability and emotion model which posit that self-regulatory variables may predict work engagement, the explanations of how work engagement is instigated can be built more firmly with the with an approach-avoidance motivation framework. Approach motivation, through approach goals, can be defined as the "... energization of behaviour by, or the directional of behaviours towards, positive stimuli ..." (Elliot, 2006, p.112). Approach motivation refers to both energization and direction of behaviour and more precisely energization relates to the initial instigation that orients an individual towards action (Elliot, 2006). Similarly, avoid motivation is a push factor, and can be defined as the "... energization of behaviour away from negative stimuli ..." (Elliot, 2006). Thus approach and avoid goals are personal resources that can, in part, explain the instigation of work engagement. More importantly, approach and avoid goals do not only explain the instigation of motivation but include the component of the direction of motivation as well, thus they potentially embed work engagement in an existing explanatory framework.

### 1.12 Direct links of mindsets to work engagement

As mentioned in section 1.02 mindsets may also have direct effects on outcomes. Work engagement is an outcome in its own right (Halbesleben, 2011) and although mindsets are mainly hypothesised as indirect predictors of work engagement in this research there are possibilities of direct effects too. The incremental mindset is directly linked with the positive view of effort (Blackwell et al., 2007), which is itself an antecedent of self-efficacy. Work engagement has a foundational relation with effort expenditure, both under typical performance and when faced with setbacks (Brown & Leigh, 1996). This common factor of effort expenditure between these two focal constructs requires investigation. In the same vein, the incremental mindset of emotion is directly linked with optimal emotional functioning (Tamir et al., 2007; Tamir & Mauss, 2011) and work engagement is nested within activated positive traits. Thus this implies a potential direct link between the incremental mindset of emotion and work engagement.

### 1.13 The work engagement-outcomes link.

As mentioned in section 1.05, two sets of work engagement outcomes are under scrutiny in this thesis. Associated with the incremental mindset of job capability are: proactive learning behaviours of (a) Proactive learning and development, (b) feedback seeking behaviours of direct inquiry and monitoring, and (c) knowledge sharing. Related to the incremental mindset of emotion are outcomes of subjective well-being of (a) Happiness (affective component of subjective well-being), (b) life satisfaction (cognitive component of subjective well-being), and (c) psychosomatic complaints (self-rated physical health). The self-regulatory processes associated with the incremental mindset of job capability are: learning goal orientation, and avoid performance goal orientation. The mindset of emotion is associated with: adaptive emotion regulation (shared variance of cognitive appraisal and learning goal orientation for emotion) and avoid performance goal orientation for emotion. As potential dispositional predictors of work engagement, incremental mindsets of job capability and emotion, together with their associated self-regulatory processes, allow for a concerted investigation into the causal work engagement-outcomes link. That is, while the two sets of outcome variables are important work engagement consequences, they primarily belong to research frameworks that are independent of the work engagement literature. As such, these outcomes have other dispositional antecedents, these dispositional antecedents include the self-regulatory variables of the mindsets. That is, proactive learning behaviours and subjective well-being can be predicted by the regulatory processes

of mindsets of job capability and emotion respectively. Therefore, interweaving work engagement, the two incremental mindsets and their associated self-regulatory variables and their respective sets of outcomes together, three meta-questions on the work engagement-outcome link call for investigation. These are explained in sections 1.131 to 1.133 below.

#### 1.131 The incremental contribution of work engagement in predicting outcomes.

Research investigating the links between work engagement and (1) proactive learning behaviours and (2) subjective well-being have not controlled for dispositional proximal predictors of these outcome variables. This raises pertinent questions about the incremental value of work engagement. How does work engagement fare as a predictor when the relevant dispositional antecedents of these outcomes are taken into account? This question is worth asking because it not only addresses the incremental value of work engagement but fundamentally improves the design of work engagement research. It has been argued that the relevant accumulated knowledge that has successfully guided past theory and practice in job attitudes research (i.e. before work engagement came on the research scene) must be incorporated in new work engagement investigations as far as is feasible (Meyer, 2013). This can ensure consistent and thorough self-correcting progress in the science and correct application of work engagement (Meyer, 2013).

The incremental value of work engagement over other constructs in explaining and predicting outcomes is a fundamental question. It has been intensely debated since the inception of work engagement in academia; raising key questions on the significance of the work engagement construct (Newman & Harrison, 2008). A meta-analysis by Christian et al. (2011) has tackled this question concluding that, based on cross-sectional studies, work engagement explains incremental variance over conceptually overlapping constructs of job satisfaction, job involvement and organisational commitment in predicting task and contextual performance.

A longstanding literature in work psychology shows that proactive learning behaviours can be predicted by motivational variables such as mastery-oriented constructs (Colquitt et al., 2000; Kanfer & Ackerman, 2000; Payne et al., 2007; Hertz & Williams, 2009; Noe et al., 2014; Parker & Collins, 2010). Similarly, a small, but growing, literature shows that emotion self-regulation processes such as cognitive reappraisal, learning goal orientation for emotion, avoid performance goal for emotion, amongst others directly affect subjective well-being in positive or negative ways (DeSteno and Gross, 2013; Rusk et al., 2011; Gross, 2015; Soto, Perez, Kim, Lee, & Minnick, 2011; Sapolsky, 2015;

Berking, Wirtz, Svaldi, & Hofmann, 2014; Elliot, Thrash, & Murayama, 2011; Kinderman, Schwannauer, Pontin, & Tai, 2013). The direct causal effects that these two sets of self-regulatory variables have on these two sets of outcomes provide an appropriate architecture for assessing the incremental value of work engagement.

More importantly, the novelty in the present research, compared to the studies included in the meta-analytic work of Christian et al. (2011), is that the predictors (i.e., the self-regulatory variables) are qualitatively different from traditional job attitudes. These variables do not share conceptual space with work engagement. One of the challenges facing work engagement researchers and practitioners is to clarify whether all of the motivated behaviours of workers stem directly from work engagement as implicitly espoused by most work engagement models. This latter assumption, if positivity embraced, is most likely problematic because work-related behaviours are multidetermined (Fleck & Inceoglu, 2010; Griffin, Parker, & Neal, 2008). Thus, new investigations of the work engagement-outcomes link need to take into account other predictors of motivated work behaviours that explain outcomes. As Fleck and Inceoglu (2010) note, work engagement and other dispositional predictors of motivated work behaviours may individually predict different outcomes to different degrees. This knowledge is important for both theoretical and practical reasons, so that the right motivational approach may be employed for targeting specific outcomes in the workplace (Inceoglu & Fleck, 2010). Indeed, it is well acknowledged in the work motivation field that different work motivational constructs affect different outcomes (Gagné, Gilbert, Aube, Morin, & Malorni, 2010).

#### 1.132 Is work engagement a full or a partial mediator between resources and outcomes?

In the extant work engagement literature, the most commonly accepted theoretical view is that work engagement fully mediates the link between its antecedents (job and personal resources) and outcomes (Christian et al., 2011). However, this assertion can be questioned because, as will be discussed in Chapter Four sections 4.0222 and 4.0322, certain outcomes of work engagement can be directly predicted from the antecedents that are used to predict work engagement itself. If work engagement is a partial mediator between some antecedents and outcomes, then this has important theoretical implications in providing a more accurate theoretical landscape on the relationships between antecedents, work engagement and its outcomes.

In their meta-analytic work, Christian et al. (2011) proposed a path model of the indirect effects of seven antecedents on the outcomes of task and contextual performance through work engagement, as

a mediator. These authors had to contend that transformational leadership, one of the seven antecedents, has direct links with both outcomes of task and contextual performance. They found strong support for linking other work engagement antecedents (out of the remaining six) directly to the two outcomes but opted not to incorporate this in their final model to ensure parsimony, an essential feature in any explanatory model. As will be discussed in Chapter Two, conceptual models postulate work engagement (Bakker, 2011, Saks, 2006) as a full mediator between antecedents and outcomes. Schaufeli and Taris (2014) report that out of sixteen studies, only four reported partial mediation between resources (job and personal resources) and work engagement. There is a bias in the literature towards postulating work engagement as a full mediator between antecedents and outcomes (see for e.g., Bakker, 2011; Schaufeli & Taris, 2014). A full versus a partial model represents related but different theoretical competing viewpoints (Rucker et al., 2011). Thus, clarification on the nature of the mediational role of work engagement and further knowledge on the incremental value of work engagement in predicting outcomes has the potential to provide more clarity on work engagement theory and practice.

#### 1.133 Questions on the stability of causal links, direction of causality, and the time lags between the links.

The relationship between work engagement and outcomes has received little attention so far (Halbesleben, 2010). Above and beyond the research questions raised in the last two sections, there are additional sets of questions regarding the work engagement-outcomes link. These questions are focussed on processes. Indeed, the field of I-O psychology is concerned with processes, defined as “... the temporal sequence by which conditions, events, and states unfold” (Spector & Meier, 2014, p. 1109). As widely discussed, cross-sectional research designs are limited in helping understand processes. There are two general approaches that can be taken to study processes. These include the use of observations before and after each step in a proposed explanatory model to show the variable of interest changes from before to after an event and the continuous monitoring of an outcome variables to see how it changes as events unfold (Spector & Meier, 2014). In the context of the work engagement-outcome link, three sets of questions arise: (1) The stability of the causal links (2) the nature of the link — reverse and reciprocal links, and (3) duration of time lags.

Within work engagement research, the outcomes of proactive learning and development (proactive learning and development, feedback seeking behaviours and knowledge sharing) and

subjective well-being (happiness, life satisfaction and psychosomatic complaints) have received little empirical attention. Importantly, the claims underpinning some of these causal links (specifically for feedback seeking behaviours and knowledge sharing) are mostly theoretical speculations (Schaufeli, 2012) although these outcomes are frequently mentioned in the work engagement literature. Thus, an evaluation of the strength and stability of causal inferences between work engagement and all these outcomes is needed. That is, it needs to be verified if the directional links between work engagement and outcomes exist enduringly over time. Indeed, with reference to the outcomes concerned in this thesis, most prior investigations have been of cross-sectional nature only (Saks & Gruman, 2014; Christian et al., 2011).

The directionality of the work engagement-outcomes link needs further exploratory and confirmatory investigations through longitudinal studies. Within longitudinal research based on correlational designs, causality between two variables can be hypothesised to exist in three main ways: (a) a normal causation based on a particular theory that specifies the direction of a lagged effect of X on Y, (b) a reverse causation compared to the normal one: the lagged effect of Y on X, and (c) a reciprocal causation: the lagged effect of X on Y followed by the lagged effect of Y on X, that is X and Y affect each other mutually (Taris, 2014). The resources-work engagement link is generally considered to be reciprocal, meaning that resources influence work engagement which in turn influences resources. This reciprocal link is based on conservation of resources theory (COR) which, as mentioned above, posits that when not facing stress and threats, individuals strive to obtain, retain and protect their resources (Hobfoll, 2002). Therefore, as workers feel engaged because of the availability of all requisite resources, this leads to the accumulation of additional resources. That is, work engagement creates and augments the resources that were its initial antecedents. For example, social support predicts work engagement and as a result, engaged workers, who gain their work engagement from a myriad of factors including social support, are known to mobilise further social support from their work environment leading to more work engagement increases over time (Weigl et al., 2010).

So, building on conservation of resources theory and the reciprocal links between resources and work engagement, researchers have theorised that the same reciprocal pattern of causality may apply to the work engagement and outcome link (Simbula & Guglielmi, 2013; Innstrand, Langballe, & Falkum, 2012). However, so far, most longitudinal studies (e.g., Innstrand et al., 2012; Hakanen & Schaufeli, 2012) have reported unidirectional links between work engagement and outcomes (i.e., from work

engagement to outcomes or outcome to engagement only). There is only one study (Simbula & Guglielmi, 2013) that has found full reciprocal links between work engagement and outcomes concluding that as outcomes are both cause and consequences, and cannot be considered as “only a cause” or only as “only an outcome”. Thus, the work engagement-outcomes link deserves more exploratory investigation, with a focus on exploring, where applicable, all reverse and reciprocal links between work engagement and outcomes. As Saks and Gruman (2014, p.171) have perceptively noted: “We know that there are positive relationships between employee engagement and work outcomes; however, we are not in a position to say that employee engagement causes a particular outcome, nor can we even be sure of the direction of causality”. These questions require the use of longitudinal research designs.

Moreover, the time lags between the measurement of work engagement and outcomes need more variation so a gradual picture of how the relationships exist over different time scales can be sketched. The determination of time lags in most longitudinal studies in organisations is mostly based on convenience rather than theory (Williams & Podsakoff, 1989; Zapf et al., 1996). However while it makes a lot of sense to argue that one should determine the time lag for the relationship between two variables (Mitchell & James, 2000; Ployhart & Vandenberg, 2010), there is currently no theoretical work in the area of work engagement to guide these research decisions. Indeed, Roe (2008, p. 37) notes that we have built “... essentially timeless descriptions and explanations of human behaviour...” in I-O psychology. Thus this research will use shorter time lags compared to past research so new insights can be gained with regard to the time-lag factor, as “... there is no *single true effect* of one variable over another ...” (MacCallum & Austin, 2000, p. 212, emphasis added) (see MacCallum & Austin, 2000, and Williams & Podsakoff, 1989, for this rationale, and, for an exemplar paper in the field of bullying research see Rodriguez-Munoz et al., 2009).

The determination of the duration of time lags in longitudinal passive research is among one of the most challenging aspects of research within applied psychology (Dwyer, 1983; Taris & Kompier, 2014). This was well noted by Billings and Wroten (1978) who wrote that: “Unfortunately, industrial/organizational theorists are not often concerned with the time it takes for an effect to occur” (p. 682). As mentioned above, theory in work engagement research has not been explicit on the selection of time lags between work engagement and outcomes, the duration of time lags underpinning relationships between variables are not discussed in major theories and reviews of work engagement research (Saks & Gruman, 2014; Schaufeli & Taris, 2014; Schaufeli, 2012; Bakker, 2011; Bakker,

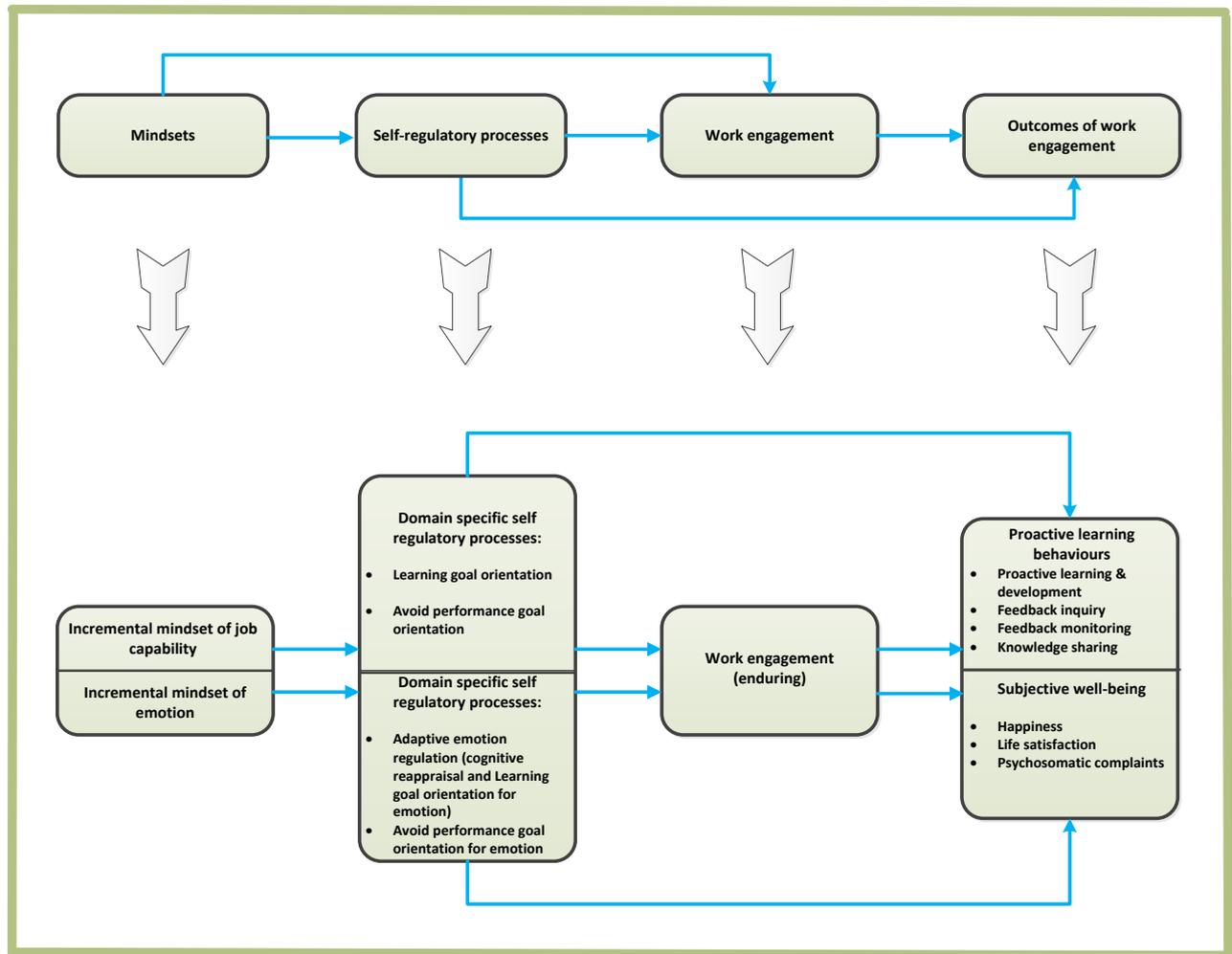
Demerouti, Sanz-Vergel, 2014). However, as many researchers have pointed out, it is not always possible to specify the exact time durations of effects between variables as these may be unknown depending on the state of research in an area (Mitchell & James 2001; Wong & Law, 1998; Schneider, White, & Paul, 1998). In such circumstances, it is good practice to investigate the links between variables using a range of different time lags for more visibility (Taris & Kompier, 2014). Thus, research on the work engagement and outcomes link will benefit from the use of new time lags (as compared to past published studies). Accordingly, this longitudinal research uses time lags that are different in length, shorter from those used in prior research. Thus, a time lag of 3.5 months is implemented.

#### 1.14 Summarising the research agenda

This thesis is a programme of longitudinal research on the potential effects of mindsets on work engagement and on its outcomes. Two distinct mindsets, the mindset of job capability and the mindset of emotion, are proposed as indirect and direct dispositional antecedents of work engagement. In the main, it is hypothesised that each of these mindsets influence work engagement through distinct self-regulatory variables. Moreover, these distinct self-regulatory variables are also direct predictors of two separate sets of work engagement outcomes.

Figure 6 below represents all the research themes interlocked together. It is schematic representation of the overall research model; it shows the hypothesised relationships between mindsets, self-regulatory processes, work engagement, and outcomes. As work engagement is a joint affective-motivational construct, this research is organised along two distinct parallel strands through the mindset of job capability model (based on section 1.06) and the mindset of emotion model (based on 1.07). These two models will be developed in Chapter Four.

Figure 6. Overall research model.



Through this assemblage of causal relationships between the variables of mindsets; self-regulatory processes; work engagement; and two sets of distinct outcomes associated with work engagement, a series of related and distinct intersecting research questions are tackled. Jointly, these questions aim to provide clarity on the nature of enduring work engagement and its relationship with a new class of dispositional antecedents. More precisely, this research aims at investigating:

- The role of a new class of dispositional predictors of work engagement which are mindsets and their self-regulatory variables. It thus moves the research on dispositional predictors beyond the exclusive focus on the Big Five factors and core self-evaluations variables;
- the incremental value of work engagement over other dispositional variables in explaining variance in predicting outcomes and the nature of the mediating role of work engagement (whether it is a partial or full mediator) in its link between resources and outcomes;
- the stability of causal link between work engagement and

outcomes that have received little empirical investigation (feedback seeking behaviours, learning and development, and knowledge sharing) as well as the direction of causality between work engagement and outcomes (life satisfaction, psychosomatic complaints, and happiness); (d) the time-lagged effects of work engagement on outcomes; (e) self-regulatory processes that underpin the maintenance and instigation of work engagement; (f) the nomological network of work engagement through mindsets and the approach and avoid motivation framework.

The next two short expository chapters that follow discuss the key attributes of work engagement (Chapter Two) and mindsets and goal orientations (Chapter Three) in more detail. Then, the two mindsets models are developed in Chapter Four. Testing is carried out in two successive stages. In the first stage (Chapter Five), the two distinct mindset models are tested using a complementary exploratory and confirmatory approach and the cross-sectional results are analysed and discussed. This informs the second and final stage (Chapter Six), in which the models are tested through repeated-measures design at cross-sectional and longitudinal levels. The final discussion is undertaken in Chapter Seven.

## Chapter Two

### Overview and evaluation the conceptual status of work engagement

#### 2.00 General overview

This chapter provides a discussion on work engagement. Building on the short introductory section on work engagement from Chapter One, it begins by tracing the origin of the construct. Then the main conceptualisations and operationalisations are discussed.

#### 2.01 Introduction

The transcript excerpt below (translated from French) is from a live exchange<sup>12</sup> between a journalist of the “Radio Television Suisse” (a Swiss public broadcasting organisation) and the famed French actor Gérard Depardieu, sometime after the latter had tragically lost his 37-year old son due to a sudden illness. In this excerpt, the journalist softly interrupts Depardieu to empathetically ask a personal question whilst the actor is manifestly responding to a previous question on his then newly released movie, “L’ autre Dumas”.

The journalist: Gérard?

Depardieu: Yes (*a little surprised with the interruption*)!

The journalist: I would like you to tell us a bit more about work. Everyone who likes you knows that you’ve recently gone through some personal tragedies and you’ve been throwing yourself into work with extraordinary energy, you’re doing a number of fascinating things that command admiration! What does work mean to you?

Depardieu: Well, work is about meeting others. If I felt like I was working even just for a second, I would run away from work. But I am not working, I am living! Because people are my lifeblood, and it turns out...well... I do a certain amount of work, but it doesn’t feel like I’m working, I’m passionate about what I do, in the restaurant industry as much as in the hospitality business or in the film industry...

Depardieu’s spontaneous reply suggests that work has a healing effect on grief and bereavement (Hensley, 2006). More importantly, his thoughts highlight the notion of harmonious passion for work, defined as “... a strong inclination toward an activity that people like ... find important, and in which

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<sup>12</sup> The full interview, dated February 2010, is on this link: <http://www.youtube.com/watch?v=gezLodaiUIM>

they invest time and energy” (Vallerand et al., 2003, p. 757). The painful context in which his thoughts are expressed provides a hint that harmonious passion for work — or enduring work engagement as it is termed in this research — is a phenomenon that can provide a buffer against stressful life events. Thus, the psychological connection that people have with work is important.

More generally, work has direct influences on an individual’s sense of self and personal worth, because work is a source of economic security social interaction, recreation and friendship (Roos, Trigg, & Hartman, 2006). Common wisdom states that losing a job is more damaging to one’s well-being than the loss of a spouse, with longer lasting effects (Delamothe, 2014). Quite plausibly, even an unsatisfactory job is potentially less harmful than the scourge of unemployment, as the latter is more likely to lead to illness and mortality in the long term (Martin, 1997). Thus, work engagement, representing the psychological connection that people have with work, is an important field of inquiry.

## 2.02 The inception of work engagement

Work engagement is an affective-motivational construct representing high levels of physical, cognitive and emotional energies that workers apply in their daily work task performances on the job (Christian, et al., 2011). It is the simultaneous investment of the “*hands, head and heart*” in the work tasks and activity, representing the connection of the holistic human self in energetic work performance (Ashforth & Humphrey, 1995).

Work engagement is a desirable psychological phenomenon because of its purported positive influences on organisational outcomes, such as in-role performance, financial returns, customer satisfaction, lower turnover intentions, job satisfaction, organisational commitment and extra-role behaviours) and, subjective well-being (Albrecht, 2010). Work engagement has been rated by managers as the fourth most important challenge to be managed after customer loyalty, mergers and cost control (Wah, 1999). An organisation can potentially benefit from an engaged workforce provided it (1): operates within a healthy economic climate while implementing prudent strategic decisions (Macey et al., 2009), and (2) enables its engaged workers to manage their work engagement by allowing them to replenish their energies through ample restorative non-work recovery which contributes to subjective well-being outside the work domain (Kahn, 2010; Sonnentag, 2003, 2012). Work engagement then, is an asset to organisations and workers. Furthermore, as mentioned in Chapter One, it is theorised that work engagement and its outcomes are self-perpetuating as they reciprocally

influence each other. For example, the organisational and individual benefits derived from work engagement such as bottom-line profits, pay, rewards, recognition, career growth, optimism and self-efficacy are known to reinforce work engagement over time. That is, the outcomes operate as predictors of work engagement too. The same pattern exists with well-being outcomes, for example the infusion of energy and self-significance that engaged workers experience as a result of work engagement leads to subjective well-being in the non-work domain, which then further positively impacts individual work goals and productivity, increasing work-related well-being in the form of work engagement (Bakker, 2011).

Despite claims of the importance and benefits of work engagement, the latter has been difficult to define (Kahn, 2010; Macey, & Schneider, 2008, and related commentaries). To the layperson, the definition of “engagement” is straightforward. It refers to roughly synonymous terms such as involvement, commitment, passion for work, enthusiasm, interest, effort, and physical and mental energy. However, work engagement has been an unusually slippery term to grasp in both the scientific and practitioner world. This is probably because of two main historical reasons.

Firstly, work engagement originated in the business world where practitioners were trying to get to grips with means of accurately predicting optimum bottom-line outcomes from various work-related attitudes of workers. It is generally believed that these methods, in the form of company-administered surveys, were unfortunately not rooted in the requisite science (Macey & Schneider, 2008). The various work engagement definitions that practitioners devised and employed to build surveys were not uniquely defined vis-à-vis other established existing attitudinal constructs such as job satisfaction, organisational commitment, and job involvement (Schaufeli, 2012).

Secondly, when I-O psychologists attempted to reach a consensus on a scientific definition of work engagement, they found themselves in roughly three main groups, namely those: (1) Arguing that work engagement had a unique conceptual space and it was not redundant and although it overlaps with other job attitudes it is a much broader, and more encompassing construct (Bakker, 2011; Saks, 2008; Christian et al., 201), (2) proposing that the shared variance among the established constructs of employee attitudes could be represented by a higher order overall job attitude construct that can be termed work engagement, which should be essentially considered as a broad construct (Newman & Harrison, 2008) and (3) comparing work engagement with the established constructs mentioned above and concluding that work engagement was not conceptually unique (Dalal, Brummel, Wee, Thomas,

2008; Newman & Harrison, 2008). Academics often discuss the growing scientist-practitioner gap in I-O psychology, referring to practitioners not applying the best practices of research (Meyer, 2013). However with the work engagement construct, both camps found themselves at a similar level of confusion. Dalal et al. (2008, p. 52) noted that: “Both the applied and the academic literatures on employee engagement are unfortunately in a state of disarray”. However, despite on-going debates and confusion on the theoretical and practical aspects of the construct, there is now some consensus on the definition of work engagement.

### 2.03 Work engagement: broad and narrow conceptualisations

Debates on the definitions of work engagement have somehow “resolved” around three angles. The first is the proposition that it is unique, conceptually distinct from other job attitudes and, has a narrow definition as a specific state pertaining to how a worker feels when he or she is fully connected at work during task performances (Khan, 1990, 1992, 2010; Saks, 2008; Parker & Griffin, 2011). It is thus an experiential phenomenon rather than an attitudinal one. This angle also acknowledges that although work engagement overlaps with other job attitudes, it is more encompassing compared to all of them because it represents the simultaneous investment of the complete self (cognitive, emotional and physical) in work roles and activities (Crawford, LePine, Rich, 2010). Based on this definition, work engagement is measured with scales tapping into the connection between the three selves and work.

The second treats work engagement as a broad phenomenon but it also involves the proposition that work engagement is an overarching umbrella term containing three different types of work engagement: Trait work engagement (conscientiousness, autotelic personality, proactive personality, and positive affectivity), state work engagement (job involvement, job satisfaction, job commitment and empowerment), and behavioural work engagement (e.g., extra-role behaviour, effort) (Macey & Schneider, 2008). Here each type of work engagement can be measured separately using a combination of existing scales and proprietor surveys. In combination all these scales measure engagement conditions, attitudes and behaviours. Furthermore, these three types of work engagement are posited to exist within a proposed causal chain, with trait work engagement influencing state work engagement which in turns influences behavioural engagement.

The third angle also views work engagement as a broad construct. However, it does so by taking into account the shared variance explained by the three main established attitudinal constructs of

job satisfaction, affective organisational commitment and job involvement. Work engagement, also called overall job attitude within this perspective, is measured through established scales of these three constructs and it is thus represented as a higher order construct that reflects the shared variance between job satisfaction and organisational commitment (Harrison, Newman & Roth, 2006). These authors could not include job involvement in their meta-analytic study because of too few primary studies in the field. The main rationale behind this approach is that the constructs of organisational commitment and job satisfaction are highly correlated to such an extent that they are indistinguishable. Indeed, after corrections for measurement error the average correlation between organisational commitment and job satisfaction is  $r = 0.92$  (Le, Schmidt, Lauver, & Harter, 2007). While the subtle distinctions between the two constructs may logically exist in the minds of researchers, these differences are unlikely to be present in the minds of the respondents (Le, et al., 2007, see also Hardy & Ford, 2014).

Within, this third angle, there are other researchers, mostly influential academic-practitioners (e.g., Harter & Schmidt, 2008), who espouse the view that work engagement is the composite of the involvement, satisfaction and enthusiasm that workers show for work and can be measured by questions that tap into workers' perceptions of important work conditions, supplemented with an overall job satisfaction item. This composite measure of work engagement is called the Gallup workplace audit, or Gallup Q12. Harter and Schmidt (2008) refer to this composite as an indicator of "employee engagement" because the question items that tap into worker perceptions assess specific processes and issues that are actionable, i.e., they are under the direct influence of the supervisor who can then "shift" work engagement. According to Harter and Schmidt (2008) this composite measure offers more leverage compared to what general "job satisfaction" construct provides. Thus, on the empirical basis that work engagement conditions correlate highly with measures of; job satisfaction, affective organisational commitment and narrow measures of work engagement (e.g., the UWES). Harter and Schmidt (2008) equate "engagement conditions" with "work engagement" itself. They however state that the Gallup Q12 is a measure of work conditions and is not a measure of "... explicit momentary affect or a direct measure of motivational state" (Harter & Stone, 2011, p. 106).

Harter and Schmidt (2008) contend that the narrow conceptualisation of work engagement in terms of the simultaneous investment of the three dimensions of the self (cognitive, emotion and physical) may have discriminant validity over job satisfaction, organisational commitment and job involvement. However, following the cautions of Le et al. (2007), Harter and Schmidt (2008) express scepticism as to whether this distinction is explicitly interpreted when workers fill in the surveys that

tap into specific work engagement. Taken together, these points pose profound questions regarding the validity and practicality of work engagement as a narrow construct. This requires more investigation. But for now, suffice it to say that the items that operationalise work engagement as a narrow construct refer to the “experiencing self” (part of the self that lives and experiences every moment of the day) rather than the “evaluative self” (part of the self that evaluates experiences in a summative form), which is measured by overall job satisfaction, although not by broad work engagement as it may contain more than overall job satisfaction (e.g., the Gallup Q12). Thus, the items in scales measuring narrow conceptualisations of work engagement purport to measure how one “feels” at work rather than how one feels “about” work.

On another note, although the questions from the Gallup Q12 offer actionable insights (see Harter & Schmidt, 2008) these actionable points are limited only to the specific number of items in the instrument. In contrast, the actionable components embedded within specific conceptualisations of work engagement reside in the large range of work context-specific resources proposed in the theoretical background of the latter approaches. However, the resources associated with specific work engagement scales are not assessed when work engagement is measured as a standalone variable. In this sense, when the Gallup Q12 and other scales, based on narrow conceptualisation of work engagement, are directly compared, the Gallup Q12 may be a potentially superior scale in a practical sense, due to its comprehensiveness as it includes job satisfaction and work conditions.

In summary, researchers use scales based on either narrow (Schaufeli & Bakker, 2002; Rich et al., 2010) or broad definitions (Robertson, Birch, & Cooper, 2011; Harter & Stone, 2011). The next section describes and evaluates a set of four conceptualisations of work engagement that are based on the narrow angle as it is the most widely used in the scientific literature.

### 2.031 Work engagement as proposed by Kahn

In academia, within the I-O psychology literature, it is agreed that the term engagement was first proposed by Kahn (1990), who coined the term “personal engagement”, representing a state in which workers “bring in” their personal selves during work role performances — simultaneously investing high levels of cognitive, affective and physical energies in their work task. An engaged worker is psychologically present and is fully “there” in the workplace, feeling attentive, connected, integrated and focused in work role performance. This intuitive notion of being fully “there” strikes a chord with anyone who realises that episodes of mind-wandering or inattention at work can at times

lead to critical errors and lapses, especially in safety critical work systems where the ramifications are far-reaching (Yorio & Watcher & 2013).

Kahn (1990) proposed the concept of personal engagement because he recognized that work motivation theories and job attitudes were limited in important ways. He argued that traditional motivational theories<sup>13</sup> are limited because they are based on the absolute presence or absence of steady motivational states experienced by workers as a response to extrinsic and intrinsic rewards. That is, it is often thought that workers are either “motivated” or “not motivated”, that motivation flows instantly at a steady value once activated (Kahn, 2010). This approach neglects the possibility that workers may experience and express different degrees and dimensions of their selves in their work role. Kahn (1990) noted that widely used constructs of job attitudes such as job satisfaction, organisational commitment, and job involvement are too narrow, representing only one part of the self and existing at a distance from the moment-to-moment dynamic psychological connection workers have with their work. In other words, as work attitude constructs operate distally from the activities of workers, they fail to capture the holistic relationship between a worker and his or her role performance.

According to Kahn (1990), personal engagement is a state in which workers “bring in” their personal selves during work role performances. A worker is said to be engaged when he or she is cognitively, emotionally, and physically connected during work role performances. These connections with work are posited to exist simultaneously, representing the investment of the complete self. Having made these a-priori assumptions and having clearly specified that workers “use varying degrees of their selves, cognitively, emotionally and physically in the roles they perform” Kahn (1990, p. 692) set the main goal of describing the general psychological conditions and processes that explain these varying degrees of investment of the three selves. Using ethnographic studies based on grounded theory, Kahn (1990) found three essential conditions that are required for workers to be engaged. These were: psychological meaningfulness, psychological safety, and psychological availability.

Psychological meaningfulness involves the understanding that one is receiving a fair return of one’s investment of the cognitive, emotional and physical self in the service of the work role. Three factors influence psychological meaningfulness: (1) task characteristics (e.g., challenging and meaningful work), (2) role characteristics (e.g., how much one likes the role and what status or influence it provides one with) and (3) work interactions (e.g. rewarding interpersonal relationships).

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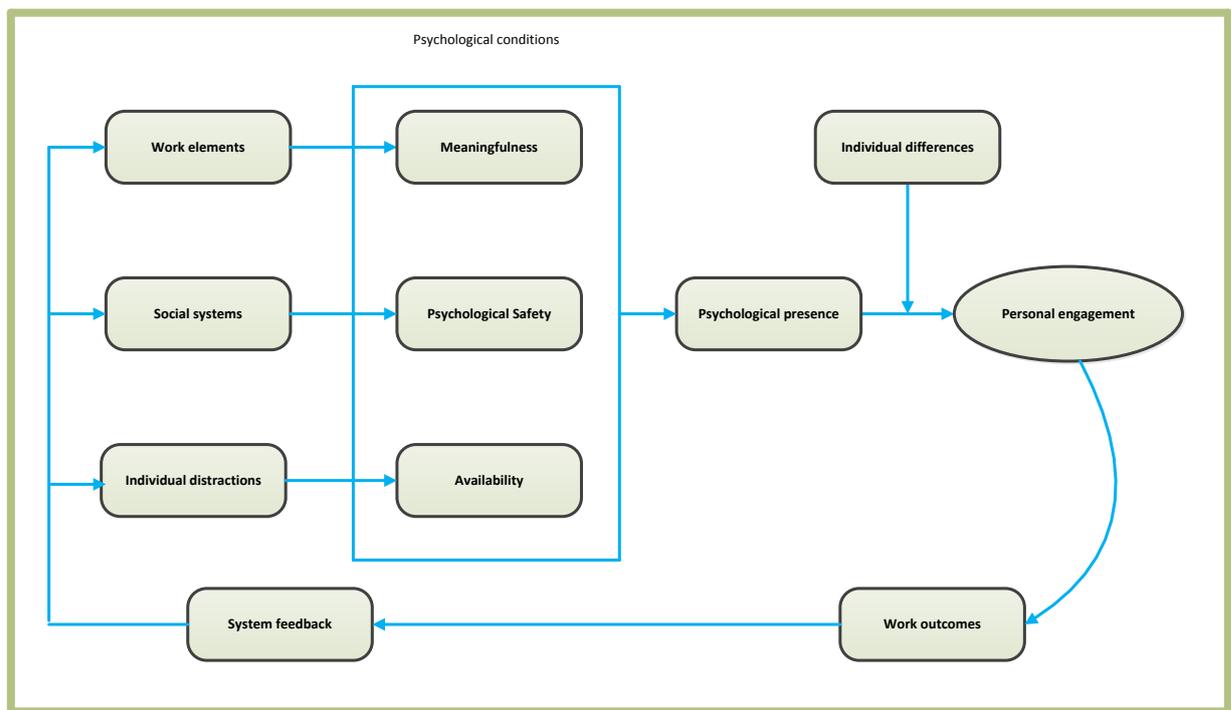
<sup>13</sup> It must be noted that despite decades of research in work motivation theory, no single unifying theory has been articulated (Forbes, 2011) and it is widely acknowledged that different work motivational theories are suited for different purposes.

Psychological safety pertains to the perception that workers are able to perform their work role and take interpersonal risks without the fear of negative consequences to their self-image, status, and career. In sum, it is a state of security and trust, influenced by sound conditions of interpersonal relationships, group dynamics, management style and organisational norms. Finally psychological availability refers to the physical, emotional and psychological resources one has accessible to invest oneself in the work role. These are influenced by physical energies, emotional energies, security about work and status, and outside life (that is the potential negative demands of non-work activities or commitments).

As a further extension, Kahn (1992) added the dimension of psychological presence to his theory. Psychological presence is an experiential state subsuming attentiveness, connectedness, integration and focus in a job role. The common theme across these four dimensions is focussed attention (Kahn, 2010). Although psychological presence is proposed as a mediator between psychological meaningfulness, safety and availability and personal engagement, its role is unclear and it may make more sense to interpret psychological presence as either as an inherent part and parcel of personal engagement itself or as a shared characteristic of the cognitive, emotional and physical selves. Taken together, Kahn (1990, 1992) argued that situational conditions influence psychological meaningfulness, psychological safety, and psychological availability. These three conditions then jointly influence personal engagement. Kahn also specifies that personal engagement ebbs and flows as a response to the three conditions described here. The overall model of personal engagement of Kahn (1992) is shown in Figure 1 below. As can be seen, the model has a feedback loop between personal engagement and the exogenous factors through “system feedback” and the outcomes of work engagement which are performance quality, individual experience systemic growth and productivity. This suggests that personal engagement and the exogenous factors reinforce each other over time. Kahn (1992) also theorises that individual differences moderate the relationship between work engagement and its three proximal conditions. In this respect Khan (1990, 1992) specifies that the model charts the general conditions of personal engagement and, that individual differences can potentially explain further why and how workers engage and disengage.

## Antecedents and outcomes of work engagement: The role of mindsets.

Figure 1. Personal engagement model, adapted from Khan (1992)



Finally Kahn (1990, 1992) did not operationalise personal engagement. The first scale was proposed by May et al. (2004). These researchers tested a revised version of Kahn's (1992) model (Figure 2) by expunging the state of psychological presence, probably because, as mentioned above, the latter can be treated as an emergent property of personal engagement. May et al. (2004) devised scales for all the variables shown in Figure 1 (excluding psychological presence) and measured personal engagement by averaging through three subscales of cognitive, emotional and physical engagement as the scale measure did not yield three distinct factors in exploratory factor analysis. May et al. (2004) found overall support for the model of Kahn (1990) with psychological meaningfulness as the strongest predictor of personal engagement. However, they had to contend that two of the antecedents of psychological availability, resources and self-consciousness, had direct effects on personal engagement. This scale has not been widely used. Indeed it has overlapping items with organisational citizenship behaviour scales and is problematic (Dalal, Baysinger, Brummel, & LeBreton, 2012).

Rich et al. (2010) also operationalised engagement based on Khan (1990), proposing a three-factor model representing physical, emotional and cognitive engagement. These researchers operationalised the three psychological conditions proposed in Kahn's (1990) model through other

established constructs. Psychological safety was measured by perceived organisational support (worker's perception of extent to which their work organization values their work input and safeguards their well-being); psychological availability was measured by core self-evaluation (an individual's appraisal of his or her own worthiness, effectiveness and capability), and psychological meaningfulness was measured by value congruence (when individuals believe their personal values correspond to that of their organisation, they perceive a further match between their preferred self-image and organisational role). Rich et al. (2010) also adapted item questions from other existing scales for the three subscales of cognitive, physical and emotional engagement. Overall, they found support for Kahn's (1990) theoretical model as well as the "job engagement scale" with three distinct factors, although they importantly note that the factors are strongly correlated together ( $r = 0.63 - 0.74$ ) and contend that: "The strong correlations among the scales ... supported their aggregation to an overall job engagement scale, which was also reliable from an internal consistency standpoint (.95)" (Rich et al., 2010, p. 624). Following May et al. (2004), the job engagement scale has items representing attention within its cognitive engagement subscale. Rich et al. (2010) did not model psychological presence as a separate dimension; they most likely equated psychological presence with engagement itself (see page 618). The Rich et al. (2010) items are rated on a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree". Example items are as follows: "I work with intensity on my job" (physical engagement), "I am enthusiastic in my job" (emotional engagement) and, "At work, my mind is focused on my job" (cognitive engagement).

To date, few empirical studies that build on Kahn's (1990, 1992) work have been conducted. In this regard, the work of Rich et al. (2010) has been well received. It tested, cross-sectionally, the antecedents and outcomes of work engagement. It also compared other work motivational constructs alongside engagement in the prediction of outcomes, concluding that work engagement outperforms all the other motivational constructs in predicting task and contextual performance due to it representing a holistic investment of the self. No studies have tested the feedback loop hypothesised in this model. However, as is discussed later in section 2.033, another work engagement model, strikingly similar to Kahn's (1990, 1992), has explored the recursive loop between work engagement, predictors and outcomes.

To sum up, Kahn (1990, 1992) took a top-down approach by positing a tripartite investment of the self (cognitive, emotional and physical) into work role performance, and then adopted several

bottom-up approaches to map-out the general psychological conditions that allow the emergence of engagement.

### 2.032 Work engagement as the positive antithesis of burnout

Following the work of Kahn (1990, 1992), a separate conceptualisation of work engagement emerged from research on burnout, as an expansion of the latter construct (Maslach & Leiter, 1997; 2004). Burnout was proposed from a bottom-up approach on the basis of many interviews with service workers. Burnout is defined as the prolonged response to chronic emotional and interpersonal stressors on the job (Maslach, Schaufeli & Leiter, 2001). A large body of research on burnout showed that as a result of prolonged work stress, workers experience their work as stressful and demanding. In other words, workers who are burned out suffer from exhaustion, cynicism, and inefficacy. Exhaustion refers to being emotionally overstretched with work tasks resulting in feeling physically fatigued and unable to recover. Cynicism relates to the acutely negative attitudes that workers develop with regard to their workplace and co-workers; it is characterised by enduring pessimism and work tasks neglect. Inefficacy refers to the feelings of lack of achievement in one's work characterised by perception of failures and incompetence.

Maslach and Leiter (2008) proposed the construct of work engagement, as a diametrically opposite pole to burnout, arguing that in the total absence of burnout workers experience their work as challenging and, have an energetic connection to their work. In the state of engagement workers feel energised (as opposed to exhausted), involved (as opposed to being in the state of cynicism) and efficacious (as opposed to inefficacy) at work. Maslach and Leiter (2008) defined work engagement as an energetic framework within which workers are dedicated to their work performance where they demonstrate confidence in their work effectiveness. From this point of view engagement represents a desired state that should form part of burnout reduction interventions. That is, to reduce burnout one needs to increase work engagement (Maslach & Leiter, 2008). Therefore the factors that are posited to influence burnout such as heavy workload, lack of reward and recognition, lack of social support and fairness are also responsible for promoting engagement when these exist in the opposite pattern (Maslach & Leiter, 2008).

To operationalise work engagement, Maslach and Leiter (2008) proposed that the scale measuring burnout, the Maslach Burnout Inventory (MBI), can be used as it also taps into work

engagement. Since then researchers espousing this conceptualisation of work engagement have measured the construct by either recoding negative items of burnout inventories (see for e.g., Innstrand et al., 2012) or by inferring work engagement from low levels on the burnout dimensions of MB1. In contrast with the work of Kahn above (1990, 1992) which used a top-down followed by a bottom-up approach, this conceptualisation of work engagement is based on a top-down approach only (Maslach, 2011).

### 2.033 Work engagement as an independent construct from burnout.

Building on the work of Maslach and Leiter (1997, 2008), Schaufeli et al. (2002) argued that although the conceptualisation of work engagement as a direct antipode to burnout is meaningful, it is a restrictive, as one can be free from burnout but still not engaged at work. To progress empirical research on work engagement, Schaufeli et al. (2002) argued that it needs to be conceptualised separately from burnout — as a standalone construct in its own right. Schaufeli et al. (2002) buttressed their claim on the distinctiveness of work engagement from burnout by drawing on the case of positive and negative affectivity. Positive and negative affectivity (Watson & Clark, 1988) are negatively related to each other and yet they are considered independent constructs.<sup>14</sup>

Building on from the theoretical work on burnout as well as on qualitative research, Schaufeli et al. (2002) proposed a more elaborate definition of work engagement. Schaufeli et al. (1997, 2008) conceptualised engagement as a persistent positive affective-cognitive state of mind that is characterised by three independent dimensions, closely resembling the investment of the three energies proposed by Kahn (1990, 1992): Vigor, dedication, and absorption. Vigor reflects high energy, mental resilience, and a willingness to invest sustained efforts even in the light of difficulties. Dedication denotes the sense of involvement at work and is associated with pride, significance, inspiration and challenge. Absorption refers to a complete concentration and engrossment in work such that the immersion makes one lose the sense of time; this is analogous to the concept of flow<sup>15</sup> except that it is

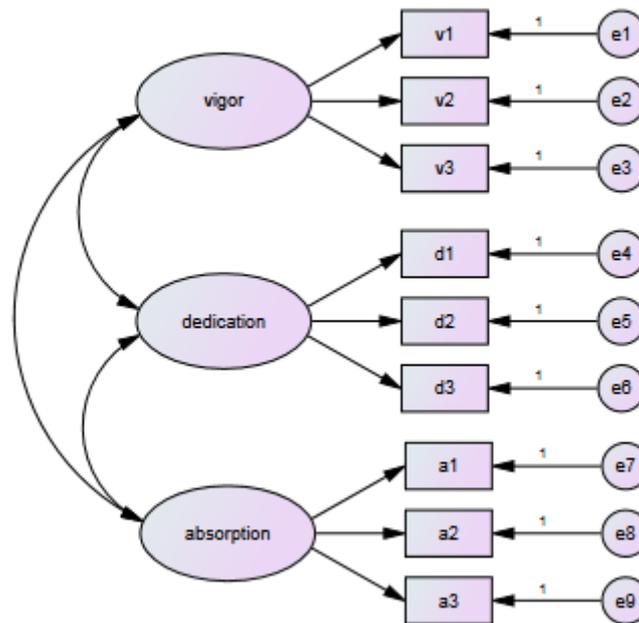
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<sup>14</sup> The distinction between positive and negative affectivity (Watson & Tellegen, 1999) is firmly rooted at the neurobiological level of analysis (Gray & McNaughton, 2003; Davis & Panksepp, 2011; Elliot & Thrash, 2002). Therefore, the extent to which the use of the positive and negative affectivity example is applicable here is contingent on providing support of a work engagement-burnout distinction that goes beyond the factor-analytical level of analysis. This is something that Schaufeli et al. (2002) did not address.

longer in duration (Bakker, 2011). Of note is that in this conceptualisation of work engagement, as an independent construct from burnout, vigor and dedication are the direct opposites of exhaustion and cynicism respectively. Moreover, the factor of absorption, which has no opposite pole from burnout, was generated through qualitative work based on interviews (Schaufeli et al., 2001). Thus, this conceptualisation of work engagement is based on a top-down followed by a bottom-up approach.

Schaufeli et al. (2002) operationalised the construct with the Utrecht work engagement scale (UWES). They proposed three independent dimensions (vigor, dedication and absorption) represented by a “correlated traits” model (Reise, Cook, & Moore, 2010) as shown in Figure 2 below.

Figure 2. Correlated traits model

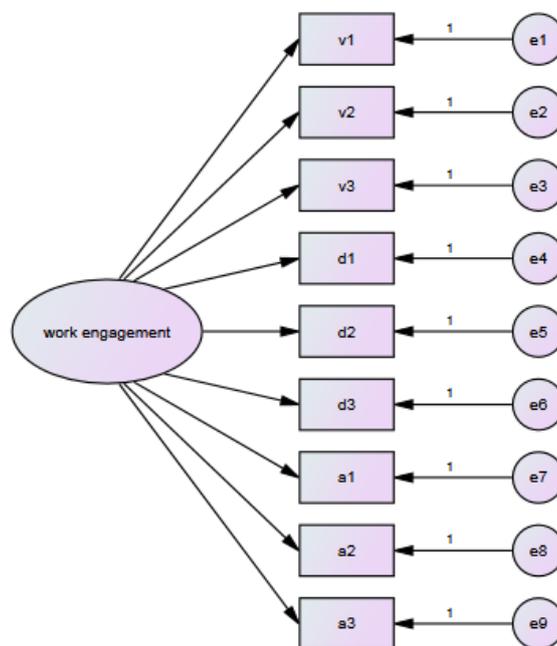


However, their own analysis, as well as exploratory factor analysis from other researchers, has shown inconsistent support for this position as the three factors are too closely related together (Christian et al., 2011; Sonnentag, 2003). Hence, it is represented by a unidimensional model as shown in Figure 3 below.

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<sup>15</sup> Flow is defined as a state of high concentration, low self-awareness and joy that occurs during the pursuit of challenging activities matching one’s skill level.

Figure 3. Unidimensional model



Therefore, researchers have used the UWES as a one-factor solution in most research. Recently Breevaart et al. (2012) suggested, through confirmatory factor analysis, that both a three-factor solution (a “correlated traits” model), and a one-factor solution (uni-dimensional model) of the UWES are equally valid. They claim to have shown that a three-factor solution had a better fit than a one-factor solution and advised that the three-factor solution can be used when there is a particular need for it (e.g., when the patterns of relationships between outcomes and the three factors are expected to differ). They also noted that using a one-factor solution in this instance would also mean that one would lose detailed information. It would however seem questionable whether both options can co-exist (Reise et al., 2010). On the other hand, using a bi-factor approach<sup>16</sup> (Reise, et al., 2010) (see Figure 4 below) De Bruin and Henn (2013) examined the structure of the UWES in a study with 369 workers and concluded that their study:

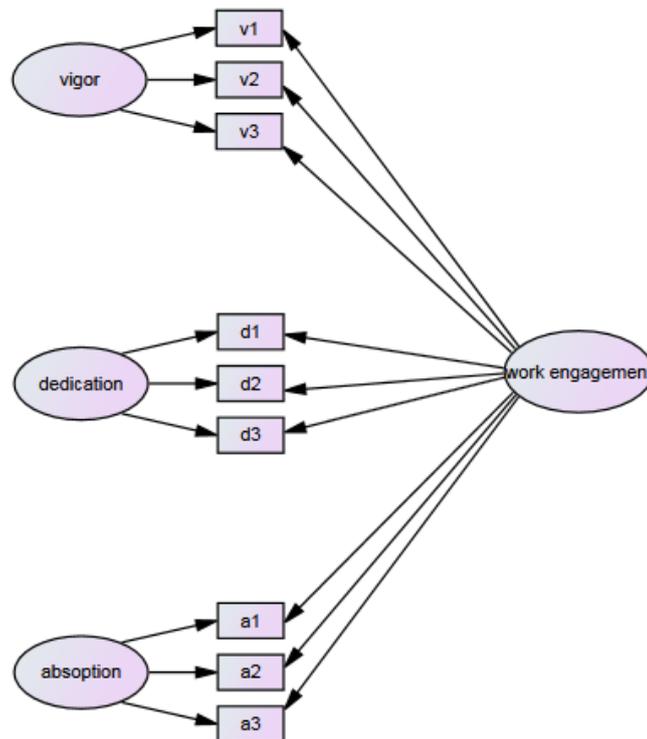
<sup>16</sup> “...a bi-factor model is a latent structure in which each item loads on a general factor. This general factor reflects what is common among the items and represents the individual differences on the target dimension that a researcher is most interested in ... Moreover, a bi-factor structure specifies two or more orthogonal “group” factors. These group factors represent common factors measured by the items that potentially explain item response variance not accounted for by the general factor” (Reise et al., 2010, p. 546).

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Confirms the multidimensionality of the UWES–9, but also clearly shows the presence of a strong general factor that runs through all the items, and it demonstrates the lack of discriminant validity of the vigor, dedication, and absorption subscales ...[and] attempts to interpret and use separate subscale scores lack an empirical foundation and are likely to be unproductive ... [and] the findings demonstrate that — despite the multidimensionality — the interpretation of total score is justified and to be preferred. (p. 8)

This position, of treating the UWES as a one-factor solution, is now almost the norm (e.g., Matz-Costa et al., 2014).

Figure 4. Bi-factor model

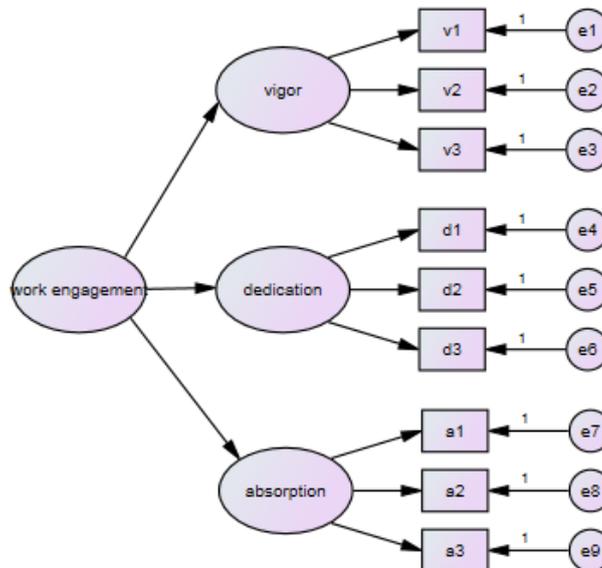


Moreover, it seems that the dimensionality of work engagement is intractably complex due to its affective-motivational nature — and, the solution is certainly not to be found at the statistical level

of analysis (i.e., factor-analytic work). There is increasing evidence that the division between affect and cognition, motivation, and attention is blurry (Engelmann et al., 2009). These are intimately tied together and viewing them as distinct constructs is not biologically tenable<sup>17</sup>. As Pessoa (2008) argues “... based on current knowledge of brain function and connectivity, ... parcelling the brain into cognitive and affective regions is inherently problematic, and ultimately untenable for at least three reasons: first, brain regions viewed as ‘affective’ are also involved in cognition; second, brain regions viewed as ‘cognitive’ are also involved in emotion; and critically, third, cognition and emotion are integrated in the brain. In the past two decades, several researchers have emphasized that emotion and cognition systems interact in important ways”. (p. 148)

As noted in section 2.032, the Rich et al. (2010) scale showed a three-factor solution (a “correlated-traits” model) and a second order factor (Figure 5 below) with high reliability of 0.95. In the higher-order factor model, the three factors of cognitive, physical, and emotional engagement are correlated because they all share a common cause, that of overall job engagement. This means that the individual items from each of the three primary factors are not directly related to overall job

Figure 5. Second-order factor



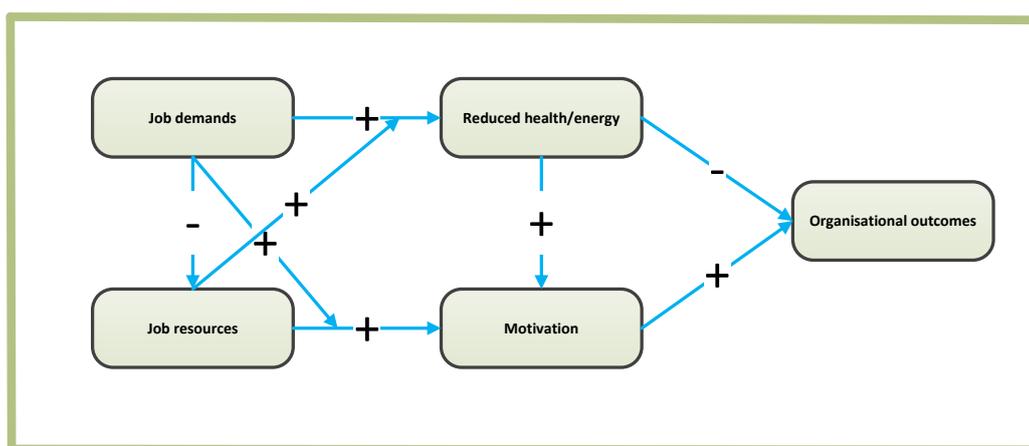
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<sup>17</sup> Even at the psychological level of analysis there is no clear division between affect and cognition/motivation. For example anger is commonly considered as an emotion but it is also a motivational construct, because anger is goal-directed, against something or someone.

engagement, but their effects are rather mediated through their respective factors<sup>18</sup>. Rich et al. (2010) finally conclude that support for their second order model is in line with Kahn's (1990) theorising. In the same vein, it can be said that Kahn's (1990, 1992) notion that work engagement is the simultaneous investment of the three selves implies that this infusion of energy into work occurs in a unitary way. Thus, an overall scale of work engagement is theoretically meaningful and in line with the integration of affect and cognition (Pessoa, 2008). The rest of this section describes work engagement as operationalised by the UWES.

Once the UWES was proposed and tested, Bakker and colleagues (Bakker & Demerouti, 2008; Bakker, 2011) grounded work engagement within the conceptual framework of the Job Demands-Resource Model (JD-R), shown below in Figure 6.

Figure 6. The Job-demands resource model, adapted from Demerouti & Bakker (2011).



The JD-R model (Demerouti & Bakker, 2011) is a general framework that integrates two distinct research traditions: Stress and work motivation research. The central assumption of the JD-R model is that every job has its own risks associated with work-related stress and that this set of factors can be broadly classified into two distinct categories, namely job demands and job resources. This makes the model a parsimonious and yet versatile tool that can be applied across virtually any workplace. Job demands relate to all the organisational, social, psychological, and physical aspects of the job that require physical and psychological efforts or skills. Job demands are associated with physiological and psychological costs. Typical examples of job demands include stressors such as high

<sup>18</sup> However, emotional engagement alone represented 57% of variance, physical engagement 11.6%, and cognitive engagement 6.26%. This is an indication there is evidence of a general factor running through all the items across the three factors (Reise et al., 2010).

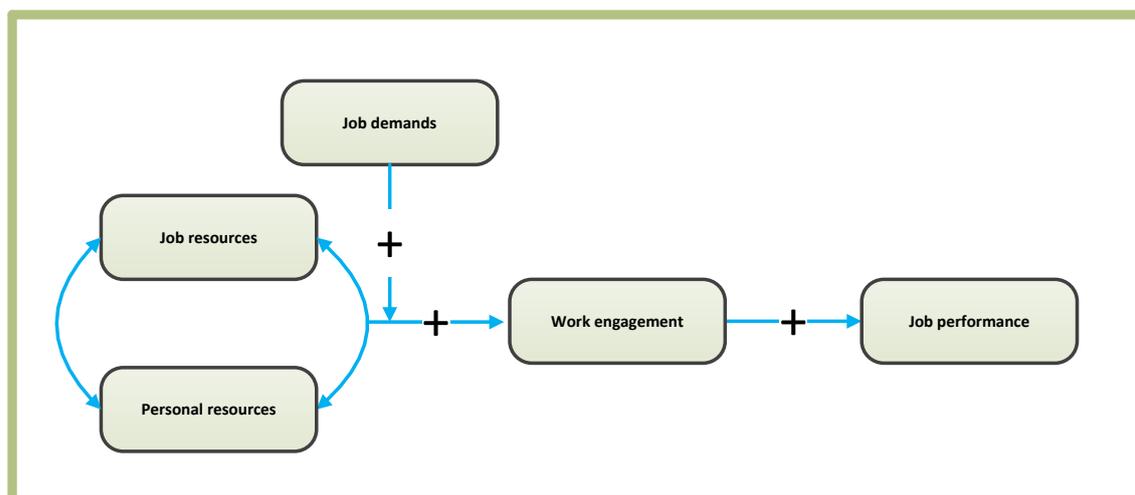
work pressure, poor design of physical work environment and irregular working hours. Although not all job demands are equal and not all are inherently negative, they become stressors when they require high efforts that deplete the energy of workers. On the other hand, job resources refer to those physical, social, psychological and organisational aspects of the job that are: (1) Functional in achieving work goals, (2) effective in reducing job demands and its associated psychological and physiological costs, (3) effective in stimulating personal growth, learning and development. Examples of job resources include: (1) macro organisational level factors such as salary, career opportunities, and job security, (2) interpersonal factors such as supervisor and coworker support and team climate, and (3) task level factors such as skill variety, task identity, performance feedback, task significance and autonomy.

Essentially, the JD-R model depicts two main processes: A health impairment process and a motivational process, these are associated with burnout and engagement respectively. The health impairment process holds that jobs with chronic excessive demands tend to exhaust the mental and physical resources of workers leading to depletion of energy, health problems and burnout. Thus job demands are posited to have a positive relationship with burnout. On the other hand, the motivational process in the model holds that job resources have a motivational potential because they play both intrinsic and extrinsic roles, foster employee growth, learning and development and are instrumental in achieving work goals respectively. Job resources fulfil intrinsic needs such as the need for autonomy, competence and relatedness. Feedback for example encourages further learning which then increases competence. Decision latitude and social support satisfy the need for autonomy and the need to belong. These perceptions increase the degree to which workers are willing to invest themselves into their work roles and work activity. Thus, job resources are posited to have a positive relationship with work engagement.

Following more empirical research on work engagement using the J-DR model, it was found that dispositional characteristics of workers, termed “personal resources”, have an important role to play in fostering work engagement. As an extension to the JD-R model, Xanthopoulou, Bakker, Demerouti and Schaufeli (2007) investigated the roles of personal resources such as self-efficacy, organisational based self-esteem and optimism and found that these personal resources partially mediated the relationship between job resources and work engagement. Further research by Xanthopoulou, Bakker, Demerouti and Schaufeli (2009) showed that personal resources and job resources positively influenced each other over time in predicting work engagement and that the

relationship of these resources with work engagement also was reciprocal. This then led to the development of the work engagement model (Bakker & Leiter, 2010) as depicted in figure 7 below.

Figure 7. The work engagement model, adapted from Bakker (2011)



The model shares the same explanatory principles described above in the J-DR model, with the addition that part of the health impairment process is integrated within the relationships between resources (job and personal) and work engagement in the form of job demands. As can be seen, job demands moderate the relationships between resources and work engagement. This has been confirmed by empirical research and it has also been found that resources become more salient when job demands are particularly high (Bakker, 2010). Subsequently, further empirical and theoretical work through this model suggested that the outcomes of work engagement in the form of proactive behaviours (e.g., feedback seeking, and volunteering on work projects) have a role in maintaining work engagement as these behaviours increase job and personal resources.

It is currently estimated that over half of all research conducted in work engagement has used the UWES instrument to measure work engagement (Saks & Gruman, 2014). As the UWES conceptualisation of work engagement is based on the assumption that work engagement is distinct from burnout, some researchers question the independence between the two constructs, arguing that burnout and work engagement show a similar pattern of association with correlates and that either burnout or work engagement is redundant (Cole, Walter, Bedeian, & O'Boyle, 2011). However, a meta-analytic study on the relationship of job demands on work engagement and burnout have shown that work engagement, as operationalised by Schaufeli et al. (2002) is independent from burnout

(Crawford et al., 2010). In this meta-analytic study, Crawford et al. (2010) differentiated between two types of work demands: Challenge demands and hindrance demands. Challenge demands are demands that are appraised as stressors that promote mastery, personal growth or future gains. Examples are job responsibility, time pressure and workload. Hindrance demands are stressors that prevent personal growth, learning and growth attainment. Examples are role conflict, role ambiguity, organisational politics and red tape. Crawford et al. (2010) found that burnout was positively related to both challenge and hindrance demands, whereas work engagement had a different pattern of correlation: It had a negative relationship with hindrance demands, but a positive one with challenge demands.

As indicated earlier in this section, the work engagement model based on the J-DR model has similarities with the model of personal engagement model proposed by Kahn (1990, 1992). The main thrust of Kahn's (1990, 1992) model is that personal engagement is indicated by three psychological conditions — psychological meaningfulness, psychological safety and psychological availability — which are themselves dependent on a taxonomy of personal and organisational conditions. These three psychological conditions overlap with the job and personal resources component of the work engagement model based on the J-DR model. In their test of Kahn's model (1990), Rich et al. (2010), used the three psychological conditions as the antecedents of work engagement. They modelled each psychological condition by a construct representing job or personal resources that are roughly similar to those postulated in the work engagement model based on the J-DR. More precisely, each of the focal constructs used were established predictors of job performance (Rich et al., 2010). For example, psychological availability was represented by core self-evaluation which is an identical representation of personal resources postulated in the work engagement model (Hakanen & Roodt, 2010). It can be concluded that the model of personal engagement of Kahn (1990, 1992) and work engagement, based on the J-DR model, are more-or-less equivalent.

#### 2.04 The definition and operationalization adopted in this thesis

Despite all the definitional perspectives on work engagement described earlier, a point to bear in mind is that the construct of work engagement — connoting the simultaneous investment of the head, heart, and hand in work tasks (Ashforth & Humphrey, 1995; Rich et al., 2010) — is rooted in the lay definition of work effort itself. Indeed, an inscription dedicated to the workers who built the Grand central terminal of New York City in 1913, proudly reads: “To all those who with head, heart, and hand toiled in the construction of this monument to the public service, this is inscribed” (Anon). This

powerfully underscores Maraun's (1997) thesis that common-or-garden terms are the backbone of psychological constructs. Thus, psychological constructs are not technical concepts with precisely defined boundaries (Strohming, 2015). Nevertheless, a definition and operationalisation is required. This thesis adopts the first angle described in section 2.03 and treats work engagement as a narrow construct. It uses the definition and operationalisation of work engagement of Schaufeli et al. (2002) and also adopts the use of a unidimensional model for reasons discussed in section 2.033. Moreover, this decision is a practical one, although it is not devoid of theoretical considerations. Most of the scientific research on work engagement is based on this conceptualisation (Saks & Gruman, 2014). It thus provides some consistency in weaving arguments across studies to form a wider net of knowledge as well as a contribution to the evaluation of the UWES scale.

## Chapter Three

### Mindsets and approach-avoidance motivation

#### 3.00 General overview

Extending the section on mindsets in Chapter One (section 1.02) additional attributes of mindsets are briefly discussed by differentiating mindsets from other control and change constructs. Then, the self-regulatory variables associated with mindsets, (goal orientations - mentioned in section 1.02), are explained further through the framework of approach-avoidance motivation.

#### 3.01 Mindsets

It is fair to say that we cannot excel in every field. This is well expressed in a quote attributed to Carl Sagan<sup>19</sup>: “It is of interest to note that while some dolphins are reported to have learned English — up to fifty words used in correct context — no human being has been reported to have learned dolphinese”. This is a noteworthy point on just one of the boundaries of our abilities — we cannot speak dolphinese (Gerber, 1990). Perhaps, the reason we do not try to learn dolphinese is that we know for a fact that, however hard we may strive to reach this goal, we will not succeed. Our vocal system cannot even come close to mimicking the vocalisations and whistles that dolphins produce. It appears that once individuals adopt the belief that reaching a goal is unfeasible, they promptly stop all goal-striving processes. As Janoff-Bulman and Brickman (1982) astutely noted, one must be able to determine in a timely manner, when tasks should be avoided or abandoned, and when one needs to turn his or her attention elsewhere. In these situations, such as speaking dolphinese, this makes good sense.

However, holding the belief that a desirable goal can be achieved is often the first crucial step towards success. This is immediately apparent through a brief review of the achievements of notable individuals who succeeded against the backdrop of obstacles. For example, Louis Braille, who became completely blind at the age of five due to an accident, developed the universal Braille reading system widely in use today (Jimenez, et al., 2009). Helen Keller, who was blind and deaf due to illness graduated from college and earned the reputation of an international author and activist (Hermann, 1998). Thomas Edison, who had little formal education having left school at the age of twelve, invented the incandescent lamp after more than one thousand failed trials as he relentlessly looked for the right material that would glow in a vacuum when electrified; he also registered a prolific record number of patents through his own efforts and collaborative entrepreneurial undertakings (Josephson, 1959). It is

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<sup>19</sup> The formal reference for this quote could not be found, but it was positively confirmed by Ann Druyan, wife of Sagan, through P. Abbey (personal communication, 08 April 2014).

plausible to assume that all these individuals must have believed that their goals were achievable in the first place — their minds were anchored in change and control, not in stability and fixedness. Whether their beliefs about their goals were explicitly or implicitly articulated in their minds is insignificant, because holding the belief that a goal can be achieved sets into motion a causal chain of mental processes and strategies that paves the route to success. Indeed, research shows that holding the belief that human attributes (e.g., intelligence, emotion, morality, personality, various forms of abilities) are amenable to change and control sets into motion a set of effortful and adaptive behaviours which form a causal chain leading to achievement (Burnette et al., 2011). Although mindsets are domain-specific, they share a common dimension: the belief about the malleability of human attributes in terms of control and change. However various other constructs relating to control and change exist. This presses for a set of questions about the distinctiveness of mindsets with regard to variables, such as locus of control, self-efficacy, self-esteem, and self-confidence.

Dweck and Legget (1988) have elaborated lengthily on the distinction between locus of control and mindsets. They argue that whilst both mindsets and locus of control focus on whether one exerts a sense of control on central elements in one's life, locus of control relates to the perceptions of control over events and outcomes whereas mindsets go one step backwards focussing on basic beliefs that may trigger and underpin the locus of control beliefs, that is, the very perception of control over the basic human attributes that have an effect on these outcomes and events such as competence. Thus, compared to locus of control, mindsets are more primal.

Self-efficacy refers to cognitive judgements about one's future capabilities to mobilise and execute upcoming courses of action needed for specific goal attainments (Bandura, 2011). Although both mindsets and self-efficacy are domain specific variables related to ability, mindsets lie at the heart of self-efficacy beliefs. For example, one cannot develop self-efficacy in mathematics if one believes that intelligence is an attribute that is fixed, since this stifles any initial step towards self-efficacy development in this domain (Kanfer, 1990; see also Tamir & Mauss, 2011; Plaks & Chasteen, 2013). Therefore, incremental mindsets generate and drive self-efficacy, whereas entity mindsets inhibit it. As Dweck and Legget (1988, p. 268) put it, "...because of belief in the controllability of the basic factors that determine outcomes, perception of control are deeply rooted in the incremental theory".

Mindsets can be differentiated from generalised attributes related to the self, such as self-esteem and self-confidence. Indeed, the correlations between mindset of intelligence and these variables are

low (Dweck et al., 1995). Furthermore, mindsets are distinct from a range of other process-oriented individual differences variables such as attributional approach, uncertainty orientation, need for cognition, need for closure and need for personal structure (Dweck et al., 1995).

While there is not much scope, within this chapter, to discuss the contrast between mindset and each one of these constructs, suffice it to say that mindsets differ from these constructs in fundamental ways. Firstly, mindsets are simple and singular constructs with a unitary theme (Dweck et al., 1995) and with a 'narrow bandwidth' in that they refer to malleability or fixedness of attributes. In contrast, all the above constructs are general, with a broad bandwidth and are complex, possibly with overlapping nomological networks. Given the longstanding debate on the status of constructs in psychology (Michell, 2012) mindsets, in comparison with most complex constructs, are remarkably parsimonious in that they are simple in definition. Secondly, mindsets are not process-oriented constructs and, are not defined by any motivational dimensions, although they lead to the adoption of approach and avoidance goals. Therefore, mindsets have no problematic overlap with individual differences in processing style or motivation, both at the definitional and operationalisation level. Finally, mindsets are also largely unrelated with the Big Five factors (Burnette & Pollack, 2013; Dweck et al., 1995; Furnham, 2014; Spinath, Spinath, Riemann, & Angleitner, 2003; Taberero & Wood, 1999).

### 3.02 Dimensionality of goal orientation through the approach-avoidance motivation framework.

As mentioned in Chapter One section 1.02, mindsets activate goal orientations. Historically, goal orientation and mindset research developed independently of each other (Payne et al., 2007). Goal orientation developed as part of the research on achievement goal theory (Eison, 1979; Nicholls, 1975). An achievement goal can be defined as "the future-focused cognitive representation that guides behaviour to a competence-related end state that the individual is committed to either approach or avoid" (Hulleman et al., 2010, p. 423). Within achievement goal research, goal orientation refers to the broad network of beliefs, cognitions and emotions about effort, success, evaluation, errors, feedback, and ability. Viewed from a traitlike perspective, goal orientation refers to the dispositional goal adoption tendency of an individual in an achievement setting as well as in a non-achievement setting where influencing situational cues are not present (Dweck & Legget, 1988; Elliot, 2005).

Early research showed that performance goal orientation, as a unitary construct, had an irregular pattern of relations with outcomes, characterised by a mix of adaptive, neutral and maladaptive relationships. This consistently irregular pattern of relationships between performance goal orientation and outcomes (i.e. both positive and negative associations) impelled researchers to separate performance goal orientation into two dimensions: Performance prove and avoid performance goal orientation. This bifurcation of performance goal orientation was first attempted by Elliot and colleagues (Elliot, 1994; Elliot & Harackiewicz, 1996) who proposed a trichotomous achievement goal framework: Mastery goal, performance approach goal and performance avoid goal. Mastery or learning goal refers to the development of competence to attain task mastery. Performance approach goal relates to the attainment of normative competence with relation to others. Performance avoid goal is focussed on the avoidance of doing worse than others. The work of Elliot and colleagues was followed by goal orientation work in the workplace domain by VandeWalle (1997) who proposed learning goal orientation, performance prove goal orientation, and avoid performance goal orientation (i.e., the two performance goal dimensions represent different components of avoid motivation). VandeWalle (1997, p. 1000) defined performance prove goal orientation as “the desire to prove one’s competence and to gain favourable judgements about it” and avoid performance goal orientation as “the desire to avoid the disproving of one’s competence and to avoid negative judgements about it.” Learning goal orientation was defined as “the desire to develop the self by acquiring new skills, mastering new situations, and improving one’s competence”. The distinction between performance prove goal orientation and avoid performance goal is now well established (Muruyama, Elliot, & Yamagata, 2011) although there is still some debate on the occasionally found moderate correlation between the two (Garcia et al, 2012).

To theoretically buttress the bifurcation of performance goal orientation into approach and avoid dimensions, Elliot and colleagues incorporated goal-orientation into basic approach and avoidance motivation (see also Elliot, 2005, for a masterful summary). Therefore, fitting achievement goals within approach-avoidance motivation provides the needed clarity to understand the inconsistent (i.e., positive negative) relationship between performance goal orientation and outcomes. Therefore, performance approach goal can be treated as approach motivation in the pursuit of positive outcomes and performance avoidance goal could be understood as avoidance motivation. The application of approach-avoidance motivation provides the essential explanatory power to mindset research, explaining the mix of positive and negative findings associated with performance prove goals (Elliot, 2005). When faced with an approach-avoidance conflict, where both approach and avoidance are strong (e.g., wanting to do well on a problem solving task but also keen to avoid failure) an individual engages in active risk assessment that produces new information. If this appraisal does not resolve the conflict

then, it may lead to displacement activity such as task-irrelevant behaviour. Approach-avoidance motivation also clarifies the theoretical distinction between performance approach and performance avoidance goals. A performance avoid goal can be understood as pure avoidance or fear (McNaughton, 2009; Gray & McNaughton, 2003). On the other hand, a performance approach goal orientation can be understood as a combination of anxiety and risk analysis (McNaughton, 2009).

### 3.03 Concurrent operations of approach and avoid goal orientations in goal striving

Research work in mindsets, across all domains, is based on a clear demarcation between the self-regulatory variables associated with incremental and entity mindsets. That is, incremental mindsets are positively associated with mastery-oriented approaches (i.e., approach motivation) and entity mindsets are related with helpless-oriented approaches (i.e., avoid motivation) (Burnette et al., 2012). However, this independent approach of modelling goal striving is potentially an over-simplified way of construing the “mindset → goal striving → achievement” chain. Striving for achievement, in any domain, is a complex activity. The processes are often recursive with feedback loops. This is because achievement and goal striving consist of a series of alternations between “... periods of working, pushing, and concentration and periods of regrouping, drawing back, and relaxing” (Janoff-Bulman & Brickman, 1982, p. 228).

The concurrent operation of approach and avoid motivation has not been widely implemented in mindset research (but see Burnette et al., 2012 for a conceptual model). Very few studies incorporate both approach and avoidance motivation variables in the relationship between mindsets and achievement within a single research model. For example, in their longitudinal studies on the relationship between the mindset of intelligence and achievement (mathematics attainment), Blackwell et al. (2007) included low helpless-oriented attributions (avoidance motivation) in their process model, alongside other mastery-oriented self-regulatory variables (approach motivation) as mediating variables between the incremental mindset of intelligence and achievement. This implies that during successful goal-striving, where the effects of mastery goals and strategies heavily dominate, helpless-oriented goals and strategies operate in the background but their effects are effectively dampened by the activation of mastery-oriented approaches. Put another way, one need might need to “talk” to the entity mindset and its correlates with the voice of incremental mindset, especially during the hardest parts of the goal-striving process when challenges are most taxing. In a recent paper on the distinctiveness between performance approach (or prove) and avoid performance goal orientations, Garcia et al. (2012)

noted that there seems to be accumulating evidence that learning goal orientations combine to different degrees with performance approach and avoid performance goal orientations in goal striving. Payne et al. (2007) note that highly efficacious individuals have a strong learning goal orientation and a weak avoid performance goal orientation. In addition, it must be reiterated that the concurrent approach-avoidance motivation deployment is firmly rooted at the neuro-biological level of analysis (Chapter One section 1.10). The concurrent approach-avoidance mechanism discussed is incorporated in the mindset models developed in the next chapter.

## **Chapter Four**

### **Development of research models**

#### 4.00 General overview

This chapter expands on the mindset of job capability and mindset of emotion models introduced in Chapter One (Figure 1, section 1.10). The research aims, broadly presented in Chapter One, are now expanded in more detail as the hypotheses and research questions of each model are developed.

#### 4.01 General outline of research models and empirical studies

The mindset of job capability model and the mindset of emotion model, represented jointly by Figure 6 in Chapter One, are now developed separately in full detail. All the research propositions within each model are discussed and expressed as research hypotheses and questions. These are investigated at a cross-sectional level through two foundational studies in Chapter Five. The results inform the design of the main studies in Chapter Six, where the findings are retested cross-sectionally and longitudinally.

At this stage, five fundamental features that underpin the research models required explanation. These are: The principle of compatibility or “Brunswik symmetry”, the application of approach-avoidance motivation, the trait nature of the exogenous variables, the use of survey-based correlational research design, and the notion of causality implied by the models. Explications of each of these points follow below.

Firstly, both research models are designed on the principle of compatibility (Ajzen & Fishbein, 2005) or on the concept of “Brunswik Symmetry” (Wittmann & Sub, 1997), itself based on the lens model of Brunswik (1952) (see Wittmann & Klumb, 2006). The lens model of Brunswik is represented in Figure 1 below.

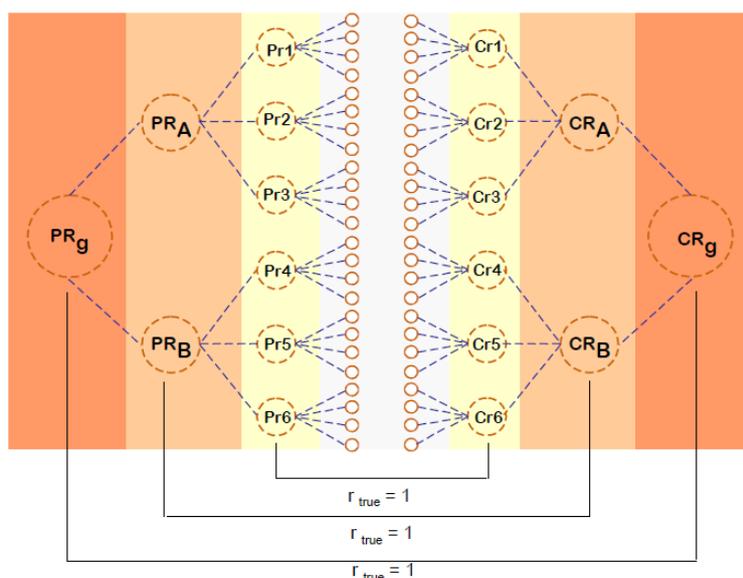


Figure 1. The true Brunswik-symmetrical latent structure of nature (copied with permission) [http://www.osi.unimannheim.de/unterdokumente/sanfrancisco\\_2007/www\\_sanfrancisco\\_2007.pdf](http://www.osi.unimannheim.de/unterdokumente/sanfrancisco_2007/www_sanfrancisco_2007.pdf)

The principle of compatibility proposes that, in an explanatory research model, predictors and outcomes must be conceptualised and measured at the same level of specificity to maximise explanation and prediction. Thus, the Brunswik lens model (Wittmann & Sub, 1997) posits that the highest conceivable associations between predictors and outcomes are most likely to be found when there is a perfect level of symmetry between them. That is, a specific predictor should be used to explain and predict a specific outcome and, a broad predictor should be used to explain and predict a broad outcome. For example, in Figure 1 above, the variable  $PR_B$ , a broad-level predictor, will have an optimum relationship with an equally broad-level outcome such as  $CR_B$  rather than with a specific-level outcome such as  $CR_5$ . Moreover, the effectiveness of the symmetry principle depends on how well the constructs are adequately developed and operationalised within a research model (Barrett, 2005). It goes without saying that symmetry is not synonymous with the practice of aligning a predictor and outcome that interrelate tautologically (see Van Knippenberg & Sitkin, 2013, who highlight such examples in leadership research; and Dalal et al., 2012, who discuss the problematic work engagement and organisational citizenship behaviour relationship when engagement is defined and operationalised in terms of organisational citizenship behaviour).

Therefore, the principle of compatibility is applied in both research models. As will be seen shortly, in section 4.02 (see Figure 2: mindset of job capability model) and section 4.03 (see Figure 3:

mindset of emotion model), each mindset posited to relate with domain specific goals or regulation strategies. That is, the mindset of job capability predicts work domain goal orientations, and the mindset of emotion predicts adaptive emotion regulation and avoid performance goal orientation for emotion. Furthermore, the domain specific goals are posited to relate with domain specific outcomes. In the mindset of job capability model work domain learning goal orientation relates to workplace proactive learning behaviours. In the mindset of emotion model adaptive emotion regulation and avoid performance goal orientation for emotion relate to subjective well-being.

In the mindset of job capability model, work engagement, as a work-related motivational construct (a specific predictor) is posited to predict proactive learning behaviours (specific outcomes that are related with work motivation). However, in the mindset of emotion model, the work engagement-outcome link violates the principle of compatibility to some extent, resulting in asymmetry. That is, work engagement, as a work-related well-being construct, a specific predictor, is posited to predict context-free well-being, a set of broad outcomes. This is a limitation. However, this asymmetry is due to the nature of the inquiry itself as specified by the research questions in this thesis.

Secondly, at a higher-order level of construct assemblage, goal orientation and work engagement are conceptualised in terms of basic approach-avoidance motivation. That is, goal orientation is either approach or avoid in nature, rather than learning versus performance, as proposed by Dweck and Legget (1988). Likewise, as explained in Chapter One section 1.081, work engagement, as an affective-motivational construct, is assumed to possess both approach and avoidance motivation in that it potentially represents high approach and low avoidance motivation. Thus, an additional feature in both models relates to the inclusion of approach-avoidance motivation mechanisms for providing more explanatory power in the processes of goal striving that link the mindsets to work engagement. As argued in the Chapter Three, the concurrent deployment of approach-avoidance temperaments and goals are ubiquitous in motivated behaviours and achievement situations (Gray & McNaughton, 2000; Janoff-Bulman & Brickman, 1982). In goal striving, avoidance motivation needs to be kept at a low level of activation so approach motivation can function effectively. In other words, the need to avoid failure should not be viewed as more important than the need to achieve success (Roskes et al., 2014; Elliot & Dweck, 2005).

Thirdly, all the exogenous variables, that is, mindsets, self-regulatory variables (goal orientation and emotion regulation strategies) and work engagement, are studied at trait levels as one of the main aims of this research is to investigate the dispositional basis of enduring work engagement. Mindsets

and goal orientations are treated as dispositional constructs (Burnette et al 2011; Dweck, 2008; Elliot, 2005) when measured without any experimental manipulations. In other words, when no situational cues are present or taken into consideration, the dispositional nature and consequences of these constructs prevail (Dweck & Leggett, 1988). As Burnette et al. (2012) note:

For example, entity theorists of intelligence tend to arrive at an academic achievement context, even before learning anything specific about that context in particular, with the belief that this context is likely to be riddled with threats to self-perceptions of one's ability. In contrast, incremental theorists of intelligence tend to arrive at an academic achievement context with the belief that this context is riddled with opportunities to develop mastery. Thus, these different mindsets trigger different goal operation processes, even in the absence of a discrepancy. (p. 7)

However, although this thesis is focussed on investigating the trait basis of enduring work engagement, the situation-activated nature of work engagement (Inceoglu & Fleck, 2010) implies that work engagement is a function of both trait and situational factors (as explained in Chapter One section 1.03). Therefore, this implies that work engagement is also construed as the sum-total of its trait and state attributes.

Fourthly, the two research models are based on a passive correlational design (Dwyer, 1983). That is, the research design involves no manipulation of predictor variables, but only the measurement of the predictor and criterion variables at cross-sectional and longitudinal levels through surveys. The choice of non-experimental methods for answering the questions posed in this thesis is based on several factors. First of all, although it is possible to manipulate mindsets and activate goal orientations experimentally, the controlled and random manipulation of work engagement in a work setting is impractical. As Dwyer (1983) explains:

Manipulation of an independent variable in a complex [work] system can raise more serious obstacles to causal inference than are raised by the inherent weaknesses of nonexperiments. More specifically, as a social scientist draws closer and closer to the process that are of interest, it is often the case that manipulation of a specific independent variable becomes more and more difficult. In fact, there are many independent variables that are of crucial importance for which the notion of manipulation does not make good sense. One begins to get the feeling that the requirements of randomized manipulation is being imposed in a context that is not appropriate.

The very idea of manipulating only one variable beings to sound absurd in the context of a social system in which all parts are interdependent. (p. 325-326)

Furthermore, the research aims presented in Chapter One are principally inquiries on processes (i.e. a sequence of events from a chosen beginning condition leading to an outcome), some of which are unobservable as they are deeply self-referential (e.g., happiness, life satisfaction, emotion regulation, and psychosomatic complaints). Thus, survey design is an appropriate option. In addition, bias associated with surveys may be avoided by collecting self-reports from third parties (e.g., supervisors and co-workers).

The final point relates to the notion of causality. In common with all passive correlational studies, causality cannot be established with absolute certainty through these models. Indeed, it is always possible that associations between variables are due to other unmeasured variables that are not part of the study (Anderson & Williams, 1992; Taris & Kompier, 2003). As Taris and Kompier (2003, p. 1) explain, "...we can never prove causal relationships; the best we can do is argue that it is plausible that certain statistical associations can be understood in causal terms". Additionally, other researchers have emphasized that ideally studies should strive to eliminate the main alternative explanations that could account for the presumed causal effects (Aguinis & Edwards, 2014). However, it is impossible to eliminate all such conceivable alternatives in the behavioural sciences (Spector & Meier, 2014). Therefore, causality in this research refers to reaching plausible approximations within the limits of the theory and research design.

#### 4.02 The mindset of job capability model

Job capability is a fundamental work construct (Huffcutt et al., 2001) representing the aggregate of knowledge, skills, and mental abilities of workers. It is fundamental in that it is one of the main constructs that connects workers to their job role and job performance (Blumberg & Pringle, 1982). The continuous improvement of job capabilities is crucial for organisational effectiveness but there is a limit to which an organisation can provide learning and development on a mandatory basis. Thus workers are expected to self-initiate learning activities to maintain and enhance their job capabilities. For this to occur, two prerequisites are needed. First of all, workers should be able to make accurate self-assessments of their own job capabilities. Secondly, once this assessment is made, they should

believe that their job capabilities can be improved — they should believe in the incremental variability of their job capability, not in its stability. There is much debate on the accuracy of self-assessment of cognitive ability (Freund & Kasten, 2011) and job capabilities (Maurer & Lippstreu, 2008). Some researchers believe individuals make inaccurate self-assessments in that they overestimate their abilities and are also often unaware of their own incompetence (Dunning, Health, & Suls, 2004). The body of research looking at this phenomenon lists a number of factors that contribute to the tendency to misjudge one's capabilities. These are the knowledge of the domain being investigated, the relative difficulty of the domain and, the specificity and ambiguity of the ability of interest (Zell & Krizan, 2014). Recent meta-analytic work in this area indicate that when self-evaluations are specific to a given domain and when performance on tasks are objective, familiar, and low in complexity, individuals provide the strongest possible accurate estimates of their own capabilities (Zell & Krizan, 2014). This suggests that, in the workplace — provided workers find themselves within the right job-fit framework whereby their job capabilities align with the job requirements — they can make accurate judgements as to the level of their current job capabilities. The question that arises then is that of variability and stability in one's job capabilities. That is, once workers with an incremental mindset make an accurate assessment of their job capabilities they should hold the belief that improvement is possible. The improvement referred to here is about intraindividual differences in a given set of job capabilities over time. That is, it is the belief that, with effort, one can improve his or her own job capabilities for an existing job in which one is already qualified for. Indeed, there is some evidence that learning motivation is stronger when a worker finds himself/herself in one's chosen job as this situation provides an individual with greater autonomy with regard to career progression and aligns learning activities closely with personal goals (Patrick et al., 2012). The belief that job capabilities can be improved is encapsulated within the mindset of job capability. The mindset of job capability refers to the beliefs that workers hold regarding the malleability of their current job-related knowledge, skills, and mental abilities (Maurer et al, 2003; Maurer & Lipstreu 2008, Van Vianen et al., 2011).

The rapidly changing nature of jobs requires workers to initiate and engage in continuous acquisition and improvement of job capabilities beyond the mandatory learning requirements of their workplace. Various individual and organisational predictors of proactive learning and development have been investigated in the literature. Examples include personality variables and support systems in the workplace. The mindset of job capability, however, is a relatively recent individual-level predictor of self-development. The significance of the mindset of job capability construct lies in the fact that unless one believes job capabilities can be improved one will be unlikely to willingly undertake any

initial steps towards self-development. This self-development is entirely volitional (Maurer & Lippstreu, 2008) when training is not mandatory. So far, the limited research on mindsets of job capability has shown that it influences self-development and feedback-seeking behaviour (Maurer, Mitchell, & Barbeite, 2002), which are essential elements in the self-development cycle (Tannenbaum, Beard, McNall, & Salas, 2010).

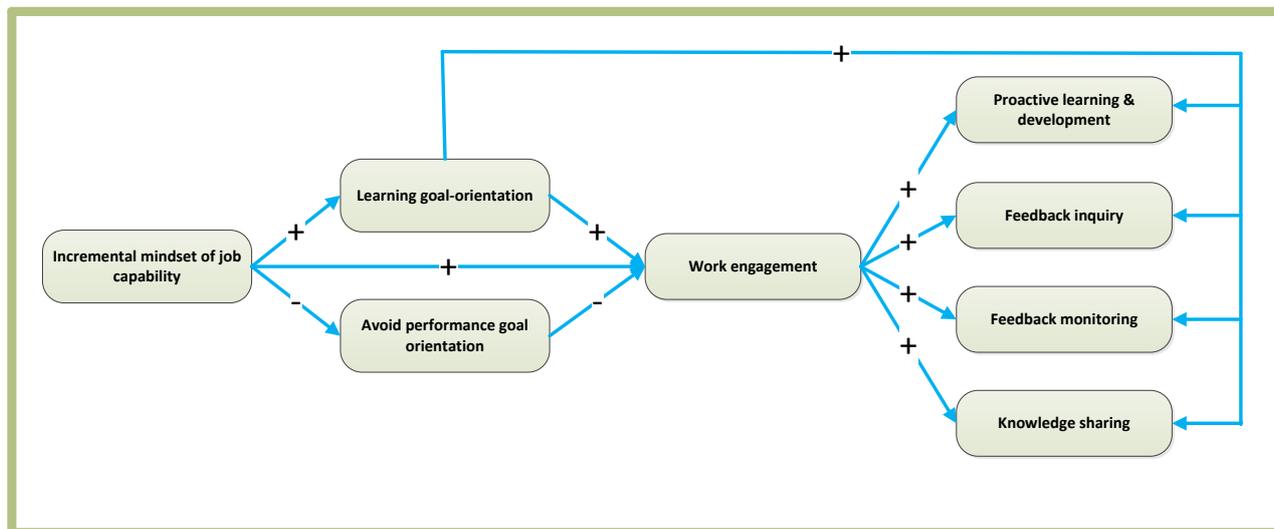
As each job has its own constellation of knowledge, skills and abilities, measuring beliefs of job capability poses a methodological challenge which requires the documentation of the improvability beliefs of each and every dimension of the knowledge, skills and abilities of a particular job or job family (Maurer et al., 2003). However, since within any job role, knowledge, skills, and abilities are reasonably inter-correlated, for pragmatic purposes, these attributes can be construed as a unitary construct so that beliefs about their improvability can be inferred through a single instrument (although this approach is only an approximation). Van Vianen et al. (2011) adopted this position and measured improvability beliefs of job-related knowledge skills and abilities through the mindset of job capability. Although mindsets are conceptually domain specific, the mindset of job capability targets beliefs about a related group of human attributes, it thus cuts across related conceptual domains. This situation is not uncommon in mindset research since in some areas one has to necessarily study questions that cut across various related domains. For example, research on the mindset of “kind of person”, which measures the entity and incremental mindset of a person as a whole, cuts across a large number of domains (Dweck, 2000).

Research on the mindset of job capability has been very limited so far, although the application of mindset to the domain of job capabilities has been previously documented in a laboratory setting. For example, in a series of experimental studies on a managerial decision-making task, Wood and Bandura (1989) showed that the mindset of managerial ability (a domain specific construct which, again, cuts across multiple domains) could be successfully induced. This mindset inducement was related to managerial self-efficacy over a series of increasingly difficult tasks such that those induced with an incremental mindset of managerial ability outperformed those induced with an entity mindset of managerial ability. The mindset of managerial ability (incremental versus entity) was related to the similar self-regulatory variables found in the mindset of ability in the educational domain, confirming that conceptions about the malleability of job capabilities influence adaptive behaviours in (simulated) job-related performance.

Following Maurer and colleagues (Maurer et al, 2003; Maurer & Lipstreu 2008), who conducted studies on the effect of the mindset of intelligence on self-development, Van Vianen et al. (2011) extended mindset research into the job capability domain and proposed a three-item scale to measure the construct. Van Vianen et al. (2011) showed that there are individual differences in the mindset of job capability and reported that it is one of the factors that affect the negative relationship between age and self-development willingness. They also speculated that the mindset of job capability is potentially one of the antecedents of self-efficacy with regard to self-development, in addition to other self-efficacy antecedents postulated by social cognitive theory (performance attainment, psychological arousal, vicarious experience, and verbal persuasion). Van Vianen et al. (2011) noted that future studies on the mindset of job capability require longitudinal designs that go beyond reliance on measures of development willingness to include measures of self-development. Thus the mindset of job capability is a construct that warrants further investigation. It affects the acquisition of knowledge, skill and abilities, which in turn can influence work engagement. It is thus a potential direct and indirect predictor of work engagement and proactive learning behaviours.

In Chapter One, (section 1.06), the theoretical model of Heslin (2010) was introduced in which the exogenous variable predicting work engagement is the mindset of intelligence. However, as a construct, intelligence is not well adapted to the workplace as it refers to the academic rather than the work setting. In the work setting, the practical constructs of knowledge, skills and abilities are more relevant (Van Vianen et al., 2011). Hence, intelligence is now substituted with job capability as an aggregate construct representing self-assessed beliefs of knowledge, skills and abilities. Furthermore, Heslin's (2010) model is now expanded to include four proactive-learning behaviours as outcome variables (discussed in Chapter One section 1.05). This extended model is represented in Figure 2 below.

Figure 2. The mindset of job capability model



A broad descriptive overview of the model is first presented in next three paragraphs that follow, after which the research rationales and hypotheses are set out (sections 4.021 to 4.024). Then, the alternative model discussed in Chapter One (section 1.06) which proposes work engagement as an antecedent of learning goal orientation is also described.

In Figure 2 above, the mindset of job capability and its self-regulatory variables of learning goal orientation and avoid performance goal orientation are the primary exogenous variables of the model. All three variables, as dispositional antecedents, are posited to influence work engagement. More precisely, the effect of the mindset of job capability on work engagement is hypothesised to be partially mediated by the presence of learning goal orientation and the absence of avoid performance goal orientation. Thus, as explained in Chapter One section 1.09, a direct effect of the mindset of job capability on work engagement is also expected. Furthermore, learning goal orientation is hypothesized to exert direct effects on all the outcomes. Controlling for the direct effects of goal orientations, work engagement is posited to have incremental effects on all outcomes. In addition, work engagement is hypothesised to function as a partial mediator between learning goal orientation and the outcomes. Finally, controlling for the effect of learning goal orientation, it is also posited that work engagement will have a stronger relationship with feedback inquiry than with feedback monitoring. This comparative prediction is a step forward in increasing theoretical precision in that it allows to rank-order predicted effects with regard to its magnitudes (Edwards & Berry, 2010); it is further explained in section 4.023 below.

Furthermore, the incremental mindset of job capability is a distal predictor of the four proactive learning outcomes. However, these causal relationships are of secondary interest because distal relationships have effects that are small in magnitude as they operate through intervening variables (see Edwards & Christian, 2014). Indeed, it is the more relatively proximal predictors of the outcomes (learning goal orientation and work engagement) that are under focus in this model. To sum up, the model in Figure 2 is a chain or sequential mediational model, in which one part of the chain consists of a set of parallel mediators (learning goal orientation and avoid performance goal orientation) (see Preacher & Hayes, 2008).

In Heslin's (2010) model, as described in Chapter One section 1.06, the effect of the mindset of intelligence on work engagement is fully mediated by four variables: Zeal for development, view of effort, interpretation of setbacks and psychological presence. However, zeal for development is now substituted by learning goal orientation as the latter is more congruent with the mindset of job capability, as well as with the outcomes of proactive learning and development. On the other hand, view of effort, interpretation of setbacks and psychological presence are excluded as all these variables are part and parcel of work engagement. As discussed in Chapter Two, engaged workers view effort as a necessary condition to performance and exert effort even in the face of adversity (Kahn, 2010). Indeed the relationship of work engagement with the activated facet of conscientiousness (Inceoglu & Warr, 2012) is most certainly due to work effort, since work effort (e.g. industriousness) is part and parcel of conscientiousness (Roberts et al., 2014; see also Merino-Tejedor et al., 2015, who discuss the work effort and conscientiousness link). Engaged workers also demonstrate psychological presence in that they are focused and attentive when engaged (Saks, 2008; Kahn 2010).

Thus, from Heslin's (2010) theoretical model, only zeal for development, modified to learning goal orientation, is retained as link between mindset and work engagement. In addition, as discussed above in section 4.01, building on the concurrent operations of approach-avoidance motivation, avoid performance goal orientation is also included in the model. The research propositions represented in Figure 2 are now developed into hypotheses in the next sections below (section 4.021 to 4.023). The outcome variables (proactive learning and development, feedback seeking behaviours, and knowledge sharing) are introduced and discussed in section 4.0221 before the hypothesised links between learning goal orientation and outcomes are proposed.

#### 4.021 The effects of mindset of job capability on work engagement

The mindset of job capability refers to the beliefs workers hold regarding the malleability of their job-related knowledge, skills, and mental abilities (Maurer et al, 2003; Maurer & Lipstreu 2008; Van Vianen et al., 2011). Workers have either an incremental or an entity job capability mindset. In line with previous research indicating that mindsets in the educational domain trigger either adaptive or maladaptive self-regulatory goals, it is posited that the mindset of job capability is associated with domain-specific goal orientations (Van Vianen et al., 2011). Workers with an incremental mindset hold the belief that job capabilities are malleable and can be changed and improved. These workers have a predisposition to develop themselves by acquiring new work-related skills, mastering new work situations and improving their competence. They are concerned about intrapersonal standards, and are likely to possess a learning goal orientation (Van Vianen et al., 2011). In addition, it is posited that workers with an incremental mindset of job capability have low avoidance motivation and consequently hold low levels of avoid performance goal orientation. That is, they are not dysfunctionally concerned about the negative judgments from others on their levels of job capabilities, they focus on intrapersonal standards. They do not express concern about fear of failure in the learning context at the expense of missing out on acquiring new knowledge.

*Hypothesis 1:* The incremental mindset of job capability will be positively related to learning goal orientation.

*Hypothesis 2:* The incremental mindset of job capability will be negatively related to avoid performance goal orientation.

A learning goal orientation is foremost a marker of approach motivation. Similarly, in Chapter One, work engagement was also conceptualised as function of approach motivation. Approach motivation refers to the “...energization of behaviour by, or the direction of behaviour toward, positive stimuli (objects, events, possibilities)” (Elliot, 2006, p. 111). Workers with a learning goal orientation show a dispositional tendency to seek competence and master new situations at work (VandeWalle, 2001). A learning goal fosters adaptive affective, behavioural and cognitive reactions in learning situations, enabling workers to construe effort as a necessary condition for achievement. As the pursuit of competence is a driver of intrinsic motivation (Deci & Ryan, 2008) it can be argued that a learning goal orientation strengthens the stable aspect of motivation within work engagement. Furthermore, the positive experiences and outcomes of learning goal orientation leads to positive affect such as pride and joy (Dweck & Leggett, 1988). This positive energy can strengthen the positive-affective dispositional

basis of work engagement. Overall, a learning goal orientation can be construed as a personal resource that activates work engagement. To sum up, the approach motivation within learning goal orientation is expected to 'bind' with the approach motivation dimension within work engagement.

As noted in Chapter Three, successful goal striving and achievement is a joint process of promoting mastery-oriented approaches and inhibiting helpless-oriented approaches. Thus, alongside approach motivation, avoidance motivation is included in the link between the mindset of job capability and work engagement. Avoidance motivation is defined as the energization of behaviour by, or the direction of behaviour away from, negative stimuli (objects, events, possibilities)" (Elliot, 2006, p. 112). With an avoid performance goal orientation, workers avoid the disproving of their competence as well as the negative judgements relating to this state. Consequently, avoidance motivation is dysfunctional in learning and achievement settings. It is thus theorised that avoid performance goal orientation will be negatively related with work engagement given that work engagement connotes high levels of pleasant activation and resilience. (Warr & Inceoglu, 2012)

*Hypothesis 3:* Learning goal orientation will be positively related to work engagement.

*Hypothesis 4:* Avoid performance goal orientation will be negatively related to work engagement.

As mentioned in Chapter One, section 1.09, although mindsets operate principally through the frameworks that they create, that is, the goal orientations that they activate, they can also have direct effects on achievement or outcomes. The incremental mindset of job capability is directly linked with the positive view of effort (Blackwell et al., 2007), implying a source of dispositional achievement motivation, akin to the activated facets of conscientiousness (e.g., achievement orientation). On the other hand, work engagement involves effort expenditure, both under typical performance and when confronted with setbacks (Brown & Leigh, 1996; Bakker, 2011). This common factor of effort between these two focal constructs suggests the potential existence of a direct causal link with the proposition that an added source of positive view of effort from the mindset of job capability can bind with the effort expenditure characteristic (i.e. vigor) of the trait aspects of engagement.

*Hypothesis 5:* The mindset of job capability will be positively related to work engagement.

Therefore, construing all the above directional effects as a theoretically plausible chain reaction (Collins, Graham, & Flaherty, 1998) it is proposed that the incremental mindset of job capability

activates learning goal orientation which in turn influences the motivational component of work engagement. Likewise, it is proposed that the incremental mindset of job capability inhibits avoid performance goal orientation which in turn inhibits work engagement. Thus learning goal orientation and avoid performance goal orientation have concurrent mediational roles between the incremental mindset of job capability and work engagement.

*Hypothesis 6:* The effect of the incremental mindset of job capability on work engagement will be partially mediated by the parallel mediators of learning goal orientation and avoid performance goal orientation.

#### 4.022 Learning goal orientation and proactive learning behaviours

##### 4.0221 Proactive learning behaviours

In the extant literature, learning behaviours are represented through a large number of constructs such as informal learning, formal learning, incidental learning, active learning, voluntary learning, mandatory learning, continuous learning, workplace learning, deliberate practice, self-development, and proactive learning (Noe et al., 2014). These constructs overlap heavily, with the result that the definitions of learning behaviours are unclear and confusing (Noe et al., 2014; Tharenou, 2001). One way of characterising the nature of this type of psychological phenomena is to view it as a form of psychological nebula — a construct without well-defined boundaries or clear centre of gravity (Strohinger, 2015). Accordingly, proactive learning behaviour, as used in this research, can be viewed from the wider proactivity research framework which affords a more workable platform from which individual proactive learning behaviours can be viewed as distinct behaviours that connote both in-role and extra-role work behaviours (Parker & Collins, 2010). Proactivity involves three components: (a) anticipatory action (acting in anticipation to solve future problems), (b) taking control and causing change, and (c) self-initiation, an essential factor for both anticipatory action and control. Following Parker and Collins (2010), this research views proactivity as a marker of both in-role and extra-role behaviours as it is plausible to argue that engaged workers construe the boundaries of their role through a much wider perspective — blurring the distinction between in-role and extra-role behaviours (Morrison, 1994). As shown in Figure 2 above, proactive learning behaviours comprise of (a) proactive learning and development, (b) feedback seeking behaviours (feedback inquiry and feedback monitoring), and (c) knowledge sharing. These proactive learning behaviours are the essential ingredients of organisational effectiveness, connoting extra-role learning-related behaviours for the

benefit of both the self and the organisation. For example, in the medical field, administrators have recently coined the term ‘improvement science’ emphasising “... the importance of learning as an ethical commitment in health care” (Marshall, Pronovost, & Dixon-Woods, 2013, p. 420). Improvement science focusses on collaborative learning, it “...aims to generate local wisdom and generalisable or transferable knowledge, with robust, well established research methods applied in highly pragmatic ways” (Marshall et al, 2013, p. 419), which, is only possible if these distinct, but related, behaviours are present (Tannenbaum et al. 2010). Each of these learning behaviours is further explained in section 4.0222 where the links between learning goal orientation and these four behaviours are proposed.

#### 4.0222 Direct effects of goal orientations on proactive learning behaviours

Learning and development can be broadly defined as “The process of employees enhancing their human capital through acquiring knowledge, skills, abilities, and other characteristics” (Noe et al, 2014, p. 247). By extension, proactive learning and development relates to learning activities undertaken voluntarily by workers. These activities take place within and outside the job context. To highlight the proactive nature of the proactive learning and development construct it must be noted that it is different from formal learning and development which is mandatory. Proactive learning and development can be predicted by a range of dispositional predictors such as self-efficacy for development, proactive personality, conscientiousness and openness to experience (Beier & Kanfer, 2009). However, learning goal orientation is among one of the most prominent of all these predictors. A longstanding line of research has consistently shown that workers with a learning goal orientation have high motivation to learn (Colquitt et al, 2000), are intrinsically motivated to improve their work competence (Farr et al., 1993) and have aspirations to advance their careers to the extent that they undertake learning activities regardless of organisational support (Orvis & Leffler, 2011). Learning goal orientation is driven by the belief that abilities are malleable and this provides the impetus to learn by putting in effort and sustaining the effort despite the experience of difficulties as the latter are considered as normal encounters in the course of self-development. As Mussel (2013) argues, learning goal orientation it is one of the prominent intellectual investment traits that cluster with constructs of need for cognition (defined as the tendency to “ seek, acquire, think about, and reflect back on information to make sense of stimuli, relationships and events in their world” (Cacioppo et al., 1996, p. 198), typical intellectual engagement (the desire to understand the world with interest in a wide range of things accompanied persistence, energy and absorption), intrinsic motivation (performing a

behaviour for its own sake because it is satisfying and engaging in itself), intellect ( the personality sub-trait that denotes an active exploring mind with inquiring intellect ), and curiosity (the seeking of information, knowledge acquisition and learning).

*Hypothesis 7:* Learning goal orientation will be positively related to proactive learning and development.

Feedback seeking behaviour is not only a prominent component of proactive learning behaviours (Parker & Collins, 2010) but is also essential for individual and organisational performance and job satisfaction (Anseel et al, 2013). Feedback seeking relates to the gathering of useful performance feedback about oneself with regard to how well one is doing on the job (Ashford & Cummings, 1983). A large number of antecedents of feedback seeking have been proposed. These are, costs and value, job and organisational tenure, feedback attitudes (e.g., positive view of feedback lack of apprehension towards feedback, belief that feedback is valuable, a sense of accountability to act on the feedback) (Dahling, Chau & O'Malley, 2012; Anseel et al., 2013), goal orientation, and the credibility and accuracy of the feedback (Kinicki et al, 2004). Goal orientation is one of the most important individual-level predictors of feedback seeking behaviours in that it can “influence how individuals cognitively process the cost and value of feedback seeking opportunities” (VandeWalle, 2003, p. 581). The most common attribute of feedback seeking behaviour studied is the feedback seeking method. These are feedback inquiry and feedback monitoring (VandeWalle, 2003). Feedback inquiry refers to actively and directly seeking feedback from others, such as work supervisor and co-workers. Feedback monitoring refers to the indirect way of observing and inferring performance feedback from the work environment and behaviours of others.

Individuals with a learning goal orientation have the focal aim of increasing their competence. On facing failure of any sort in achievement situations, they view feedback as insightful diagnostic information for changing strategies and making requisite revisions. Thus, they value feedback and do not perceive any cost to their self-esteem or self-presentation when they seek, gather, and receive that feedback. Therefore, holding a learning goal orientation promotes both feedback inquiry and feedback monitoring (VandeWalle & Cummings, 1997).

*Hypothesis 8:* Learning goal orientation will be positively related to feedback inquiry

*Hypothesis 9:* Learning goal orientation will be positively related to feedback monitoring.

As work has become increasingly knowledge-based, knowledge sharing has emerged as an important construct in the workplace. Knowledge sharing is defined as “the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures” (Wang & Noe, 2009, p. 117). Failure to share knowledge impedes intra-organisational learning, decreases the organisation’s ability to transfer knowledge and learning from mistakes (Haas & Park, 2010). As Wang and Noe (2009) note, organisations can no longer rely only on staffing and training systems to ensure competitive advantage. The available knowledge resource that exists within an organisation has to be exploited for the overall benefit of the organisation. Unsurprisingly then, knowledge sharing is positively related to performance indicators such as reductions in production costs, efficiency in production, innovation and sales growth (Wang & Noe, 2009). Knowledge sharing is also related with the effectiveness of work design features such as team work (Mesmer-Magnus & DeChurch, 2009). Shared knowledge is often in the forms of tacit knowledge, that is, knowledge which is not easily articulated or readily absorbed — thus it is not to be found in the official repository of an organisation but resides within individuals in the forms of undocumented ideas, creative insights and know-how (Polanyi, 1983). Thus, knowledge sharing refers to the direct purposeful provision and exchange of knowledge between workers, it can be conceptualised as a form of proactive learning behaviour because the act of sharing knowledge is related with learning. Although knowledge sharing is intended for the benefit of the receiver, knowledge sharing has learning consequences for both the sharer and the recipient. Knowledge sharing depends on many antecedents such as availability of time (Constant, Sproull, & Kiesler, 1996), virtual and physical proximity (Chen, Chang, & Tseng, 2012), cognitive ability, psychological safety, personality attributes and achievement motivation and goal orientations (Wang & Noe, 2010). Knowledge sharing is a complex activity associated with costs and benefits in that, while it is an opportunity to display one’s knowledge and to also rehearse and learn, it can also expose one’s lack of knowledge, especially when the latter is used and evaluated by the knowledge recipients. Learning goal orientation is one of its most prominent antecedent variables as it is the only variable that connects learning with its related affective, behavioural and cognitive correlates (Dweck & Leggett, 1988; Swift, Balkin, & Matusik, 2010; Matzler & Mueller, 2011). Thus, those with a learning goal orientation not only engage in knowledge sharing to increase and rehearse their own knowledge about work tasks (as they are driven by the goal of continually learning and always looking for new learning goals), but they do so because they are not anxious about revealing any knowledge gaps that might become evident as they share knowledge. Indeed it can be assumed they would use this diagnostic information as a motivation for further learning.

*Hypothesis 10:* Learning goal orientation will be positively related to knowledge sharing.

#### 4.023 Incremental effects of work engagement on proactive learning behaviours

As an outcome variable, proactive learning and development is associated with the characteristics of work and the worker (Feldman & Ng, 2009). By virtue of their sound design, jobs have motivational attributes that promote learning. More precisely, jobs that are active, challenging, and characterised by high demands and high latitude promote learning and development behaviours. This phenomenon is known as the active learning hypothesis (Karasek & Theorell, 1990). However, studies on the active learning hypothesis have yielded mixed results (Taris, Kompier, De Lange, Schaufeli, & Schreures, 2003), showing that jobs with high control and low demands are also related with learning (Van der Doef, & Maes, 1999), the active learning hypothesis is still under investigation (Hausser, Schulz-Hardt, & Mojzisch, 2014). But beyond this ongoing debate on the link between job characteristics and learning, there is more consistent agreement that proactive learning and development is related with the personal characteristics of workers. Intrinsically motivated workers have an inherent need for growth and progression, which is largely fulfilled through continuous improvement via learning (Oldham & Hackman, 2010). In line with this, one of the earliest studies on the proactive outcomes of engagement found that engaged workers undertake self-initiated work-related learning activities for their own development (Sonnentag, 2003). The main explanatory rationale behind this link is that engaged workers are enthusiastic individuals who care about their work, who are absorbed with it and have the willingness to persistently expend effort in continuously improving the general work situation and task outputs. It can be further proposed that this learning motivation is driven by the intrinsic motivation within work engagement itself. This explanation is congruent with other studies reporting high correlations between work engagement and intrinsic motivation (e.g., Gagné & Deci, 2005; Stone, Deci, & Ryan, 2009, Van Beek et al., 2012) and between intrinsic motivation and participation in non-mandatory training and development (Sankey & Machin, 2014). Indeed, in a qualitative study, Engelbrecht (2006) reported that highly engaged midwives are described by peers as individuals who are voluntarily involved in many work-related self-development activities are proactive in seeking new information for development. In the same vein, Bakker et al. (2012) tested the work engagement and proactive learning and development link further by measuring the latter through supervisor reports and reported that engaged employees undertake discretionary learning activities on the job. The situation-activated nature of work engagement also suggests that an engaged worker benefits from job resources such as supervisor support and feedback on performance. Consequently, considering both the trait and state nature of work engagement, it can be posited that at

both the cross-sectional and longitudinal level of analysis, work engagement will predict proactive learning and development above and beyond the effects of goal orientation.

*Hypothesis 11:* Controlling for learning goal orientation work engagement will positively predict proactive learning and development.

The relationship of feedback in the workplace with work engagement has been a focal point since the inception of work engagement. Performance feedback (i.e., feedback on work performance given by supervisors) is a central antecedent to work engagement. This suggests that for feedback to be received, it must be, to some extent, also sought. Thus, it is posited that engaged workers actively seek feedback on performance. In his model of engagement, Kahn (2010) argues that, with the benefit of psychological safety (the perception of being able to perform one's work role without the fear of negative consequences to their self-image, status, and career), engaged workers seek out feedback and voice their opinions openly without the fear of negative judgement (Kahn, 2010). Recent research also shows that engaged workers actively express their dissenting views to supervisors and co-workers (Kassing et al., 2012). Thus there is some empirical indication emerging that engaged workers value the exchange of information, whether it relates to acts of seeking information (Ghughtai, 2013; Tims, Bakker, & Derks, 2012; Petrou et al., 2012) or providing feedback (e.g., voicing out opinions). As such, the situation-activated nature of work engagement is likely to boost feedback seeking propensities of engaged workers over and above the effects of learning goal orientation. In addition, given the link between work engagement and proactive learning and development, it is likely that engaged workers will value feedback seeking as feedback is of diagnostic value for self-initiated learning (Tannenbaum et al., 2010). Furthermore, given that work engagement is an active work-related state of mind linked to proactivity, engaged workers are likely to use feedback inquiry more than feedback monitoring, the latter is a less active model of feedback seeking. As mentioned above in section 4.001, this is a comparative prediction that offers more precision as it rank-orders the magnitude of effects.

*Hypothesis 12:* Controlling for learning goal orientation, work engagement will predict feedback inquiry.

*Hypothesis 13:* Controlling for learning goal orientation, work engagement will predict feedback monitoring.

*Hypothesis 14:* Controlling for learning goal orientation, work engagement will be more strongly related with feedback inquiry than with feedback monitoring.

Research on the dispositional antecedents of knowledge sharing shows it is related with the personality traits of conscientiousness, agreeableness and openness (Matzler et al., 2008). Conscientious individuals are consistently engaged in extra-role behaviour which is itself linked with knowledge sharing behaviours (Matzler et al., 2006). Agreeableness implies altruism and enthusiasm for helping others, it promotes cooperation among workers hence it leads to knowledge sharing. Workers with high levels of openness demonstrate intellectual curiosity which leads them to reach out in knowledge exchange with others as they seek new insights from co-workers. The literature on helping behaviours suggests that positive affect is one of the dispositional determinants of helping behaviour (Carlson, Charlin & Miller, 1988). According to Watson et al., (1988), individuals with high levels of positive affectivity experience pleasurable interactions with their environment. These individuals attract social contact (Lucas & Diener, 2003) while showing consistent attention to those with whom they interact (Isen, 1970). All these dispositional variables are positively correlated with work engagement, forming part of the dispositional basis of the affective-motivational construct (Wefald et al., 2012). Thus, by extension it can be argued that engaged workers have the propensity to share knowledge with co-workers. Indeed some cross-sectional evidence exists for this link (Chen, Zhang, & Vogel, 2011) although no solid theoretical rationales have been provided. Of note is that Chen et al. (2011) reported a strong association between work engagement and knowledge sharing. However, they also cautioned that not only is their finding based on cross-sectional data but their sample is from a collectivistic population — data were obtained from two Chinese knowledge-based R&D (research and development) organisations where knowledge sharing is perhaps more established than in other organisations.

Furthermore, knowledge sharing is a pro-social organisational behaviour (Wang & Noe, 2010). As work engagement is a strong predictor of organisational citizenship behaviour (Christian et al., 2011) it follows that work engagement can be predictive of knowledge sharing. Thus, work engagement is potentially more generally linked with knowledge sharing due to organisational commitment which is part and parcel of work engagement. Research suggests that workers with a strong sense of affective organisational commitment — those with an emotional attachment to their organisation — often solve organisational problems through the sharing of their acquired knowledge to others even those with whom they have weak ties (Constant, Sproull, & Kiesler, 1996). As discussed in Chapter Two, work engagement is strongly underpinned by a state of psychological safety (Kahn, 2010; 1990). A longstanding strand of inquiry has shown that psychological safety is a strong predictor of knowledge sharing (Edmondson & Lei, 2014). Given that engaged workers usually benefit from

psychological safety at their workplace, they are likely to share knowledge with co-workers without any fear or threat to their self-image. Thus, taking into account the dispositional basis of work engagement and its situational conditions, it is expected that work engagement will strongly predict knowledge sharing, over and above learning goal orientation.

*Hypothesis 15:* Controlling for learning goal orientation, work engagement will predict knowledge sharing.

Finally, within the framework of the incremental importance of work engagement over learning goal orientation in predicting the four outcomes, lies the implication that work engagement is a partial mediator between learning goal orientation and outcomes. As explained in Chapter One section 1.132, a commonly accepted theoretical view is that work engagement fully mediates the link between its antecedents (job and personal resources) and outcomes (Christian et al., 2011). However, as Christian et al. (2011) have suggested, there is some evidence indicating that work engagement is a partial, rather than full mediator, between resources and outcomes.

*Hypothesis 16:* Work engagement is a partial mediator between learning goal orientation and the four outcomes.

#### 4.024 Reverse causation effects between outcomes and work engagement.

As argued, work engagement is posited to predict proactive learning and development behaviours. However, the reverse possibility of proactive learning and development influencing work engagement has not been evaluated (see Noe et al., 2014), although it is widely acknowledged that the availability for learning and development opportunities provided by the workplace is a key resource that drives work engagement (Bakker, 2011, Breevaart, Bakker, & Demerouti, 2014; Schaufeli & Salanova, 2007). The availability of learning and development opportunities in the workplace and proactive learning and development are distinct constructs. Although theory in work engagement research is not specific about the mandatory or optional nature of learning and development opportunities as work engagement resources, it would seem that both mandatory and non-mandatory opportunities for learning and development in the workplace can co-exist independently. In this sense, proactive learning and development may partially overlap with undertaking optional learning and development in that both construct are makers of learning motivation. Thus, while work engagement is

an antecedent of proactive learning and development, the latter can also be viewed as an antecedent of work engagement. As Noe et al. (2014) note: “Learning enhances knowledge and skills, but it can also lead to important individual and organizational outcomes by enhancing motivation, engagement, and commitment through enhanced job confidence and the desire to reciprocate for the investment and opportunities provided” (p. 263).

*Hypothesis 17:* Controlling for learning goal orientation, proactive learning and development will predict work engagement.

Knowledge sharing as an outcome of work engagement has received little empirical attention. However, in the first ever empirical study on the link between work engagement and knowledge sharing, the authors (Chen et al., 2011) noted that the reverse link could well be a possibility, although they principally referred to the recipients of knowledge sharing rather than the knowledge sharer: “Knowledge sharing may also foster work engagement; that is, through knowledge sharing, employees find new task solutions, thus achieving good performance, which then motivates them to become engaged in their work” (p. 1026). Knowledge sharing, as an activity based on social exchange, is a rewarding experience likely to trigger positive affective states in the mind of the knowledge sharer as he or she enjoys moments of deep satisfaction when the knowledge recipient is helped and expresses gratitude. This is likely to invigorate the knowledge sharer with enough positive affect that could consolidate work engagement. Furthermore, as a result of knowledge sharing it is likely that the competency of the knowledge sharer will increase through the interaction and collaboration with the recipient of the shared knowledge. Thus the knowledge sharer becomes the recipient of new knowledge which then acts as a resource for driving work engagement.

*Hypothesis 18:* Controlling for learning goal orientation, knowledge sharing will predict work engagement.

Work engagement is positively related with feedback seeking behaviours. Similar to proactive learning and development, it is possible that the reverse is true, and feedback seeking might be an antecedent of work engagement. Conceptually, the relationship between feedback seeking and work engagement is difficult to predict. As mentioned above, performance feedback (an antecedent of work engagement that is distinct from feedback seeking behaviour) is a predictor of work engagement (Bakker 2011; Breevaart et al., 2014). However, those who seek feedback will only experience work

engagement if they receive accurate and quality feedback (Whitaker & Levy, 2012). Hence, although feedback seeking is positively related with feedback orientation defined as “an individual’s overall receptivity to feedback” (Linderbaum & Levy, 2010. p. 1372), the link from feedback seeking to work engagement may be mediated through performance feedback and its quality and utility. Hence for this reason the feedback seeking to work engagement link is examined as a research question.

*Research question 1:* Controlling for learning goal orientation, do feedback seeking behaviours predict work engagement?

#### 4.025 An alternative model of to represent the mindset of job capability.

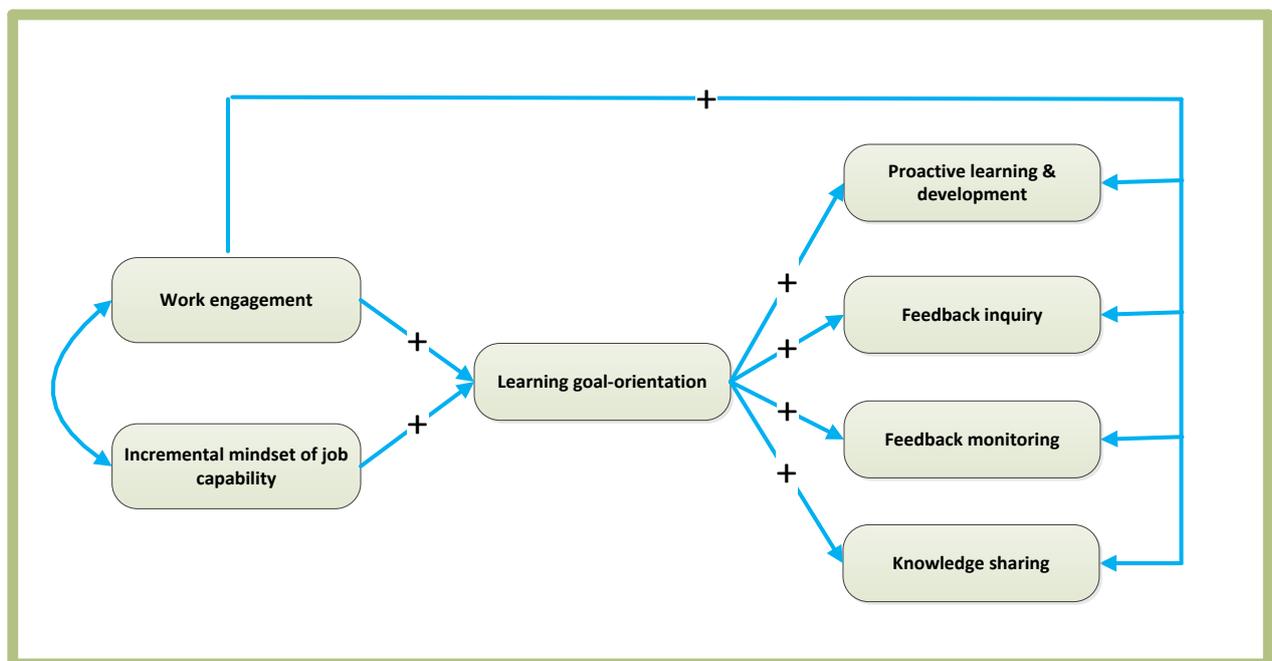
As mentioned in Chapter One section 1.06, an alternative model to the mindset of job capability model can be proposed. In this model, work engagement and the incremental mindset of job capability are the exogenous variables predicting goal orientations. This model is shown below in Figure 3. Apart from work engagement as an antecedent of learning goal orientation (and the exclusion of avoid performance goal orientation from the model) all the other links between the variables are identical with the model in Figure 2 above.

The main thrust of this alternative model is that at, enduring work engagement is synonymous with intrinsic motivation, a central aspect of self-determination theory. Intrinsic motivation is a powerful antecedent of learning goal orientation (Cerasoli & Ford, 2014). There is an important conceptual overlap between work engagement and self-determination theory, which was thoroughly discussed in Chapter Two, section 2.0431. To recapitulate, self-determination theory proposes that there are three types of motivation: amotivation, intrinsic motivation and extrinsic motivation (Gagné et al., 2010; 2014). Amotivation is the absence of motivation for or towards an activity. Intrinsic motivation refers to the undertaking an activity for its own sake and, extrinsic motivation relates to undertaking activities for instrumental reasons. However, in addition to external regulation (doing an activity only for obtaining reward or for avoiding punishments), extrinsic motivation has two other dimensions that adaptively approach the concept of intrinsic motivation. These are identified regulation (doing an activity because one deeply identifies with it) and integrated regulation (identifying with the value of an activity to the point that the activity becomes part of one’s self). Intrinsic motivation, and these two dimensions of extrinsic motivation (identified regulation and integrated regulation) can be combined together, representing autonomous motivation. Thus, optimal functioning is a function of

intrinsic motivation and extrinsic motivation. Work engagement and (contextual) autonomous motivation correlate at  $r = 0.80$  (Gillet et al., 2013). On the other hand, autonomous motivation is positively related with learning goal orientation (Cerasoli & Ford, 2014; Ciani et al., 2011), suggesting that raw motivational drive from intrinsic motivation is guided by learning goal orientation towards performance or outcomes. More precisely, motives are too general to be of much predictive utility, their power need to be harnessed and focussed towards specific goals (Johnson et al., 2013; Thrash & Elliot, 2003;). Given that the model in Figure 1 postulates a directional hypothesis of learning goal orientation predicting work engagement the two models must be considered as competing models and given the two time point data of this research temporal precedence can be used to differentiate between the models (Williams, 2012). However, the work engagement and learning goal orientation link can also be reciprocal in nature. Thus, building on the proposition that work engagement represents autonomous motivation, and high approach motivation, the following longitudinal research question is proposed:

*Research question 2:* Is the work engagement and learning goal orientation link reciprocal?

Figure 3. The alternative model of mindset of job capability.



#### 4.03 The mindset of emotion model

Compared to job capabilities, emotions are much harder to define (Kleinginna & Kleinginna, 1981, Panksepp, 1998). This is expected because psychological constructs are essentially common-or-garden terms with "... notoriously complicated grammars" [of meaning] (Maraun, 1998, p. 436). Hence psychological constructs have imprecise definitions. The next two paragraphs below address the definition problem of emotions after which emotion regulation is discussed leading to the development of the mindset of emotion model. The discussion on emotion regulation precedes the mindset of emotion definition because it is more pragmatic to do so, as will become clear shortly. In addition, this section (4.03) necessarily borrows heavily on dominant cutting-edge definitions and discussions of emotional phenomena. This should *not* be viewed as an inability or unwillingness of the author in re-expressing constructs and other precisely articulated discussion points. Indeed, imprecise re-expressions of constructs are at the heart of the definitional problem in psychology (Barrett, 2015a). Moreover, this difficulty is quite pronounced in emotion research itself (see Cuff, Brown, Taylor, & Howat, 2014; Panksepp, 1998). Thus, it is important to maintain fidelity in construct description.

Drawing attention to disagreements on the meaning of emotion, Pessoa (2008) notes that independent definitions of emotion focus on (1) drives and emotions (as elicited by rewards and punishers), (2) conscious and unconscious evaluation of events (i.e. appraisal-driven emotions), (3) primal emotions (e.g., fear and anger), (4) extended emotions (e.g., pride and envy), and (5) the complex links of emotions to the body<sup>20</sup>. Given this diversity, Pessoa (2008) skips addressing the definition problem in emotion. However, one way to resolve this is to follow Panksepp (2003), who argues that "... emotional processes have many attributes including motor-expressive, sensory-perceptual, autonomic-hormonal, cognitive-attentional, and affective-feeling aspects [and] a general definition of emotion should include all these characteristics, phrased partly in neuroconceptual terms" (p. 4). This is a remarkable step towards an integrative definition. A general definition of emotion is indispensable so one can use emotions as "units" in explanatory models. Panksepp (1998) has provided such a potential standard definition:

When powerful waves of affect overwhelm our sense of ourselves in the world, we say we are experiencing an emotion. When similar feelings are more tidal — we say we are experiencing a mood. These feelings come in various dynamic forms and are accompanied by many changes in

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<sup>20</sup> An example is gut-feeling (Mayer, 2011).

behaviour and action readiness, as well as the activities of our visceral organs. Emotions are typically triggered by world events; they arise from experiences that thwart or stimulate our desires, and they establish coherent action plans for the organism that are supported by adaptive physiological changes. These coordinated brain and bodily states fluctuate as a function of time, as a function of minor changes in events, and especially as a function of our changing appraisal of these events. To be overwhelmed by an emotional experience means the intensity is such that other brain mechanisms, such as higher rational processes, are disrupted because of the spontaneous behavioural and affective dictates of the more primitive brain control system. (p. 47)

Of note is that Panksepp's (1998) definition of emotion relates to emotions at the tertiary processes level, that is, they are at the thought-penetrated or appraisal-driven level. Panksepp (1998) proposes other sets of definitions of emotion at the primary-process level that are based on the subcortical systems of the brain. These definitions are labels for brain networks of SEEKING, FEAR, RAGE, LUST, CARE, PANIC AND PLAY. They are capitalised to highlight the specialised vocabulary for the evolutionary foundations of the brain and to demarcate them from secondary and tertiary-process brain functions (these latter two are explained shortly). These seven terms are not the "usual garden varieties of emotional terms" (Panksepp, 2008, p. 402) but are technical labels referring to evolutionarily-dedicated brain networks defined at the neural level of analysis. Panksepp (2008) thus overcomes the language-based limitations that constrict the definitions of psychological constructs in his attempt to define primal neuropsychologically distinct emotions that do *not* depend on context or information-based appraisal. As he notes:

One must wonder what role should language have in our search to discover the nature of affective experience in human brains? If emotional feelings evolved long before there were words on the face of the earth, surely traditional emotional words cannot have priority in the final scientific answer. It must also be addressed through the neurobehavioral, neurophysiological and neurochemical functions of mammalian brains. We must generate scientific, neurophenomenological languages that are up to the difficult task in front of us. (p. 402)

Thus, as Panksepp (2011) explains: "... it is useful to divide evolved brain functions in terms of primary-processes (tools for living provided by evolution), secondary-processes (the vast unconscious

learning and memory mechanisms of the brain), and tertiary-processes (the higher order functions of mind permitted largely by the cortical expansions that allow many thought-related symbolic functions) (p. 1792).

The seven basic emotion terms of SEEKING, FEAR, RAGE CARE, LUST, PANIC/GRIEF AND PLAY, represent the unconditioned primary-process emotion networks. All of these are instinctual volitional systems, they are distinct but they nevertheless interact massively (see also McNaughton & Corr, 2014; Pessoa, 2014). These systems were detected through causal, rather than correlational, analysis on animal brains by electrical stimulation of the brain methodology (ESB). ESB are techniques that stimulate discrete subcortical neural loci that leads to coherent emotional behaviours in terms of rewards and punishments, representing instinctual behaviours and raw feelings. The SEEKING system reflects the behaviours of the basic appetitive drive for rewards and pleasurable experiences. The FEAR system, when activated leads to worry, anxiety, freezing and fleeing behaviours. RAGE is about the exhibition of aggressiveness and involves fight rather than flight (avoidance). The CARE system underpins nurturing and loving behaviours that lead to social bonding and regulates distress and pain management. The LUST system is at the base of all reproductive drives. The PANIC system underpins the expression of social separation distress, loneliness and the thoughts of missing loved ones. The PLAY system drives social interaction built on physical contact, humour and the seeking and expression of fun. Although these emotional systems cannot be identical across all species they are sufficiently similar in anatomical and neurochemical terms, to illuminate homologous psychological functions in humans (Panksepp, 2012). This is discussed further, towards the end of this section where two of these systems (SEEKING and PLAY) are integrated with the dispositional basis of work engagement on the basis of work engagement's position within core affect.

Moreover, there is often confusion between the terms of moods and emotions, but these can be differentiated too (Parkinson, Totterdell, Briner, & Reynolds, 1996). "Emotions are relatively intense, short-lived feelings that are linked to their antecedent causes, demand attention, and interrupt ongoing cognitive processes and behaviors ..., moods are less intense states that are not linked to their causes and do not interrupt thought processes and behaviors" (George, 2011, p. 148). In the I-O psychology literature, emotions and moods are mostly used interchangeably and the distinction is blurry, although some authors strive to make a distinction between the two (George, 2011). In this thesis, following Panksepp (1998), emotion is differentiated from mood. Of note is that the inter-relationships between mood, emotion and affect is still a matter of ongoing discussions — affect is often treated as the

superordinate construct consisting of emotions and moods (George, 2011; Gross, 2015), but on the other hand, emotion is considered as "... the superordinate concept, with affect being the term for the experiential aspect of emotional arousal" (Panksepp, 2007, p. 403). In line with Panksepp (2007), emotion is here used as a superordinate concept, with affect as the experiential aspect of emotional arousal. Therefore, there is a distinction between "emotion" and "affect or feeling", these two concepts are often conflated (Damasio, 2001). The importance of this distinction is explained in the next paragraph where emotion regulation is discussed.

Emotions have sweeping influences on human behaviour (Koole, 2009; Gross, 2015), yet many individuals adaptively control and change their emotional processing. As Oscar Wilde (1890/1992) wrote: "I don't want to be at the mercy of my emotions. I want to use them, to enjoy them, and to dominate them" (p. 85). Emotion regulation has direct consequences on our daily lives. Longstanding research has shown that emotion regulation affects work performance and motivation (Lord, Diefendorff, Schmidt, & Hall, 2010), physical and mental health (Sapolsky, 2015; Tamir et al., 2007), interpersonal relationships, and many other, if not all, realms of life. Emotion regulation is defined as the modification and control of emotional responses (Tamir & Mauss, 2011). Individuals regulate their emotion-related behaviours to pursue instrumental or prioritised goals with the aim of making changes in their own physiology, motivated behaviours, cognitions and social environment (Tamir, 2011). In the workplace, emotion management has received considerable attention, with the acknowledgment the ability to manage one's emotions effectively in the workplace is both instrumental and developable (Gibbons et al., 2006). Research on emotion regulation has witnessed an exponential growth over the past decades (Gross, 2015) and the integration of this research poses a real challenge to researchers as it has developed across multiple disciplines within psychology (Koole, 2008). The main unit of study in emotion regulation is the emotion regulation strategy and although there are unconscious, automatic and deliberate or overt ways of emotion regulation, current research has mostly focused on the deliberate means of regulation strategies. There are virtually endless types of emotion regulation strategies that one can adopt (Gross, 2001). There are also many ways of classifying these diverse types of emotion regulation strategies. As emotion regulation relates to the deployment of regulation strategies emotion regulation is primarily a cognitive activity.

More importantly, emotion regulation refers to the regulation of emotion through the regulation of affective-feelings<sup>21</sup>. Affective-feelings or affects are the "... the valenced phenomenal experiences (qualilia) that come in desirable (positive) and undesirable (negative) forms and varieties" (Panksepp, 2011, p. 1791). Moreover, affective-feelings are the "mental representation of the physiological changes that characterise emotions. Unlike emotions, which are scientifically public, feelings are indeed private, although no more subjective than any other aspect of the mind, for example ...the mental solving of a mathematical problem" (Damasio, 2001, p. 781). Damasio argues that feelings are the direct consequences of emotions and notes that "If emotions provide an immediate response to certain challenges and opportunities faced by an organism, the feeling of those emotions provides it with a mental alert. Feelings amplify the impact of a given situation, enhance learning, and increase the probability that comparable situations can be anticipated" (Damasio, 2001, p.781). Referring back to how Panksepp (1998) parses the various attributes of emotion (mention in the first paragraph of this section) one can also say that emotion regulation refers to the cognitive, attentional, and behavioural attributes of emotion.

As noted in section 1.07 of Chapter One, parsimonious methods of classifying emotion regulation strategies have been proposed by Parkinson and Totterdell (1999) and Gross and Thompson (2007). To reiterate, Parkinson and Totterdell (1999) classified emotion regulation strategies into four clusters along the lines of engagement (i.e., whether an emotional experience is approached or avoided) and the mode of regulation (i.e., whether the regulation is effected through behavioural or cognitive mode). Thus four types of emotion regulation strategies are obtained: cognitive-engagement, cognitive-disengagement, behavioural-engagement, and behavioural-disengagement. On the other hand, Gross and Thompson (2007) view emotion regulation from a temporal perspective, suggesting that the timing at which an emotion regulation is activated and deployed influences the success of a strategy (Gross, 2011). The model is termed the "process model of emotion regulation" and holds that emotions can be regulated at five stages in the emotion generative process. These are situation selection, situation modification, attentional deployment, cognitive change, and modulation of experiential, behavioural or physiological responses. The model focusses mainly on antecedent-focussed emotion regulation strategy and response-focussed emotion regulation strategy. Thus two emotion regulation strategies

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<sup>21</sup> The term affective-feeling is deliberate and specific because there are different kinds of feelings or affects, e.g. homeostatic affects (hunger and thirst) and sensory affects (sound, touch, smell and taste) which are all situated within the subcortical terrains of the brain (Panksepp, 2011).

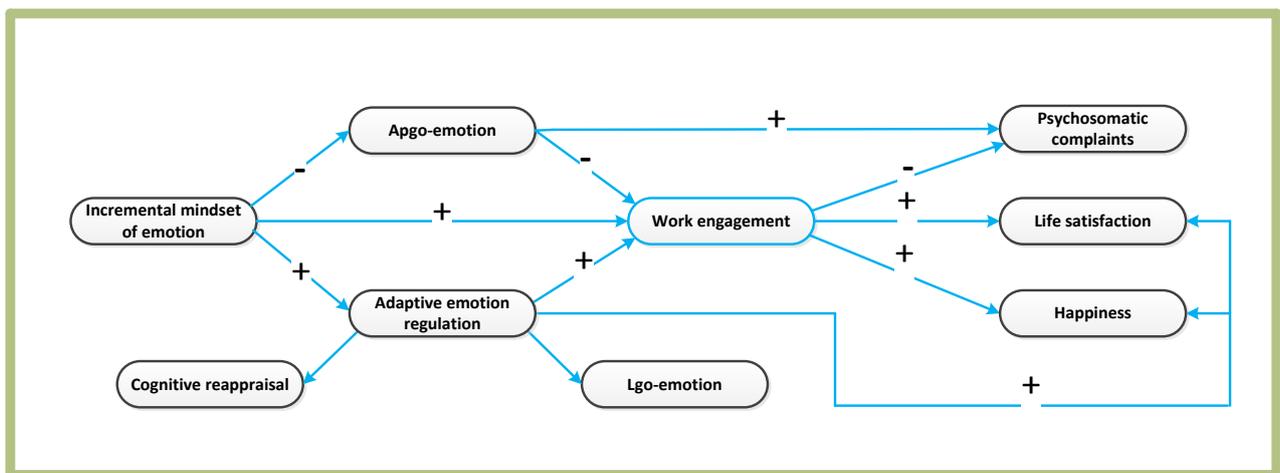
proposed by Gross and Thompson (2007) are cognitive reappraisal, an antecedent-focussed emotion regulation strategy, and expressive suppression, a response-focussed emotion regulation strategy. Most of the studies in the field of emotion regulation are based on the emotion regulation strategies of cognitive reappraisal and expressive suppression. Cognitive reappraisal is an emotion regulation strategy involving attention deployment towards changing the subjective interpretation of an emotion-eliciting situation (Gross, 2007). Expressive suppression is the deliberate inhibition of expressive behaviour whilst one is emotionally aroused by either positive or negative affect (Gross, 2013). According to the process model of emotion regulation, as per the five stages described above, the emotion generative process usually precedes the emotion regulation processes (more on this in section 4.031 where the emotion regulation to work engagement directional link are discussed).

Current research in emotion regulation is focussed on its content (e.g., which emotions people value) and process (i.e., strategies of emotion regulations and competencies involved). Emotion regulation occurs after the emotion generative process. However, purposeful adaptive emotion regulation needs to be triggered, and there is currently little research on the initiation of emotion regulation (Gross 2015, Tamir & Mauss, 2011; Tamir et al., 2007). Extending research on mindsets to the emotion domain, Tamir et al. (2007) proposed the mindset of emotion. They hypothesised and detected individual differences in the mindset of emotion. That is, Tamir et al. (2007) found that individuals hold one of two different beliefs about the malleability of emotions: emotions are seen as either fixed or malleable. Thus, the mindset of emotion is one of the antecedents of emotion regulation, with the proposition that if one does not believe emotions are controllable and changeable, then one is less likely to deploy adaptive emotion regulation.

Experimental and field research has consistently shown that the incremental mindset of emotion is related to the adaptive emotion regulation strategy of cognitive reappraisal (Tamir et al., 2007; Kappes & Schikowski, 2013; Romero et al., 2013). The incremental mindset of emotion is however unrelated to expressive suppression. This is because the mindset of emotion is focussed on emotion experience and not on emotion expression (Tamir et al., 2007). Individuals make a distinction between emotion experience or generation and emotion expression — they can separate the experience of emotion from its very expression (Tamir et al., 2007) and are able to skilfully mask their emotion expression without changing their emotion experience. This is at the heart of the emotion regulation strategy of surface acting discussed in Chapter One section 1.081. Surface acting is the purposeful modification of emotional displays without altering inner feelings which, it is argued, has detrimental effects on well-being (Grandey et al., 2015).

Therefore, in the mindset of emotion model, three emotion regulation strategies are included that can be construed in terms of approach-avoidance motivation. Cognitive reappraisal (re-evaluating an emotion-eliciting situation in such a way so as to decrease its potential emotional negative impact) and learning goal orientation for emotion (pursuing the goal of improving one’s ability to manage emotions positively) represent approach motivation. Avoid performance goal orientation for emotion (pursuing the goal of avoiding to showing incompetence in managing emotions) represents avoidance motivation. With reference to the classification of emotion regulations strategies discussed above, cognitive reappraisal and learning goal orientation for emotion refer to modes of cognitive engagement (approach oriented self-regulation that is cognitively based) ,and avoidance performance goal orientation for emotion refers to cognitive disengagement (i.e., avoidance oriented self-regulation that is cognitively based). The mindset of emotion model is represented below in Figure 4, with outcome variables of subjective-wellbeing: psychosomatic complaints, life satisfaction, and happiness.

Figure 4. Mindset of emotion model.



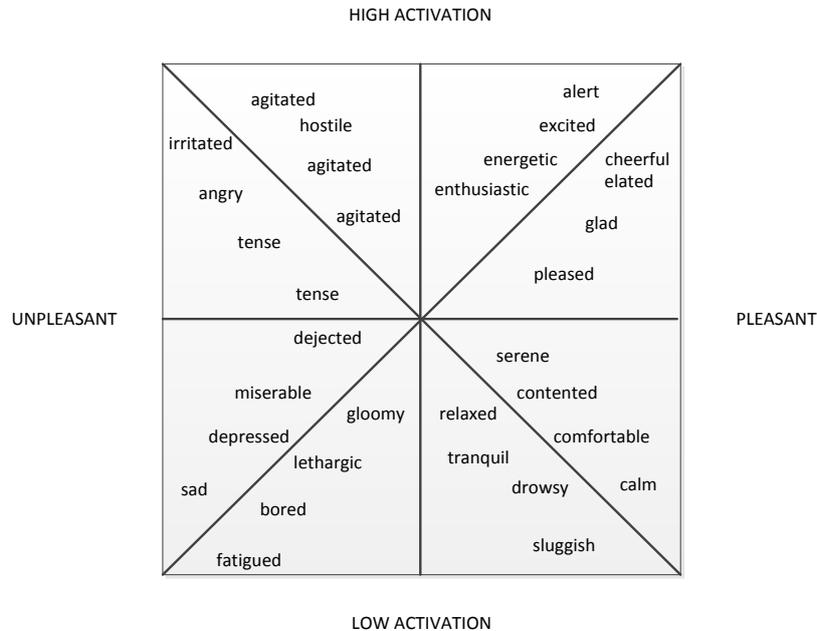
As can be seen above in Figure 4, cognitive reappraisal and learning goal orientation for emotion are represented by a higher order factor of ‘adaptive emotion regulation’. Adaptive emotion regulation represents the shared variance between cognitive reappraisal and learning goal orientation for emotion. The incremental mindset of emotion, adaptive emotion regulation and avoid performance goal orientation for emotion are the primary exogenous variables in the model. All these variables are posited to influence work engagement. The effect of the mindset of emotion on work engagement is hypothesized to be partially mediated through the presence of adaptive emotion regulation and the

absence of avoid performance goal orientation of emotion. Moreover, a direct positive effect of the mindset of emotion on work engagement is also expected. Adaptive emotion regulation has a direct positive effect on life satisfaction and happiness. Avoid performance goal orientation for emotion has a direct effect on psychosomatic complaints. Controlling for the effect of adaptive emotion regulation on life satisfaction and happiness, work engagement will have positive effects on the latter two outcomes. Controlling for the positive relationship between avoid performance goal orientation for emotion on psychosomatic complaints, work engagement will be negatively related with psychosomatic complaints. Finally, work engagement is hypothesised to function as a partial mediator between goal orientations and the outcomes, that is (1) work engagement is a mediator between adaptive emotion regulation and life satisfaction and happiness, and (2) work engagement is a mediator between avoid performance goal orientation for emotion and psychosomatic complaints.

Furthermore, the incremental mindset of emotion is a distal predictor of the three subjective well-being outcomes. However, these causal relationships are of secondary interest because distal relationships have effects that are small in magnitude as they operate through intervening variables (see Edwards & Christian, 2014). Indeed, the more relatively proximal predictors of the outcomes (adaptive emotion regulation, avoid performance goal orientation for emotion and work engagement) are the ones under focus in this model. To sum up, the model in Figure 3 above is a chain or sequential mediational model (Hayes, 2013), in which one part of the chain consists of a set of parallel mediators (adaptive emotion regulation and avoid performance goal orientation for emotion) (Preacher & Hayes, 2008). The research propositions represented in Figure 4 are now developed into hypotheses in the next sections below (section 4.031 to 4.034). The outcome variables (happiness, life satisfaction and psychosomatic complaints) are introduced and discussed in section 4.0321 before the hypothesised effects of adaptive emotion regulation and avoid performance goal orientation on subjective well-being are discussed.

However, before all the hypotheses are developed, it is crucial to revisit work engagement's location within the circumplex model of emotion that was mentioned in Chapter One. Here, a more in-depth analysis and discussion is presented by mapping core affect onto the model of affective neuroscience as proposed by Panksepp (1998). This connects work engagement with the primary-process emotional networks, in search of its dispositional basis. The circumplex model is shown in Chapter One is reproduced again in Figure 5 below for ease of exposition.

Figure 5. The circumplex model, adapted from Warr et al. (2013)



Core affect relates to the “...neurophysiological state consciously accessible as the simplest raw (nonreflective) feelings evident in moods and emotions” (Russell, 2003, p. 148)”. According to Russell (2003) core affect exists without any labels. As can be seen, core affect posits that emotions can be represented by two axes. One is the pleasantness axis (the subjective feeling of how one is doing in terms of hedonic valence of good-bad, pleasant-unpleasant, and appetitive-aversive) and the other is the activation axis (a sense of energetic mobilization of one’s physiological state ranging from activation to deactivation). It is claimed that work engagement can be located in the upper-right hand corner of the circumplex (Warr et al., 2013), within the high activation and pleasant emotions quarter.

Puzzlingly, the mainstream work psychologists specialising in work motivation have neglected the role of affective feelings in motivation research (Seo et al., 2004; Warr et al., 2013) as they have all followed psychology’s cognitive revolution. However, a small group of researchers, mainly Seo and colleagues (Seo, Barrett, & Bartunek, 2004; Seo, Bartunek, & Barrett, 2010; Warr et al., 2013) have paid some attention to this. For example, Seo et al. (2004) have proposed a theoretical model postulating that affective experience (i.e., emotional feelings) at work influences work motivation in

direct and indirect ways. Building on the circumplex model of affect they argued that pleasantness and activation have direct and indirect effects on three behavioural outcomes of motivation: direction (behavioural choices), intensity (amount of effort exerted) and persistence (maintenance of initial action). A state of high activation and high pleasantness represents the affective-motivational drive (a blend of emotion and motivation) that directly leads to action, or the observable behavioural outcomes of direction, intensity and persistence. This direct link exists because of the primal instinct for action-readiness (more on this in the next paragraphs when the model of affective neuroscience and engagement are discussed). On the other hand, the indirect link of pleasantness and activation to these three behavioural outcomes are mediated through cognitive routes such as goal level, goal commitment, and other components of motivation such as expectancy judgements, utility judgements, and progress judgements. This theoretical model has been tested recently (Seo et al., 2010) and the propositions were generally supported with more evidence for indirect links. However, it seems the study designs was inadequate in several regards as it used a non-worker sample and, a simulation exercise — with the result that the indirect and direct effect sizes found were not as strong as theoretically suggested by the model. However, Warr, Bindl, Parker, and Inceoglu (2014) have shown that work engagement can be directly measured by affective adjectives situated in the top right corner of Figure 5 above (this was discussed in Chapter Two, section 2.0434). To reiterate, Warr et al. (2013) showed that a set of adjectives representing high activation and pleasant affect (enthusiastic, excited, inspired and joyful), can be all jointly used as a predictor of organisational outcomes of organisational advocacy, extra-role contribution, voice, taking charge, strategic scanning, problem prevention and proficiency. These adjectives are used in a scale termed MultiAffect Indicator. It uses a simple question format asking how often workers have felt the following feelings (the adjective terms) at work.

The finding of Warr et al. (2013) is in accord with the affective-motivational dimension of work engagement and its massively blended characteristic of ‘emotion and cognition’ (see Chapter Two section 2.033, where this was discussed in detail). Importantly, with reference to affective neuroscience, we are here referring to emotion at the tertiary-process rather level rather than the primary-process level, as the affective and cognitive dimension of emotion cannot be differentiated at the tertiary level. Differentiation is possible only at the primary process level, although it must be noted that the emotional systems still interact at the primary process level, in both excitatory and inhibitory ways (see Panksepp, 2011; Pessoa, 2008, 2014). Thus, perhaps the study of Warr et al. (2013) suggests that, for all practical purposes, work engagement can be reduced to a superordinate affective-emotional construct, within which motivation is nested. Indeed, as noted in Chapter Two, work engagement

overlaps with the construct of vigor, which is an operationalization of positive affectivity, as measured by item words of cheerful, active, lively, alert and energetic through the Profile of Moods States Scale (McNair, Lorr & Droppleman, 1971). In the comparison of work engagement with workplace mindfulness (defined as the degree to which individuals are mindful in their work setting, see Chapter Two section 2.0433), Dane and Brummel (2013) emphasize that work engagement is more affective than cognitive (see Chapter Two section 2.0433). Indeed work engagement is highly related with positive affect (e.g.  $r = 0.69$ , see Wefald et al., 2012, 2011) and this suggests that it potentially has a strong dispositional basis that can be theoretically mapped by linking it with work on affective neuroscience.

The sources of core affect lies at the primary-process emotional level (Panksepp, 2008; Russell, 2003). As Panksepp (2005, p. 30) puts it "... the bedrock of emotional feelings is contained within the evolved action apparatus of mammalian brains." So, the primary-process networks proposed by Panksepp (1998) are relevant for further elaboration on the dispositional basis of work engagement. As hinted on earlier, although the emotion systems proposed by Panksepp (1998) are based on animal models, they are at the base of the affective neuroscience model of human personality that holds much promise to provide an evidence-based foundation for understanding tertiary-process emotions in humans (Davis & Panksepp, 2011). As Panksepp (2011) notes, in order to understand functions of the human mind investigators need to accept the "... grand but empirically robust premise — that higher aspects of the human mind are ... strongly linked to the basic neuropsychological processes of "lower" animal minds". (p. 1792)

The hierarchical model of emotion of Panksepp connects three nested levels at which emotions exist: from the primary-process emotions to secondary-process functions (e.g., learning/memory) and to the tertiary process functions (cognitive thinking) (Panksepp, 2012; Russell, 2003). Thus, work engagement, as located within core affect, can be linked with the primary-process emotions. Among the seven primary-process, two emotional networks are relevant for the purpose of giving more evidential support to work engagement's position within core affect. These two are the systems of SEEKING and PLAY. These map onto the upper right hand side of the core affect circumplex shown above in Figure 5. SEEKING is the brain reward system; it is a general appetitive-motivational system that underpins basic survival in that it allows one to gather resources. The emotion system of SEEKING is based on neurochemicals of the ancient brain system, its neural circuits are situated in "extended lateral hypothalamic (LH) corridor" (Panksepp, 1998, p145.). SEEKING is at the base of all enthusiastic

exploration, intrinsic engagement, investigation, curiosity, interest, expectancy, foraging and all appetitive behaviours. It is the most important of all systems as it underpins all the other six systems, including FEAR, in that, for example, it mediates the pursuit of safety when FEAR is activated (Panksepp, 1998). The SEEKING system is the biggest motivation apparatus for human and all animals — without it no being would survive. As Panksepp (1998, p.145) puts it, “... the SEEKING system has a characteristic feeling tone — a psychic energization that is difficult to describe but is akin to that invigorated feeling of anticipation we experience when we actively seek thrills and other rewards. Clearly this type of feeling contributes to many distinct aspects of our active engagement with the world.” PLAY is the neural system of the brain that underpins the generation of rough-and-tumble play. In animals, as well as in humans, play has important effects such as the learning of physical skills that encourage us to test the perimeters of our knowledge and limits. It enables individuals to construct their place within their social fabric, “... it is the epigenetic construction of the social brain” (Davis & Panksepp, 2011, p. 1995) and it leads to the experience of humour, laughter, fun, and happiness. Indeed, PLAY is potentially one of the centres of intrinsic motivation. Those who have intrinsic motivation in their work tasks can afford to make little distinction between work and play — this thought is somehow implied by Mark Twain (1876/ 1999):

Work consists of whatever a body is obliged to do, and ... play consists of whatever a body is not obliged to do. And this would help [Tom Sawyer] to understand why constructing artificial flowers or performing on a tread-mill is work, while rolling ten-pins or climbing Mont Blanc is only amusement. (p. 9)

Collectively, SEEKING and PLAY, are two of the three systems (the third being CARE) underpinning positive emotions and approach motivation (see Davis & Panksepp, 2011). The SEEKING and PLAY systems neatly represent the neural basis of the upper-right quadrant of the circumplex model, where the dispositional correlates of work engagement are theoretically situated.

Hence, the central proposition here is that highly engaged workers have active SEEKING and PLAY systems. However, these systems are at the primary-process level. For these to operate purposefully, emotion regulation is vital. By extension, the dispositional affective basis of work engagement requires adaptive cognitive resources, so engaged workers can function optimally in all work-related circumstances that include unavoidable negative work-related events (Bledow et al, 2011).

#### 4.031 The effects of mindset of emotion on work engagement.

As depicted in Figure 4, cognitive reappraisal and learning goal orientation for emotion are represented as a higher order construct, termed adaptive emotion regulation. Cognitive reappraisal is one of the most studied emotion regulation strategies. It is an emotion regulation strategy involving attention deployment towards changing the subjective interpretation of an emotion-eliciting situation. It is defined as "...a form of cognitive change that involves construing a potentially emotion-eliciting situation in a way that changes its emotional impact" (Gross, 2003, p. 349). In parallel, learning goal orientation for emotion (Rusk et al., 2011) is a recently proposed adaptive emotion regulation strategy. In line with learning goal orientation, learning goal orientation for emotion refers to the pursuit of improving one's ability to manage emotions (Rusk et al., 2011). Adopting a learning goal orientation for emotion enables individuals to construe emotional difficulties as opportunities for growth and development in the realm of managing emotions. Both cognitive reappraisal and learning goal orientation for emotion are approach-related motivational constructs. It can be argued that at the raw affective and motivation level, these two constructs share the broad network of approach mechanisms across the neuraxis (Elliot & Thrash, 2010). These two emotion regulation constructs are positively related (Rusk et al. 2011) and their shared variance represents the higher order factor of adaptive emotion regulation.

*Hypothesis 19:* Cognitive reappraisal and learning goal orientation for emotion will be represented as a higher order construct of adaptive emotion regulation.

The incremental mindset of emotion refers to the belief that one can control and change one's emotion. This basic belief has direct implications for the regulation of emotion as it facilitates adaptive emotion regulation at a crucial stage, that of initiation (Tamir & Mauss, 2011). That is, unless one believes emotions are controllable and changeable, one will not start any kind of emotion regulation. As mentioned earlier, Tamir et al. (2007) found a positive correlation between the incremental mindset of emotion and cognitive reappraisal. More precisely, in a longitudinal study on the link between the mindset of emotion and emotion regulation, these authors found that individuals with an incremental mindset of emotion used cognitive reappraisal more frequently than those who had an entity mindset of emotion. Cognitive reappraisal is an antecedent focussed strategy of emotion regulation involving the active reconsideration of emotion eliciting events, before the emotion has had time to have any impact. Thus the emotional effect of events are either changed or decreased. As individuals who have an

incremental mindset of emotion believe emotions are highly malleable, they purposefully exercise control on the emotion eliciting process they experience. On the other hand individuals with an entity mindset use cognitive reappraisal less frequently as they have less inbuilt motivational resources and incentives for doing so (Tamir et al., 2007). For these individuals, emotions are fixed, possibly overwhelming, and powerful. So it is predicted that cognitive reappraisal is positively related to incremental mindset of emotion. In the same vein, those with an incremental mindset of emotion would also have an intrinsic tendency to pursue learning goal orientation for emotion in that they value the mastery over their emotion regulation by learning from emotional difficulties with the goal to enhancing their emotion regulation. .

In addition to the positive link between the incremental mindset of emotion and adaptive emotion regulation, it is posited that individuals with an incremental mindset of emotion will have low avoidance motivation. Avoid performance goal orientation for emotion is a marker of avoidance motivation in the realm of emotion regulation. Building on goal orientation theory in the learning domain, Rusk et al. (2011) also proposed the construct of avoid performance goal orientation for emotion, defined as pursuing the goal of avoiding showing incompetence in managing emotions. As those with an incremental mindset of emotion seek to improve their emotion regulation abilities, they are likely to react adaptively with emotion regulation failure and will thus not be concerned about pursuing the goal of avoiding incompetence in emotion regulation. Instead they consider failure in emotion regulation as inevitable, and they view this as a learning opportunity for improving emotion regulation.

*Hypothesis 20:* The incremental mindset of emotion will be positively related to adaptive emotion regulation (higher order construct representing shared variance between cognitive reappraisal and learning goal orientation for emotion).

*Hypothesis 21:* The incremental mindset of emotion will be negatively related to avoid performance goal orientation.

Engaged workers experience positive and negative emotions at work (George, 2011). There is evidence to suggest that engaged workers with high positive affect are less influenced by negative events in that they recover quickly. Their positive affectivity acts like a buffer, enabling them to maintain their work engagement level (Bledow et al, 2011). For this to occur, engaged workers

habitually use adaptive emotion regulation strategies. Within the emotion regulation and emotion generation interface, the target of an emotion regulation strategy is always the emotion generation process (Gross, 2015). Viewed from this angle, work engagement can be considered as the emotion generation source, and adaptive emotion regulation strategy as emotion regulation tool. Thus, once adaptive emotion regulation strategy (i.e. the shared variance between cognitive reappraisal and learning goal orientation for emotion) is triggered from the incremental mindset of emotion, it targets the activated positive emotions within work engagement, resulting into the successful management of emotions. This sequence of events, from emotion regulation to emotion generation, is counter to the conventional directional process in which emotion regulation is posited to unfold (from emotion generation to emotion regulation). However, postulating links from emotion regulation to emotion generation is not unusual (Gross, Sheppes & Urry, 2011) as the temporal sequence between emotion generation and emotion regulation is complex in that both processes can co-occur in parallel, and emotion regulation can precede emotion generation too. As Gross et al. (2011) note:

Emotion-regulatory processes may even precede emotion-generative processes at times. For example, before going to work, one may make plans to take one's children to the park after work, knowing that this will help to relieve work-related stress. In this example, the emotion-regulatory manoeuvre (situation selection) is set in motion before the relevant emotion has even been generated (by work-place stressors). (p. 775)

This is applicable to the mindset of emotion model with the incremental mindset of emotion to emotion regulation and work engagement chain link. Thus, because an individual has an incremental mindset of emotion, which gives rise to relatively stable adaptive emotion regulation tendencies, he or she is already predisposed to managing emotions adaptively during periods of fluctuating engagement at work.

Cognitive reappraisal has a reduced physiological cost for the individual. This is because it is associated with reduced physiological activation (Gross, 1998; Ray, Wilhelm, & Gross, 2008), and low cognitive cost as it requires few or no cognitive load for emotion regulation — no off-task attention and no constant self-monitoring for masking negative emotions with positive sham expressions. Thus cognitive reappraisal does not deplete one's cognitive, emotional and physical resources. In a study on the emotion regulation strategies of service workers across a wide range of occupations, Yagil (2012) found that work engagement is a full mediator between deep acting (the process of modifying one's

internal affect so it matches with one's outwards expressions prescribed by ones work requirements — deep acting is comparable to cognitive reappraisal) and job performance. This suggests that work engagement can be consolidated by cognitive reappraisal. In the same vein, pursuing the goal of learning to improve one's emotion regulation abilities has an adaptive function: it influences cognition, affect and behaviours such that one is open to viewing emotional setbacks as opportunities for learning and improving emotion regulation. As mentioned above, learning goal orientation for emotion is positively related with cognitive reappraisal (Rusk et al., 2011). Therefore, adaptive emotion regulation strategies (represented by the shared variance of cognitive reappraisal and learning goal orientation for emotion) changes the way one thinks about a situation in order to decrease its emotional impact (i.e., before the emotion is even generated) and motivates workers to learn from their emotional regulation failures. Thus, it has a buffering effect on negative events at work and bonds with the raw positive emotions associated with work engagement. This leaves the engaged worker dedicated and focussed in the pursuit of work tasks in such a way that he or she is not distracted by hindrance demands that may otherwise tax the investment of the self in work tasks.

In line with the concurrent operation of approach and avoid motivation explained earlier in Chapter Three, the concurrent operation of approach and avoid motivation is potentially in operation during emotion regulation episodes as well. That is, while adaptive emotion regulation strategies are active, potential maladaptive emotion regulation tendencies need to be disinhibited for adaptive emotion regulation to function effectively. As mentioned above, avoid performance goal orientation for emotion is about pursuing the goal of avoiding showing incompetence in managing emotions. Rusk et al. (2011) have shown that avoid performance goal orientation for emotion is positively related with depressive symptoms and rumination. This is because adopting an avoid performance goal for emotion leads to avoidance of efforts to change negative emotions as failure to succeed at emotion regulation is construed as direct evidence of incompetence. It is thus theorised that avoid performance goal orientation will be negatively related to work engagement. As discussed in Chapter One, section 1.02, mindsets may have a direct effect on achievement. In this regard, there is evidence that the incremental mindset of emotion is directly linked with markers of optimal emotional functioning such as high self-esteem, low stress, and absence of depression (Castella et al., 2013; Tamir et al., 2007). Thus, the incremental mindset of emotion may have a direct effect on work engagement as well.

*Hypothesis 22:* Adaptive emotion regulation will be positively related to work engagement.

*Hypothesis 23:* Avoid performance goal orientation for emotion will be negatively related to work engagement.

*Hypothesis 24:* Incremental mindset of emotion will be positively related to work engagement.

Finally, construing all the above directional effects as a plausible chain reaction (Collins, Graham, & Flaherty, 1998), it is proposed that the incremental mindset of emotion activates adaptive emotion regulation which in turn activates the affective component of work engagement. Likewise, it is proposed that the incremental mindset of emotion inhibits avoid performance goal orientation for emotion which in turn inhibits the affective component of work engagement.

*Hypothesis 25:* The effect of the incremental mindset of emotion on work engagement will be partially mediated by the parallel mediators of adaptive emotion regulation and avoid performance goal orientation for emotion.

#### 4.032 Adaptive emotion regulation, avoid performance orientation for emotion and subjective-wellbeing

##### 4.0321 Subjective well-being

Subjective well-being is a broad construct without a single agreed index (Busseri & Sadava, 2012; Warr, 2012). Its conceptual breadth poses an intractable measurement challenge (Krueger & Stone, 2014). Research on subjective well-being is based on distinctions made among (1) psychological and physiological well-being; (2) state and trait well-being; (3) context free and specific well-being (e.g. workplace well-being); (4) affective and cognitive well-being; and (5) the emphasis on positive and negative affect (Warr, 2012). Therefore, a feasible way to study subjective well-being is to first delineate or select which aspects one needs to study as this has the benefit of instilling some conceptual clarity into what is being measured.

Subjective well-being is conceptualised with a tripartite model consisting of cognitive well-being in the form of high life satisfaction, affective well-being in the form of the presence of high positive affect (e.g., happy, cheerful, pleased, joy) and the absence of low negative affect (e.g., sad, depressed, upset, angry). Although these three components have intuitive appeal, their inter-related causal structure is a subject of ongoing discussions. Five configurations can be found in the literature (Busseri & Sadava, 2012). Although each configuration is underpinned by its specific set of theoretical point, they are broadly equivalent in that the constituent tripartite system is the same. The

differentiation lies at the level of the causal structure among the three constituent components. Research on this is ongoing, and it is unlikely that consensus will emerge from this debate soon (Brown et al., 2014). As such, each of configurations is valid in its own right. Therefore, for the practical end of research, choices between these models are optional because the tripartite nature of subjective wellbeing is undetermined (Busser & Sanaa, 2012). For this reason the configurations are only briefly described below as the causal structure among the components of subjective-wellbeing is not the main issue at hand here.

The first configuration treats life satisfaction, positive affect, and negative affect as three separate components (a “correlated traits” model). The second configuration considers subjective well-being as a higher order latent factor representing the shared variance among life satisfaction, positive affect, and negative affect (a reflective latent model). The third configuration considers positive affect and negative affect as predictors of life satisfaction (a causal model). The fourth is that subjective well-being is a composite of positive affect, negative affect and life satisfaction (a formative latent model). The fifth configuration treats subjective well-being as an idiosyncratic configuration of positive affect, negative affect, and life satisfaction, that is different levels of each component can exist within an individual in different ways (e.g., high life satisfaction, high positive affect and low negative affect or low life satisfaction, moderate positive affect and moderate negative affect).

In this thesis, a modified version of the first configuration is adopted. It is modified in that negative affect is substituted with psychosomatic complaints so that a subjective indicator of physical health, as well as presence of negative affect, is obtained. This approach is not uncommon in the measurement of subjective wellbeing as physical health is an important part of subjective well-being. Physical health itself is a multidimensional broad construct and it refers to both objective and subjective states with research revealing that subjective measures of physical health have a reliable concordance with measures of objective health (Gina et al., 2013). Thus, with the measurement of psychosomatic complaints, a measure of subjective physical health is obtained and this fits with the research agenda. Indeed, early research on the effects of work engagement linked it with the absence of psychosomatic complaints — this is further explained in section 4.033.

#### 4.0322 Direct effects of self-regulatory variables on subjective-wellbeing

The habitual deployments of emotion-regulation strategies have differential long term cumulative effects on subjective well-being. That is, adaptive emotional regulation strategies such as cognitive reappraisal and learning goal orientation for emotion are positively related with subjective well-being (Gross & John, 2003; Rusk et al, 2011), and maladaptive emotion regulations strategies are negatively related with subjective well-being. Cognitive reappraisal was one of the first adaptive emotion regulation strategies to be investigated with respect to its long term effect on well-being (Gross and John, 2003). At its core, cognitive reappraisal is targeted at down-regulating potential negative emotion-eliciting events through deliberate reinterpretations. This diminishes the experience of negative affect and promotes the experience of positive affect. Thus it has a direct impact on the affective aspect of well-being. That is, those who use cognitive reappraisal frequently experience more happiness. Controlling for the effect of extraversion, cognitive reappraisal has an incremental effect on happiness or the experience of positive affect (Hagan, Kraft, & Corby, 2009). This suggests that cognitive reappraisal is a significant variable worth studying because extraversion itself, an individual level variable, is an important long term predictor of subjective well-being (Gale, Booth, Mottos, Kuhn, & Diary, 2013). This implies that cognitive reappraisal, as a construct of cold cognition and goal-directed behaviour, guides raw positive affect towards positive ends. Rusk et al. (2011) found that holding a learning goal orientation for emotion was positively related with cognitive reappraisal, but more importantly, in one of their studies, they found that a learning goal orientation for emotion was negatively related with rumination and depressive syndromes. Again, as suggested earlier, those with a learning goal orientation for emotion are more likely to be open to learning from negative emotions. Taken together, adaptive emotion regulation fosters happiness and life satisfaction.

Building on research in learning goal orientations, in the education domain, where avoid performance goals are related with depression (e.g., Siderites, 2005; Tuominene-Soini, Salmela-Aro, Niemivirta, 2008) and maladaptive affective outcomes (Elliot et al., 1999), Rusk et al. (2011) showed that avoid performance goal orientation for emotion (i.e., pursuing the goal of avoiding to show any potential incompetence at managing emotions) predicts depressive syndromes in a student sample. Rusk et al. (2011) suggest this is strong evidence that avoiding providing evidence of incompetence at managing emotions has a unique effect on the development of depressive symptoms. Comparing the effects of avoid performance goal orientation in the learning domain with that of emotion, Rusk et al. (2011) argue that while avoid performance goal for learning causes individuals to equate failure on academic tasks as an inadequacy in a specific domain (i.e., learning), avoid performance goal for

emotion has implications for multiple, if not all, realms of life. Rusk et al. (2011) argue that by adopting avoid performance goal orientation for emotion, individuals also avoid experiencing positive emotions as they fear the failure of regulating these emotions too. In the same vein, these individuals also avoid making any efforts to change negative emotions because failure in this realm also provides even further confirmatory evidence of incompetence at emotion regulation.

Emphasizing the maladaptive pattern of cognition, emotions and behaviours noted in the realm of avoid performance goal orientation for learning, Rusk et al. (2011) argue that adopting avoid performance goals for emotions leads to lack of effort in managing emotions, shallow processing of emotions and to negative emotions about negative emotions that lead to “negative meta-emotions”. Rusk et al. (2011) also found that avoid performance goal orientation for emotion is positively related with rumination and thought suppression, both of which are markers of maladaptive emotion regulation. There is increasing evidence that emotional responses, such as chronic negative affect, have direct influences on physical health (Gross, 2013). More precisely, there is evidence that emotional avoidance strategies are positively related with a range of psychosomatic complaints (van Middendorp, et al., 2008; Rimes & Chalder, 2010). For example, research in psychosomatic medicine shows that individuals who believe that the expression of emotions or distress is evaluated negatively by others develop social anxiety and psychosomatic symptoms (Clark & Wells, 1995), and this spirals down to the experience of even lower negative affect (Ferster, 1973). Thus, extrapolating on the findings of Rusk et al. (2011) and building on past findings in psychosomatic medicine, it can be posited that avoid performance goal orientation for emotion will have a direct effect on psychosomatic symptoms.

*Hypothesis 26:* Adaptive emotion regulation will be positively related to life satisfaction and happiness.

*Hypothesis 27:* Avoid performance goal orientation for emotion will be positively related with psychosomatic complaints.

#### 4.033 Incremental effects of work engagement on subjective-wellbeing.

Until recently, there was little research interest on whether work-related wellbeing leads to context-free wellbeing. From an organisational effectiveness point of view, the context-free wellbeing to work-related wellbeing link is more relevant and it has understandably received much research attention. Context free well-being of workers has been regarded as a precious business asset for a long

time. In the early 1900's, well before I-O psychology was even recognised as a scientific discipline, employers in the industrialised world realised the importance of this link. They argued that "A happy, contented woman turns out more work and better work than an unhappy one. Therefore anything we can do to make the people who do our work at ease in mind and body we regard as good business management, just as we regard fire-insurance, improved machinery and labour-saving devices" (JAMA editorial, 1912, pp.1382 -1383). Research since then has proposed that happy workers are more productive than unhappy workers (Fisher, 2010). However, as mentioned in Chapter Two, section 2.01, work-related wellbeing, as an antecedent, has direct impacts on context-free wellbeing because work is a source of economic security, social interaction, recreation, and friendship (Pavot & Diener, 2004; Ross, et al., 2006). In contrast, unemployment is associated with decreases in wellbeing (life satisfaction), that is remedied only upon re-employment (Clark, Diener, Georgellis, & Lucas, 2013). Thus, it is now widely accepted that work-related wellbeing contributes to the context-free subjective wellbeing of workers, and various conceptualisations of work-related wellbeing such as job satisfaction and work-related affect have been used to investigate these propositions (Bowling, Eschleman, & Wang, 2010).

Work engagement, as a work-related wellbeing construct, is rather new in that it has not been extensively used in studying the link between work-related well-being and context-free wellbeing although some authors have hinted on the need for a work-related wellbeing construct that can combine job satisfaction and work-related affect (e.g., Page & Vella-Brodrick, 2009). Associations between work engagement and markers of subjective wellbeing have been investigated from the inception of the work engagement research in academia. For example, Hallberg and Schaufeli (2006) reported negative associations between work engagement and emotional exhaustion, cynicism, depressive symptoms, psychosomatic complaints, and sleep disturbances. Innstrand et al. (2011) reported negative cross-lagged effects of work engagement on anxiety and depression using a two-wave study with a two year time interval. Hakanen and Schaufeli (2012) reported negative cross-lagged correlations between work engagement and life satisfaction and depressive symptoms using three-wave data over a time period of seven years. In the same vein, Simbula and Guglielmi (2013) reported cross-lagged effects of work engagement on subjective-wellbeing, measured as mental health problems using the General Health Questionnaire (this measures dysfunction in three domains: Social dysfunction, anxiety and loss of confidence). Thus, work engagement is predictive of subjective wellbeing and this is so for a number of reasons. At the most simple level of explanation, work engagement is negatively related with markers of subjective well-being because work engagement, as theorised and operationalised through the

Utrecht work engagement scale (UWES), is negatively related with burnout. However, beyond this seemingly simple relationship, there are further explanatory mechanisms that account for the work engagement to subjective wellbeing link. Work engagement, through its generation of positive affective states, leads to happiness and this occurs through multiple pathways. As explained in Chapter Two, focussed attention is a hallmark of work engagement (Kahn, 1992; 2010; Saks, 2008) and focussed attention itself is strongly related with momentary and enduring happiness. Evidence for this is found in the field of mind-wandering and mindfulness. Mind-wandering can be broadly defined as the situation in which “the executive control shifts away from a primary task to the processing of personal goals” (Smallwood & Schooler, 2006, p. 946). This shift occurs without conscious intention and the awareness that one’s mind has drifted away as it (the mind) triggers and pursues other thoughts unrelated to ongoing activities. Emerging research (e.g., Killingsworth & Gilbert, 2010) suggests that mind-wandering is potentially a cause of unhappiness, although there is some evidence suggesting unhappiness causes mind-wandering (e.g., Mason, Brown, Mar, & Smallwood; 2013; Smallwood, Fitzgerald, Miles, & Phillips, 2009). Using an experience sampling methodology and time-lag analyses, Killingsworth and Gilbert (2010) showed that people report being less happy when their minds wander than when they are focussed. Thus, the habitual and frequent failure to prevent the mind from changing focus (i.e., from task-focus to off task-focus), followed by the maintenance of focus on that same off-task episode, is a driver of negative affect that leads to unhappiness. Maintaining focus and experiencing the present, as happens when workers are engaged, is linked with happiness because it prevents individuals from reviewing the past or dysfunctionally contemplating the future, and this keeps one’s mind out of the depressive loops. Mindfulness, an opposing concept to that of mind-wandering (mentioned briefly in Chapter Two, section 2.0433) is the dispositional tendency to maintain sustained attention. It is a mental mode whereby one focusses attention to events unfolding in the present moment, and accordingly predicts self-regulated behaviours and positive emotional states (Brown & Ryan, 2003). Accordingly, workplace mindfulness is defined as the degree to which individuals are mindful in their work setting (Dane & Brummel, 2013). Recent research has shown that workplace mindfulness is positively related with two of work engagement’s dimensions, vigor and dedication, (although the positive relationship of workplace mindfulness with absorption is low) (Dane & Brummel, 2013). In the same vein, research shows that work engagement is negatively related with boredom at work, a state that has negative impacts on general subjective wellbeing (Schaufeli, 2013). Boredom induces immediate affect-based behaviours that have direct effects resulting in distress and depressive complaints (Hoof & Hoof, 2014). Importantly, distress and depressive complaints are distinct from feelings of work-related boredom (which fades away when an employee ceases to pursue

the boredom inducing activity) in that boredom is transient but its effects of distress and depressive complaints relate to the affective states of employees in the non-work domain.

Early research on work engagement, which looked at its distinctiveness vis-à-vis other job related attitudes, showed that it is negatively related with psychosomatic complaints (Hallberg & Schaufeli, 2006). Since then further research looking at the direct link between work engagement and subjective physical health has shown that work engagement predicts psychosomatic health (Schaufeli & Bakker, 2004). The explanatory basis of this link has not been justified enough and as a result the work engagement-subjective physical health link has been seriously questioned. As Maslach (2011) sceptically noted as health is determined by other factors beyond the workplace, there is little evidence to suggest that work engagement has any important influence on physical health. However, work engagement is negatively related with work stress and, work stress, as a psychosocial work factor, is positively related with both objective and subjective physical health. That is, although the causes of psychosomatic complaints such as musculoskeletal disorders are multifactorial and are related with ergonomic factors (e.g., physically demanding work, repetitive movements, vibration, awkward postures) and other personal factors (e.g., genetics and high body mass index) there are also psychosocial antecedent factors as independent causes of psychosomatic complaints. In this regard, there is a large compendium of studies showing that self-reported work stress, monotonous work, organisational factors such as time pressure and poor work conditions, high demands and poor job control are related with psychosomatic complaints and these links are mediated through complex physiological pathways related with perceived muscle tension (Bongers, 1993; Larsman, Kadefors, & Sandsjo, 2013; Nahit et al., 2003). Given that work engagement is a work-related wellbeing construct, it is expected to be negatively related with psychosomatic complaints. As a form of autonomous motivation, work engagement should predict subjective wellbeing as positive links between autonomous motivation and subjective wellbeing have been reported (Blais, Briere, Lachance, Riddle, & Vallerand, 1993) whereas negative links between controlled motivation and subjective well-being have also been noted (Fernet, 2013).

As mentioned at the beginning of this section, work engagement can be reduced to a superordinate positive affective construct, more precisely as a combination of high pleasure and high activation positive affect (Warr et al., 2014). Positive affect is associated with physical health and this may explain the link between work engagement and subjective physical well-being. Although the evidence is far from conclusive, positive affect is linked with positive markers of health and there are

both direct and indirect pathways that explain this association (Pressman & Cohen, 2005). The direct pathways include the direct links between positive affect and health practices (through sleep quality, exercise and diet), autonomic nervous system activation (through the dampening of the sympathetic nervous system, decreasing heart rate, and blood pressure), hypothalamic-pituitary-adrenal (HPA) axis activation (through the release of hormones of cortisol), and endogenous opioids (exercise and laughter). There is also some emerging evidence that positive affect predicts lower levels of proinflammatory cytokines (Stellar et al., 2015). Cytokines are communication molecules that are “regulators of host responses to infection, immune responses, inflammation and trauma” (Dinarello, 2000, p. 503). Taking all the above into consideration, it is posited that work engagement will have direct and incremental effects on happiness, life satisfaction and psychosomatic complaints.

*Hypothesis 28:* Controlling for adaptive emotion regulation life, work engagement will be positively related to happiness and life satisfaction.

*Hypothesis 29:* Controlling for avoid performance goal for emotion, work engagement will be negatively related with psychosomatic complaints.

Taking into consideration that work engagement is posited to predict (1) life satisfaction and happiness when adaptive emotion regulation is controlled for, (2) psychosomatic complaints when avoid performance goal orientation is controlled for, work engagement is hypothesised as a partial mediator between these antecedents and the respective outcomes.

*Hypothesis 30:* Work engagement is a partial mediator between adaptive emotion regulation and life satisfaction and happiness.

*Hypothesis 31:* Work engagement is a partial mediator between avoid performance goal orientation for emotion and psychosomatic complaints.

#### 4.034 Reverse causation effects between outcomes and work engagement.

Currently, enduring and context-free happiness (the affective component of subjective well-being) is often treated as an outcome of work engagement (Culbertson, Mills, & Fullagar, 2012; Rodriguez-Munoz, Sans-Vergel, Demerouti, & Bakker, 2014; Schaufeli, Taris, & Bakker, 2006). However, enduring happiness is synonymous with positive affectivity (Lyubomirsky, 2001) because

enduring happiness is deemed to be stable although it is still a stochastic phenomenon (Lykken & Tellegen, 1997). But more importantly, positive affectivity is a key personal resource underpinning enduring work engagement (Bakker, Demerouti, & Sanz-Vergel, 2014; Bledow et al., 2010; Binnewies & Fetzner, 2010; Warr, Bindl, Parker, & Inceoglu, 2014; Wefald et al., 2011, 2012). Thus, context-free happiness itself is potentially predictive of work engagement. Because enduring happiness is conceptualised and operationalised very closely with positive affect, there is a possibility of a reciprocal link between the two variables.

*Hypothesis 32:* Work engagement and happiness are reciprocally related over time.

As discussed above, the work engagement to life satisfaction link has received some support while evidence for the reverse hypothesis of life satisfaction to work engagement remains an open question (e.g., Hakanen & Schaufeli, 2012). Hakanen and Schaufeli (2012) noted that the reciprocal relationship between work engagement and life satisfaction is unclear. On the basis of their research they also concluded that experiences at work are important as they impact context-free well-being in the form of life satisfaction, and that the latter may not be an important determinant of work-related well-being. This is in line with the propositions of Kahneman and Riis (2005) who argue that experienced affective momentary states have a direct impact on indicators of well-being that are evaluative in nature (i.e., life satisfaction) and that the reverse relationship can be posited to be much weaker. This view is espoused by other researchers (e.g., Kuppens, Realo, & Diener, 2008; Seligman, Parks, & Steen, 2004). However, the life satisfaction to work engagement link is an open question at this stage given the paucity of reported findings. It requires more longitudinal investigation before hypothetico-deductive approaches can be used to answer the question. Thus this link is investigated as a research question.

*Research question 3:* Is life satisfaction related to work engagement over time?

The normal causation link proposes that work engagement is causally linked with the absence of psychosomatic complaints (Demerouti, Bakker, Jonge, Janssen, & Schaufeli, 2001; Hallberg & Schaufeli, 2006; Peterson et al., 2008). However this link has been reasonably questioned (Maslach, 2011) as health is dependent on many other non-work variables, and most research has found no relationship between work engagement and reports of objective physical health (Airila, Hakanen, Punakallia, and Lunkonen, 2012; Bakker et al, 2011), although there are some notable exceptions

(Shirom, Toker, Jacobson, & Balicer, 2010; Shirom, Toker, Melamed, Berliner, & Shapira, 2012). On the other hand, the reverse causation link proposing that psychosomatic complaints are negatively and directionally linked with enduring work engagement is a plausible hypothesis in that optimum health is linked with the ability to exert effort in the workplace. Indeed, work motivation is, to an important extent, dependent on a state of sound physical health. Recently, Gana et al. (2013) conducted a longitudinal study showing that physical health is a more plausible cause of subjective well-being as measured by life satisfaction (the cognitive aspect of subjective well-being) than the reverse proposition (this study was based on an aged non-working sample). Although life satisfaction and work engagement are different forms of well-being (as context-free subjective well-being and work-related well-being, respectively), the study by Gana et al. (2013) does raise an interesting possibility with regard to the physical health and work engagement directional link:

*Research question 4: Are psychosomatic complaints related to work engagement over time?*

## **Chapter Five**

### **Foundational studies**

#### 5.00 General overview

This Chapter describes two foundational cross-sectional studies. These studies take a complementary exploratory-and-confirmatory approach, providing an initial reconnaissance of the proposed mindset of job capability and mindset of emotion models. Results are analysed and discussed with reference to implications for further testing in Chapter Six.

#### 5.01 Strategy of study design and analysis

Each model proposed in Chapter Four represents a set of inter-related questions brought together to intersect on a novel and discrete domain-specific construct of mindset, i.e., mindset of job capability and mindset of emotion. The main purpose is to explore whether the incremental mindsets of job capability and emotion are useful as predictors in models investigating work engagement and outcomes. The overall investigation is not only novel but it also requires a bottom-up approach whereby complementary exploratory and hypothetico-deductive approaches can be deployed to test and evaluate the research propositions for further testing.

At this stage, it is fitting to discuss the importance of exploratory research and its role alongside confirmatory hypothetico-deductive approaches. Social science, including I-O psychology, is at a crisis point. Its credibility is increasingly questioned with regard to replicability (O'Boyle, Banks, & Gonzalez-Mule, 2014; Pashler & Wagenmakers, 2012). There are several factors that underlie the replicability crisis. One prominent factor relates to questionable research practices (QRP) (Sijtsma, 2015). Within the QRP problem lies the nebulous role of exploratory research and the implications of its provisional findings. Researchers are suspected of sometimes selecting subsets of positive results from large studies with mixed findings, and of passing exploratory results as confirmatory evidence of hypothetico-deductive research plans (Miguel et al., 2014). However, the complementary and transparent use of exploration and confirmation deserves more emphasis as this sheds light on the research process as a whole. Asimov (1971, p. 116) noted with dismay that scientists "...obscure the actual methods by which they obtain their results" and Feynman (1965/1966) remarked that:

We have a habit in writing articles published in scientific journals to make the work as finished as possible, to cover all the tracks, to not worry about the blind alleys or to describe how you had the wrong idea first, and so on. So there isn't any place to publish, in a dignified manner,

what you actually did in order to get to do the work, although, there has been in these days, some interest in this kind of thing. (p. 699)

So, with the aim of making the research process of this thesis transparent, the use of exploratory modelling alongside confirmatory modelling is made explicit through the two foundational studies.

The distinction between exploration and confirmation is not sharply defined. Anderson and Gerbing (1988, p. 411) note that “Although it is convenient to distinguish between exploratory and confirmatory research, in practice this distinction is not as clear-cut.” In the same vein, Joreskog (1974) specifies that:

Many investigations are to some extent both exploratory and confirmatory, since they involve some variables of known and other variables of unknown composition. Rather than as a strict dichotomy, then, the distinction in practice between exploratory and confirmatory analysis can be thought of as that of an ordered progression. (p. 2)

Following these recommendations, exploratory modelling here refers to parts of the model where the paths are mostly untested, although they are theoretically derived in Chapter Four. Examples are the proposed differential relationship of work engagement with feedback inquiry and feedback monitoring; the relationship of incremental mindset of emotion with learning goal orientation for emotion through adaptive emotion regulation; the directional links between work engagement and goal orientations; the distinction between learning goal orientation and proactive learning & development; and the parallel mediation (i.e., with approach and avoidance constructs as parallel mediators) in the incremental mindset to work engagement causal nexus. On the other hand, confirmatory modelling relates to paths based on existing findings. Examples are the incremental mindset of emotion to adaptive emotion regulation link, and learning goal orientation to proactive learning and development link.

As a general rule, “science seeks [the] understanding of an event or process by investigating its component elements and underlying processes” (Ayala, 1996, p. 442). In the same vein, I-O psychology is “... very much concerned with process — the temporal sequence by which conditions, events, and states unfold” (Spector & Meier, 2014, p. 1109), (see also Monge, 1990). In accordance with this meta-principle, the mindset of job capability and the mindset of emotion models are foremost process models. As explained in Chapter Four, each model consists of chain mediation, in which one part of the chain has a set of parallel mediators (Preacher & Hayes, 2008). Therefore, the models are amenable to testing through structural equation modelling (SEM) as this enables testing complex

process models based on the correlational method (Hoyle, 2012). Indeed, "... a structural equation model is a complex composite statistical hypothesis" (McDonald & Ho, 2002, p. 65) enabling the testing of simultaneous regression equations and accommodating multiple variables that are both outcomes and predictors. Conventionally, SEM is not designed for exploratory modelling. SEM is for confirmatory work, where causal assumptions between units of a larger theory (e.g., the linear relationship between two variables) are known apriori and, are used with other such units to confirm a larger set of propositions represented as a unified model (Kline, 2012). This practice stems from the work of Sewall Wright (Wolfle, 1999), the evolutionary biologist, who invented path analysis to estimate magnitudes of effects in genetics models, where links between variables are already established as causally true (Kline, 2012). However, this is not so in the psychological sciences. As Kline (2012) explains:

In the behavioral sciences, we *rarely* know the true causal model. Instead, we usually *hypothesize* a causal model and then we test that model using sample data. This context of use is very different from that of Wright. Specifically, when the true causal model is unknown but our hypothesized model fits the data, about all we can say is that our model is consistent with the data, but we cannot claim that our model is proven. In this way, SEM can be seen a disconfirmatory technique, one that can help us to reject false models (those with poor fit to the data), but it basically never confirms a particular model when the true model is unknown. In this sense, referring to SEM as "confirmatory" is misleading, especially in the behavioral sciences where true causal pathways are rarely known. (pp. 113-114, original emphasis)

Hoyle (2012) notes that in SEM, following initial specification and estimation, respecification of measurement and structural models are an expected part of the modelling process, except when modelling is strictly confirmatory (Bollen, 2011). Therefore, exploratory modelling is essential for progressing towards confirmatory, or disconfirmatory testing. In fact, more broadly, Oreskes, Shrader-Frechette and Belitz (1994, p. 644) caution that "...we must admit that a model may confirm our biases and support incorrect intuitions [and] therefore, models are most useful when they are used to challenge existing formulations, rather than to validate or verify them".

Finally, exploration in this chapter is not synonymous with finding better fittings models by capitalising on chance occurrences (MacCallum, Roznowski, & Necowitz, 1992). Rather, it involves the use of theoretically-informed approaches to test the paths, with the aim of maximising explanatory

and predictive power for further testing in the next chapter. MacCallum et al. (1992) advise that re-specifications should have three essential features: (1) an acknowledgement that resulting models after modifications are in part data driven, (2) theoretically meaningful modifications, and (3) evaluation of modified models with relevant cross-sample replications.

#### 5.011 Sampling strategy

Both models are tested through a common convenience sample sourced from the Amazon Mechanical Turk (AMT) website. Online participant pools such as AMT have gained acceptance in research (Landers & Behrend, 2015). US participants, employed in diverse occupational settings for at least 20 hours of work per week, were solicited from the research pool. A common sample was used as the two mindsets, including all other variables across both models, are conceptually distinct (this assumption is verified in the results section).

The sample used here has implications for the replicability of the foundational studies. The principles of simple random sampling stipulate that employee participants must be randomly drawn from a well-defined population, such that the sample is representative of the population. For example, a defined population can be the inbound call center employees working either day or night shifts in the banking sector across a geographic location. Accordingly, a random sample of size  $n$  would consist of  $n$  employees from the target population, chosen independently in such a way that every set of  $n$  employees has an equal chance to be selected. Although a (broadly) defined population is specified here, the sample is only a convenience sample, it is neither random nor representative. Therefore, generalizability of findings from the sample to the AMT population is limited (Berk & Freedman, 1995). However, this limitation can be overlooked since no generalization of the sample to its parent population is intended. These foundational studies are only the starting point of the inquiry in that the results are used inductively to progress towards the cross-sectional and longitudinal testing of models in the next chapter.

#### 5.012 Optimisation and integrity of the data collection process and ethics

Strategies for reducing satisficing were implemented. Satisficing is the provision of “satisfactory answers” as opposed to “optimal answers” to survey questions as respondents often do not put in the required substantial cognitive effort in responding to questions (Krosnick, 1991). First of all,

the optimisation of data quality was ensured by avoiding the generation of missing data. Although it is possible to handle certain types of missing data in AMOS 22 using the full information maximum likelihood estimation (Graham & Coffman, 2012), missing data are in general better avoided because they contribute to data bias and data distortion (De Veaux & Hand, 2005). Thus, participants were requested to respond to all question items in order to progress through the survey. This is an optional feature in SurveyMonkey, and is routinely used where responses to selected items are critical. This approach was in compliance with the Auckland Human Participants Ethics Committee (UAHPEC) approval and guidelines since participants were informed they could stop and withdraw from the study at any time. In compliance with the UAHPEC guidelines, participants who did not complete the survey were compensated. Further steps taken to ensure optimisation and data integrity are presented in the results section as they are more applicably described there.

#### 5.013 Strategies for minimising common method bias.

Common method variance bias (CMV) refers to the collection of data at the same time, with the same method and, from the same source (Podsakoff, Mackenzie, & Podsakoff, 2012). Thus, the variance in CMV refers to the common method rather than the use of the measures of constructs of interest (Podsakoff et al., 2012). One way to handle CMV is to factor it out through research design by: (1) obtaining criterion measures from other sources, such as performance ratings of employees from supervisors, peers, or other objective metrics where applicable; (2) separating the presentation of scale items to prevent respondents from guessing relationships between predictor and criterion variables; and (3) separating the time at which the predictor and criterion responses are collected. In these studies, obtaining reports from supervisors was not possible. Implementing a short time lag between predictor and criterion responses was also not a feasible option because of the risk of attrition. Thus, Step (2) was implemented by interspersing the variables of both models together. Moreover, when CMV cannot be prevented by research design, statistical methods can be used to assess the extent of bias, and to then partial out this variance. One way to partial out variance is to use a marker variable to determine the extent of CMV influence, allowing a cautious interpretation of data can be done. A marker variable is a variable that is theoretically unlinked with the variables under study yet is subject to the same response bias (Lindell & Whitney, 2001).

Podsakoff, Mackenzie, Lee, and Podsakoff (2003) are skeptical about the marker variable method. They state that:

From a conceptual point of view, a major problem is that this procedure fails to control for some of the most powerful causes of common method biases (e.g., implicit theories, consistency motif, social desirability). Because a marker variable is one that most people believe should not be related to the predictor or criterion variable, there is no reason to expect that it provides an estimate of the effect of a person's implicit theory about why the predictor and criterion variables should be related, and therefore partialling out the effects of shoe size would not control for this source of common method variance. The same could be said for the ability of shoe size to serve as a marker variable to control for consistency motif and/or social desirability. (p. 893)

However, what these authors miss is that, Lindell and Whitney (2001) specify that a properly selected marker variable is one that is not just theoretically unrelated to the outcomes of the study at hand, but it must also be subject to the same method bias as the other variables. Thus the shoe size analogy is inaccurate (Lindell, 2013, personal communication, 05 May 2013). The marker variables used are listed in the method section, where rationales are also given.

The Harman's one-factor test is also used here to assess CMV. The Harman's one-factor test holds that if substantial CMV is present, then, though PCA unrotated analysis, either a single factor will emerge or a one-factor solution will account for majority of variance.

#### 5.014 Implementation of SEM methodology

AMOS version 22 (Arbuckle, 2011) is used for statistical analyses. The two-phase modelling approach (Anderson & Gerbing, 1988) is followed. In the measurement model testing phase, structural models were specified to allow all latent variables to freely covary. The structural stage involved re-inserting the originally hypothesised relations among the latent variables. The estimation method was Maximum Likelihood (ML). When data are modelled using SEM, the tested model is fitted to a covariance matrix (of the variables) so the adequacy of the model can be assessed (Ullman & Bentler, 2003). The fit of the model to the covariance matrix is statistically evaluated. This is done by "... using a "goodness of fit" test referenced against the [chi-square] distribution, which takes as its argument, the discrepancy between the model-implied population covariances and the actual observed sample covariances" (Barrett, 2007a, p. 816). Model fit involves testing whether these differences are above chance level. That is, the chi-square test verifies whether the differences between the model-implied covariances and the actual observed sample covariances are zero. Thus, the chi-square test is about

retaining the null hypothesis. Notably, in line with what can be expected with null hypothesis testing, the sensitivity of the chi-square test increases with sample size such that the test becomes highly sensitive to tiny differences between the population covariance and the actual observed sample covariance (Ullman & Bentler, 2003). For this reason, although the chi-square ( $\chi^2$ ) statistic is generally reported and used for nested model comparisons (Kline, 2011), approximate fits indices (AFI) are used instead.

The following AFI are used for evaluating model fit: the chi-square ( $\chi^2$ ) statistic and the chi-square/df ratio<sup>22</sup> ( $\chi^2$  /df) with a cut-off value of  $< 5$  (Bollen, 1989); root mean square error of approximation with 90% confidence intervals (RMSEA) with range of 0.05 to 0.08 (Steiger, 1990); comparative fit index (CFI) with cut-off value of  $\geq 0.90$ <sup>23</sup> (Hu & Bentler, 1999); and standardised root mean square residual (SRMR) with range of 0.05 to 0.10 (Hu & Bentler, 1995). Throughout this thesis, the indicators of the latent variables in the structural models are not shown for ease of presentation (item loadings and reliability are mentioned when needed). The results section of the SEM analysis is organised around the SEM results reporting conventions where testing of measurement models precede that of structural models. Therefore, the analysis of measurement models (section 5.032) includes the measurement models of both mindset models, the same approach is adopted for the analysis of structural models (section 5.033).

## 5.02 Methods

### 5.021 Sample and procedure

A total of 508 US participants was recruited through the AMT website. In accordance with standard AMT wages, each participant was paid US\$0.40 to complete an 18-minute questionnaire. From the AMT website, participants were directed to an external survey site (SurveyMonkey). Participants were informed the study broadly investigates how beliefs about job capabilities and emotions relate to work motivation. As the employment status of AMT participants is not verifiable, the study advert included a specific mention about the characteristics of participants, informing them they needed to be in employment (at least 20 hours per week) to participate.

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<sup>22</sup> This chi-square related index is reported as it is less affected by the sample size.

<sup>23</sup> Although this value has been revised to  $\geq 0.95$  (Hu & Bentler, 1999), Kenny and McCoach (2003) argue that the CFI has the tendency to worsen as the number of observed variables increases in a model, thus the 0.90 is preferred because both models tested here have a large number of observed variables.

To ensure integrity of the data a number of steps were taken, some of which are based on the recommendations of Meade and Craig (2012). As this research is based on survey methodology, procedures were used to decrease satisficing. First of all, steps were taken to enhance the motivation of participants to increase optimal cognitive effort in providing accurate answers. This was effected by emphasising that the research would be instrumental in helping employees to increase and sustain their motivation and their subjective wellbeing (Krosnick, 1991, 1999) and that honest responses are kindly expected from them. To further encourage honest responding, participants were informed their responses cannot be shared with their employees and that their participation cannot have any adverse effects on their employment. Participants were informed participation in the online study implied consent and were provided with researcher contact details for additional information. Once participants started the survey, they were asked, for a second time, to confirm their job status as there is evidence participants do not read introductory information of surveys when administered online (Kraut et al., 2004). They were presented with all options relating to employment status (i.e., unemployed, employed full-time, self-employed, and employed part-time). The responses obtained filtered out those with unemployed and self-employed status who had opted to participate because they either did not comply with the instructions or they did not read the instructions well. These participants were however remunerated for their participation. Interspersed in the survey were question items to identify deliberate careless responding or inattention (requiring participants to provide a pre-specified answer of a question, e.g. “I have never brushed my teeth” and to gauge self-reported honesty and diligence at the end of the survey (e.g., “In your honest opinion, should we use your data in our analyses for this study”, here it was emphasised that regardless of their answer participants would be paid for their participation). Thus, the following cases were excluded from the data analysis: duplicates as identified by unique AMT identification number (25 cases: 5%), unemployed (12 cases: 2.4%), self-employed (32 cases: 6.29%), self-reported cases of careless or inaccurate responding (7 cases: 1.38%), participants failing to respond accurately to attention measuring items (22 cases: 4.4%). Finally, 98 cases out of 508, representing unreliable data, were discarded.

The final sample size was 410. The gender split was approximately even, with 221 (53%) males and 189 (47%) females. The age of participants was distributed as follows: 18 – 29 years:  $n = 195$ ; 30 – 39 years:  $n = 120$ ; 40 – 49 years:  $n = 55$ ; and > 60 years:  $n = 12$ . The majority of the participants were White (77%), followed by Asians (9.26%), Hispanics (6.09%), African American (5.12%), Native Americans (1.46%), and Other (1.22%). The majority had a college education (63.65 %,  $n = 261$ ),

followed by high school (28.29%,  $n = 116$ ) and other qualifications (8.05%,  $n = 33$ ). There were more full-time employees (64%) than part-time employees (36%). The majority were team members (66%), followed by team leaders (16%) and the rest (18%) were middle managers and executive managers. Organisational tenure was distributed as follows: 1-2 years:  $n = 170$ ; 3-5 years:  $n = 115$ ; 6-9 years: 68; and > 10 years:  $n = 57$ .

#### 5.022 Measures for mindset of job capability model

*Incremental mindset of job capability* was assessed using a four-item questionnaire by combining the three-item questionnaire used in Van Vianen et al. (2010) with an additional item modified from Dweck's (1999) scale. The three-item questionnaire and the additional item were both adapted from the domain of job capability by replacing the word intelligence with capability. As in many previous studies (e.g., Chiu, Hong, & Dweck, 1997; Hong et al., 1999), the four-items were all entity items as "incremental items are highly compelling and more socially desirable" (Hong et al., 1999; p. 590). Disagreement with entity-theory items can be taken to represent agreement with the incremental theory (e.g., Dweck et al., 1995). An example item is: "Your capabilities are something about you that you can't change very much". Participants were given a clear definition of capabilities in the instructions, defined as "the job knowledge, skills, and mental abilities one has". The scale was scored on 6-point Likert scale (1 = strongly agree, 6 = strongly disagree). A high score meant disagreement with entity theory, hence high agreement with incremental theory. Since this measure was rather new it was subjected to an exploratory factor analysis using maximum likelihood with oblique rotation. A unifactor solution with one only factor with eigenvalue greater than 1.0 emerged explaining 76 % of variance. Cronbach's alpha was  $\alpha = .90$ .

*Work engagement* was measured with the nine-item, English version of the Utrecht Work Engagement Scale (UWES: Schaufeli et al., 2006). This version comprises of three items for each engagement dimension: *Vigor* (e.g., "At my work, I feel bursting with energy"), *dedication* (e.g., "My job inspires me"), and *absorption* (e.g., "I get carried away when I am working"). Items were scored on a Likert scale ranging from (0) "never" to (6) "always". As past research has not provided consistent evidence of a three-factor structure for the 9-item scale (Schaufeli et al., 2006), an exploratory principal-axis factor analysis using maximum likelihood with oblique rotation was conducted to assess its dimensionality. Only one factor had an eigenvalue greater than 1.0 explaining 68% of variance

indicating that the UWES could be considered as a unidimensional construct. Cronbach's alpha was  $\alpha = .94$ .

*Learning goal orientation* (five items, e.g., "For me, further development of my work ability is important enough to take risks".) and *Avoid performance goal orientation* (four items, e.g., "I'm concerned about taking on a task at work if my performance would reveal that I had low ability" ) were measured with the Vandewalle's (1997) goal orientation scale. Learning goal orientation is conceptualised as a trait and it measures the extent to which one has a desire to develop oneself by acquiring new skills, mastering new situations and improving one's competence, reflecting a preference for difficult and challenging tasks. Avoid performance goal orientation, conceptualised as a trait, is the desire to avoid displaying low competence and negative judgements by others. Responses to the items were made on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). An exploratory factor analysis using maximum likelihood with oblique rotation confirmed the distinctiveness of both factors. Cronbach's alpha for Learning goal orientation and Avoid performance goal orientations were  $\alpha = .91$  and  $\alpha = .87$  respectively.

*Proactive learning and development* was measured using a six-item scale. Four items were taken from an eight-item scale by Xander et al. (2010), who developed it from the work of previous studies on proactive learning at work. Items overlapping with learning goal orientation and feedback seeking were removed. Two additional new items were developed: "I make efforts to find resources (e.g., people, technology) which can help me achieve my career-related goals" and "I spend time outside of work reading various sources (e.g., books, internet) to help stay current in my line of work". The scale measures the extent to which an employee is voluntarily involved in active learning behaviours by searching for new knowledge through different means. Participants indicated on a five point scale from 1 (never) to 5 (very often) how frequently they performed the behaviours. In line with the definition of proactive learning and development adopted in this thesis, participants were presented with the following instructions: "Proactive learning and development are activities that you deliberately perform for the purpose of learning something new for your job or improving your job skills or knowledge. These activities are not mandatory but may be optionally undertaken by employees". Cronbach's alpha of the five-item scale was  $\alpha = 0.86$ . An exploratory factor analysis using maximum likelihood with oblique rotation showed a unifactor solution with only one factor with eigen value greater than 1.0 explaining 60 % of variance.

*Knowledge sharing* was measured by an eight-item questionnaire adapted from two scales: 7 items from Chen et al. (2006), and one item from Lin (2006). The eight-item scale measures to what extent workers share tacit knowledge. An example item is: “I share my experience or know-how from work with my co-workers”. Exploratory factor analysis using maximum likelihood with oblique rotation showed a unifactor solution, explaining 60% of variance. Cronbach’s alpha  $\alpha = .90$ .

*Feedback inquiry* (four items) and *feedback monitoring* (seven items) were measured using scales from Ashforth (1986) and Ashforth and Tsui (1991). Participants indicated how frequently they used various feedback seeking strategies using a five-point Likert scale (1 = very infrequently; 5 = very frequently). An example of the direct inquiry feedback items is “How frequently do you directly ask your supervisor for informal appraisals of your work?”, and an example item of feedback monitoring is “How often do you pay attention to casual remarks that your supervisor and co-workers make”. Cronbach’s alpha for direct inquiry feedback and feedback monitoring were  $\alpha = .86$  and  $\alpha = .88$  respectively. The exploratory factor analysis to check for the distinctiveness of feedback inquiry and feedback monitoring is addressed in the results section.

*Marker variable:* The four-item *Tendency to forgive scale* (Brown, 2003) was used. An example item is: “I tend to get over it quickly when someone hurts my feelings”. Participants responded on a seven-point Likert scale from strongly disagree (1) to (7) strongly agree. Cronbach’s alpha  $\alpha = .80$ . The scale taps into trait forgiveness, in line with the correct use of the marker variable method it is theoretically unrelated with the outcomes in the mindset of job capability model and is subject to social desirability bias (Brown, 2003).

#### 5.023 Measures for mindset of emotion model

*Incremental mindset of emotion* was measured using the scale of Tamir et al. (2007). This scale is adapted from the original Dweck (2000) implicit theory of intelligence scale. It has two incremental and two entity items. The two incremental items were reversed-scored. An example of an entity item was: “No matter how hard you try, you can’t really change the emotions that you have,” and an example of an incremental item was: “You can learn to control your emotions”. Responses were scored on 6-point Likert scale (1 = strongly agree, 6 = strongly disagree). A high score meant a disagreement with entity theory, hence high agreement with incremental theory. An exploratory factor analysis using

maximum likelihood with oblique rotation showed a one factor solution explaining 65% of variance. Cronbach's alpha was  $\alpha = .82$ .

*Work engagement* was measured as described above.

*Cognitive reappraisal* (six items) was measured using the emotion regulation questionnaire of Gross and John (2003). An example item of reappraisal is: "When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm". It is scored on a 7-point Likert scale (1 = strongly disagree to strongly agree). An exploratory factor analysis using maximum likelihood with oblique rotation showed a one factor solution explaining 65% of variance. Cronbach's alpha for reappraisal and was  $\alpha = .89$ .

*Performance avoid goal for emotion* was measured using the four-item scale from Rusk et al. (2011). This sub-scale is part of the three-factor scale of goals for emotion regulation developed from the Elliot and Church (1997) approach and avoidant motivation scale. An example item is: "I'm afraid that if I ask people for help in managing my emotions, they might think I'm emotionally unstable". Participants responded on a six-point Likert scale (1 = strongly disagree, 6 = strongly agree). Cronbach's alpha was  $\alpha = .82$ . An exploratory factor analysis using maximum likelihood with oblique rotation showed a one factor solution explaining 64.5% of variance.

*Learning goal orientation for emotion* was measured using the five-item scale from Rusk et al. (2011). An example item is: "In many situations, I prefer to experience emotions that challenge me to learn more about myself". Participants responded on a six-point Likert scale (1 = strongly disagree, 6 = strongly agree). An exploratory factor analysis using maximum likelihood with oblique rotation showed a one factor solution explaining 72% of variance. Cronbach's alpha was  $\alpha = .87$ .

*Psychosomatic complaints* was measured with physical illness-health factor of the OSI (short version) scale (Evers et al., 2000). It has seven items. Participants indicated the frequency with which they have experienced several psychosomatic symptoms (e.g. headaches, feeling dizzy) over the last three months on a six-point Likert scale (1 = never, 6 = very frequently). An exploratory factor analysis using maximum likelihood with oblique rotation showed a one factor solution explaining 49.5% of variance. Cronbach's alpha was  $\alpha = .83$ .

*Life satisfaction* was measured with the widely used Satisfaction with Life Scale (Pavot and Diener, 1993). An example item is “I am satisfied with my life”. Responses are scored on a seven-point scale (1 = “strongly disagree”, 7 = “strongly agree”). Cronbach’s alpha was  $\alpha = .92$ .

*Happiness* was measured using the four-item subjective happiness scale (Lyubomirsky & Lepper, 1999). It is rated on seven point Likert scale with agreement (not at all - a great deal) and level of happiness anchors (less happy - more happy; not a very happy person - a very happy person). Cronbach’s alpha was  $\alpha = 0.90$ .

*Marker variable*: The knowledge sharing scale in the mindset of job capability model was used as marker variable. In line with the correct use of the marker variable method, knowledge sharing is theoretically unrelated with the outcomes in the mindset of emotion model and it can be reasonably assumed that it is subject to social desirability bias.

### 5.03 Results

#### 5.031 Preliminary analysis of both models

##### 5.0311 Normality diagnostics

Normality diagnostics are reported in each of the measurement model sections below as this was tested with AMOS version 22 (Arbuckle, 2011).

##### 5.0312 The distinctiveness of the mindset of job capability and emotion

Mindsets are distinct across domains (Burnette et al., 2011). Hence, as is common practice in mindset research where more than one mindset is used, distinctiveness needs verification. Furthermore, this verification is important because a common sample is used for both research models. The zero-order correlation between the two mindsets was low with  $r = 0.31$  ( $p < 0.01$ , one-tailed). An exploratory factor analysis (EFA) using maximum likelihood with oblique rotation showed a two factor solution, each with eigen value greater than 1.0. This was re-tested by a CFA. A correlated-traits two-factor model showed a better fit to the data [ $\chi^2$  (19, N = 410) = 189.55,  $p < 0.001$ ,  $\chi^2 / df = 9.97$ , CFI = 0.90, RMSEA = 0.15 with CI<sub>90</sub>: (0.13, 0.17), SRMR = 0.06.] compared to a unidimensional model, where all items of both mindsets were specified to load on one latent factor [ $\chi^2$  (20, N = 410) = 653.85,  $p < 0.001$ ,  $\chi^2 / df = 32.70$ , CFI = 0.63, RMSEA = 0.28 with CI<sub>90</sub>: (0.26, 0.29), SRMR = 0.18.]. A chi-square test of difference also showed that both models differ.

### 5.0313 The distinctiveness of feedback inquiry and feedback monitoring

Despite the theoretical distinction between feedback inquiry and feedback monitoring (Ashford & Cummings, 1983) there are no factor-analytic studies on their distinctiveness (Anseel et al., 2013). The zero-order correlation between the two feedback seeking methods was  $r = 0.46$  ( $p < 0.01$ , one-tailed), lower than the reliabilities of feedback inquiry and feedback monitoring (0.86 and 0.88, respectively). The disattenuated<sup>24</sup> correlation is  $r = 0.53$ , i.e., it is lower than the two reliabilities, indicating that these two feedback seeking behaviours are distinct. Furthermore, an exploratory factor analysis (EFA) using maximum likelihood with oblique rotation showed a two factor solution, each with eigen value greater than 1.0. As SEM requires robust measurement models, further discriminant analysis was carried out. Two CFA models were compared. A correlated-traits two-factor model showed a better fit to the data  $\chi^2(43, N = 410) = 414.582, p < 0.001, \chi^2/df = 9.6, CFI = 0.85, RMSEA = 0.14$  with  $CI_{90}: (0.13, 0.16), SRMR = 0.72$ ] compared to a unidimensional model [ $\chi^2(44, N = 410) = 905.39, p < 0.001, \chi^2/df = 20.57, CFI = 0.64, RMSEA = 0.22$  with  $CI_{90}: (0.30, 0.23), SRMR = 0.00$ ]. However, the correlated-traits two-factor model had unsatisfactory fit. As the factor structures of these two dimensions of feedback seeking behaviours are not psychometrically developed enough (see Anseel et al., 2013), a re-specification of the measurement model was undertaken by allowing correlated residuals of indicators within each latent variable.

Implementing correlations of residuals in latent variables (i.e., the inter-correlations of the error terms of the indicators within a single latent variable) for improved fit in CFA and structural models is often discouraged and seen as a sleight of hand (Cole, Ciesla, & Steiger, 2007). Ideally, the error terms of indicators of latent variables are random in nature and therefore are uncorrelated with one another. This is ideal because it signifies that the indicators co-vary only because they are related to the latent variable due to the assumption of local independence (Holland & Rosenbaum, 1986). However, error terms of indicators can be allowed to correlate because of shared method variance due to the influence

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<sup>24</sup> As the constructs are measured with error, the zero-order correlation between the pair is underestimated. The correction to the correlation applied here is for unreliability of measurement. It is based on the zero-order correlation and the reliabilities of the two variables. Essentially, the correction for disattenuation attempts to measure the maximum theoretical correlation possible between the two variables by assuming that the variables have been measured without error, with a perfect reliability of 1.0. Therefore, if the disattenuated correlation (i.e., the correlation corrected for measurement error) is lower than the reliability of both variables then this can be taken as evidence of low correlation supporting empirical distinctiveness. The formula used is based on Gulliksen (1987). See also Muchinsky (1996) for more exposition.

of factors such as same rater responses, scale-specific properties and characteristics of response sets (see Cole et al., 2007; Kline, 2011, chapter 13). A CFA with feedback inquiry and feedback monitoring was run anew and modification indices were used to identify which indicators required correlation. Within each latent variable, only one pair of correlation of error terms was needed. The CFA improved with excellent fit [ $\chi^2(41, N = 410) = 153.80, p < 0.001, \chi^2/df = 3.75, CFI = 0.95, RMSEA = 0.08$  with  $CI_{90}: (0.068, 0.096), SRMR = 0.05.$ ] supporting the distinctiveness of feedback inquiry and monitoring.

#### 5.0314 The distinctiveness of learning goal orientation and proactive learning and development.

As mentioned in Chapter One section 1.06, based on the attitude-intention distinction, learning goal orientation and proactive learning and development are posited to be orthogonal. The zero-order correlation between learning goal orientation and proactive learning and development is  $r = 0.46$ . The disattenuated correlation is  $r = 0.61$ , it is lower than the reliabilities of learning goal orientation and proactive learning and development (0.91 and 0.86, respectively), indicating the two variables are distinct. This distinction is evaluated further when the measurement model is tested in section 5.0322.

#### 5.0315 Distinctiveness of constructs across the two models

Finally, to gain more insight into the structure of the combined dataset (that is, of both models) an EFA using maximum likelihood with oblique rotation was conducted. It showed a sixteen-factor solution, each with eigen value greater than 1.0.

#### 5.032 Analysis of measurement models

##### 5.0321 Data aggregation in both models

In line with the practice of using item parcels in SEM (Little, Rhemtulla, Ginson, & Schoemann, 2013) item parcels were used as indicators for some latent variables. An item parcel can be defined as the aggregate-level item comprised of the mean of two or more items. Parcelling is beneficial for several reasons. The use of item parcels produces more reliable measurement models (Little et al., 2002) and reduces the idiosyncratic characteristics of individual items. Parcelling also reduces skewness and kurtosis, although this is not a panacea for non-normal distribution of data as the

addition of more items into any item parcel does not eliminate non-normality to perfection (Bandalos, 2008). At the estimation level in SEM, parcelling reduces the number of iterations during analysis (as the number of parameters to be estimated are reduced with lower item to sample size ratio), providing closer approximations to normal theory-based estimation, and yielding fewer violations of normality assumptions. Parcelling also allows for simplification of model interpretation, reducing type 1 errors and the likelihood of a priori model mis-specification.

Individual indicators were combined into item parcels using a non-random method, the single-factor method of Landis, Beal, and Tesluk (2000). This entails creating items by pairing the highest and lowest factor loadings to form the first item parcel, repeating the process until all items are assigned to an item parcel. The single-factor method is not only suited for unidimensional constructs but also deals adequately with weak items. As (Little et al., 2013) clarify:

The rationale behind this approach is that an item with a high loading ... provide strong support for the construct to match with a weaker item, and it attempts to create replicates of the overall factor structure in each of the parcels, creating a set of tau equivalent or parallel parcels [and] given that the specific variances are reduced, the amount of reduction in the weak item is relatively pronounced. (p. 296)

Following Hau and Hall (2004) and Matsunaga (2008), parcelling was effected only when at least three or more item parcels could be obtained. The single-factor method<sup>25</sup> was preferred over the random parcelling approach because random parcelling is based on the strong assumption that the items are all interchangeable in the population. This last condition is rarely met as it requires low sampling error (i.e., very large samples with many items). Thus, for the mindset of job capability model item parcels of only three constructs were created: Engagement (4 item parcels,  $\alpha = 0.94$ ), knowledge sharing (4 item parcels,  $\alpha = 0.91$ ), and proactive learning and development (4 item parcels,  $\alpha = 0.89$ ). Likewise, for the mindset of emotion model, the items of only three constructs were combined into item parcels: engagement (4 item parcels,  $\alpha = 0.94$ ), cognitive reappraisal (3 item parcels,  $\alpha = 0.89$ ) and psychosomatic complaints (3 item parcels,  $\alpha = 0.84$ ). The Cronbach's reliability indices of all item

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<sup>25</sup> Other non-random methods include the correlational method (pairing of items with higher inter-correlation as first item parcel and repeating the process until items are exhausted), the content method (item parcels based on rational groupings of items), and the empirically equivalent method (item parcels with equal means, variances and reliabilities). All these methods yield more or less similar results in terms of fit indices in SEM (Landis et al., 2000).

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parcels were similar or better compared to their respective un-parcelled reliability indices reported above.

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5.0322 The mindset of job capability model

Table 1. Descriptive statistics, zero-order correlations, and alphas for mindset of capability model.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Incremental mindset of job capability	4.52	0.95	<b>.90</b>								
2. Learning goal orientation	5.56	1.07	.30**	<b>.91</b>							
3. Work engagement	4.87	1.27	.14**	.44**	<b>.94</b>						
4. Avoid performance goal orientation	3.76	1.35	-.27**	-.27**	-.13**	<b>.87</b>					
5. Proactive learning and development	3.18	0.90	.09*	.46**	.39**	-.14**	<b>.86</b>				
6. Knowledge sharing	3.87	0.77	.19**	.45**	.34**	-.21**	.23**	<b>.90</b>			
7. Feedback inquiry	2.66	0.87	-.05	.21**	.28**	-.02	.42**	.29**	<b>.86</b>		
8. Feedback monitoring	3.31	0.77	.09	.28**	.20**	.05	.29**	.39**	.46**	<b>.88</b>	
9. Tendency to forgive	4.3	1.3	.14**	.12*	.22**	.27**	.08	.16**	.12	.08	<b>.80</b>

Note. \*  $p < 0.01$  \*\*  $p < 0.05$ , two-tailed.  $N = 410$ . The numbers in bold on the diagonal are the alphas.

Table 1 above shows the descriptive statistics and correlations among all the variables. As expected, incremental mindset of capability is positively correlated with learning goal orientation and is negatively correlated with avoid performance goal orientation. The negative relationship between avoid performance goal orientation and work engagement is low ( $r = -0.13$ ) although it is significant ( $p < 0.05$ ). Furthermore, work engagement is positively related to feedback inquiry and feedback monitoring, proactive learning and development, and knowledge sharing. Likewise, learning goal orientation is positively related with all outcome variables. The incremental mindset of capability is positively related with work engagement. Work engagement is more related with feedback inquiry ( $r = 0.29$ ) than with feedback monitoring ( $r = 0.21$ ). Feedback inquiry has a stronger correlation with work engagement ( $r = 0.29$ ) than with learning goal orientation ( $r = 0.21$ ). The inter-correlations between pairs of the outcome variables of proactive learning behaviours (i.e., proactive learning and development, feedback inquiry, knowledge sharing and feedback monitoring) are not too high as to suggest redundancy of constructs.

An unrotated principle components factor analysis on all the eight variables was conducted (i.e., Harman's one-factor test). Eight factors with eigen value greater than 1.0 were obtained, accounting for 67.70% of total variance. The first and largest factor did not account for a majority of the variance (25.77%). This was indicative of low or no method bias. The marker variable, tendency to forgive, has low associations with outcome variables, excluding the low and significant correlation with knowledge sharing ( $r = 0.16$ ) all the other correlations with outcome variables are low and non-significant. Tendency to forgive has low significant correlations with the predictors. It appears that CMV might not be a concern here due to the very low correlations. Nevertheless, this is retested by implementing the marker variable in SEM analysis in section 5.0331 to obtain common method bias adjusted estimates.

The measurement model freely estimated the relationships among all the variables. This measurement model showed an adequate fit to the data [ $\chi^2(530, N = 410) = 1100.49, p < 0.001, \chi^2/df = 2.08, CFI = 0.94, RMSEA = 0.05$  with  $CI_{90}: (0.047, 0.056), SRMR = 0.05$ ]. All indicators and parcels had significant loadings on the intended latent variables (range = 0.68 – 0.94,  $p < 0.001$ ). The reliability values of the indicators in the model ranged from 0.45 to 0.88. All the variables had acceptable levels of skewness ( $< 2.0$ ) with kurtosis ( $< 2$ ) for M.L implementation in AMOS (Kline, 2011). Mardia's normalised multivariate kurtosis value (273) was less than  $p(p+2)$  or 1368, where  $p$  = number of indicators in the model. Thus according to Bollen (1989) there is multivariate normality.

This study is one of the few studies where learning goal orientation was used as a predictor of proactive learning and development. As discussed in Chapter One, in prior studies on engagement and

learning related behavior, researchers (Sonnentag, 2003) have used the learning goal orientation measure as a direct proxy for measuring actual learning and development. Learning goal orientation is the trait of developing oneself by acquiring new skills, mastering new situations and is characterized by a preference for undertaking challenging tasks and being resilient in the face of adversity when learning (Dweck & Legget 1988). On the other hand, proactive learning and development, as conceptualized in this study, is a state construct and it is about the actual active pursuit of self-initiated non-mandatory learning activities. Indeed, researchers investigating continuous learning and development behaviour have used trait learning goal orientation as a predictor of learning activities (Hurtz & Williams, 2009). Indeed, recently, Porath et al. (2011) proposed a measure of learning as part of the thriving construct; they conceptualize learning as a state and recognize that learning goal orientation, as a trait, leads to the state of learning.

Nevertheless, it was essential to establish the discriminant validity of learning goal orientation and proactive learning and development. As explained earlier, an EFA with all the variables showed the distinctiveness of the two factors, and the disattenuated correlation coefficient between learning goal orientation and proactive learning and development does not suggest overlap or redundancy. An EFA on these two factors was conducted using orthogonal and oblique rotations. These results showed the presence of two distinct factors. Moreover, a CFA testing a one-factor and single order two-factor solution of learning goal orientation and proactive learning and development was conducted as an additional test. The two-factor solution showed a better fit [ $\chi^2(43, N = 410) = 244.30, p < 0.001, \chi^2/df = 4.0, CFI = 0.97, RMSEA = 0.08$  with  $CI_{90}: (0.067, 0.105), SRMR = 0.04.$ ] than the one-factor solution [ $\chi^2(21, N = 410) = 606.11, p < 0.001, \chi^2/df = 26.86, CFI = 0.74, RMSEA = 0.26$  with  $CI_{90}: (0.243, 0.279), SRMR = 0.15$ ]. Another test of distinctiveness of the two factors was conducted by comparing the correlations between each of these variables with the outcome variable of feedback inquiry. The correlation comparison was calculated with the Steiger's t-test (Steiger, 1980). The t-statistic between the feedback inquiry-learning goal orientation correlation ( $r = 0.21, p < 0.01$ ) and feedback inquiry-proactive learning and development correlation ( $0.42, p < 0.01$ ) was  $-4.40, p < 0.00001$  (one-tailed) indicating that learning goal orientation and proactive learning and development are distinct.

Antecedents and outcomes of work engagement: The role of mindsets.

5.0323 The mindset of emotion model

Table 2. Descriptive statistics, zero-order correlations, and alphas for mindset of emotion model.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Incremental mindset of emotion	4.20	0.92	<b>.82</b>								
2. Avoid performance goal orientation for emotion	3.00	1.08	-.31**	<b>.82</b>							
3. Learning goal orientation for emotion	4.00	.96	.08	-.00	<b>.87</b>						
4. Happiness	4.77	1.47	.27**	-.45**	.15**	<b>.90</b>					
5. Life satisfaction	4.33	1.50	.20**	-.33**	.12**	.62**	<b>.92</b>				
6. Psychosomatic complaints	2.82	.93	-.22**	.42**	-.04	-.43**	-.31**	<b>.83</b>			
7. Cognitive reappraisal	5.00	1.01	.22**	-.28**	.33**	.39**	.19**	-.16**	<b>.89</b>		
8. Work engagement	4.87	1.27	.13**	-.20**	.15**	.41**	.32**	-.20**	.21**	<b>.94</b>	
9. Marker variable: Knowledge sharing	3.87	.77	.08	0	.26*	.19	.09	-.05	.4**	.35**	<b>.90</b>

Note. \*  $p < 0.01$  \*\*  $p < 0.05$ , two-tailed.  $N = 410$ . The numbers in bold on the diagonal are the alphas.

Table 2 above shows the descriptive statistics and correlations among all the variables in the mindset of emotion model. As expected, the incremental mindset of emotion is positively correlated with cognitive reappraisal. However, the incremental mindset of emotion has a low positive correlation with learning goal orientation for emotion. The incremental mindset is negatively related with avoid performance goal orientation for emotion. The outcomes of happiness and life satisfaction are correlated (this was discussed in Chapter Four, it is explained further in section 5.0333). Both cognitive reappraisal and learning goal orientation for emotion are positively correlated with work engagement. Work engagement is positively correlated with happiness and life satisfaction is negatively correlated with psychosomatic complaints.

An unrotated principle components factor analysis on all the variables was conducted (i.e. Harman's one-factor test). Results showed eight factors with eigen values greater than 1.0. Altogether, the eight factors accounted for 67.75% of the total variance. The first and largest factor did not account for a majority of the variance (25.55%). This was indicative of low or no method bias. The marker variable, knowledge sharing, has low and non-significant correlations with the three outcome variables. While this evidence suggests that CMV might not be a concern, this is tested again by implementing the marker variable in SEM analysis in section 5.0334 to obtain common method bias adjusted estimates.

The model freely estimated the relationships among all the seven variables and one of the factor loadings of each latent variable was fixed to one (Kline 2011). This measurement model showed an adequate fit to the data [ $\chi^2(406, N = 410) = 762.05, p < 0.001, \chi^2/df = 1.87, CFI = 0.96, RMSEA = 0.05$  with  $CI_{90}: (0.041, 0.051), SRMR = 0.05$ ]. All indicators and parcels had significant loadings on the intended factors (range = 0.63 – 0.93,  $p < 0.001$ ). The reliability values of the indicators in the model ranged from 0.39 to 0.86. All the variables had acceptable levels of skewness ( $< 2.0$ ) with kurtosis ( $< 2$ ) for M.L implementation in AMOS (Kline, 2011). Mardia's normalised multivariate kurtosis value (211) was less than  $p(p + 2)$  or 1023, where  $p$  = number of indicators in the model. Thus according to Bollen (1989) there is multivariate normality.

### 5.033 Analysis of structural models

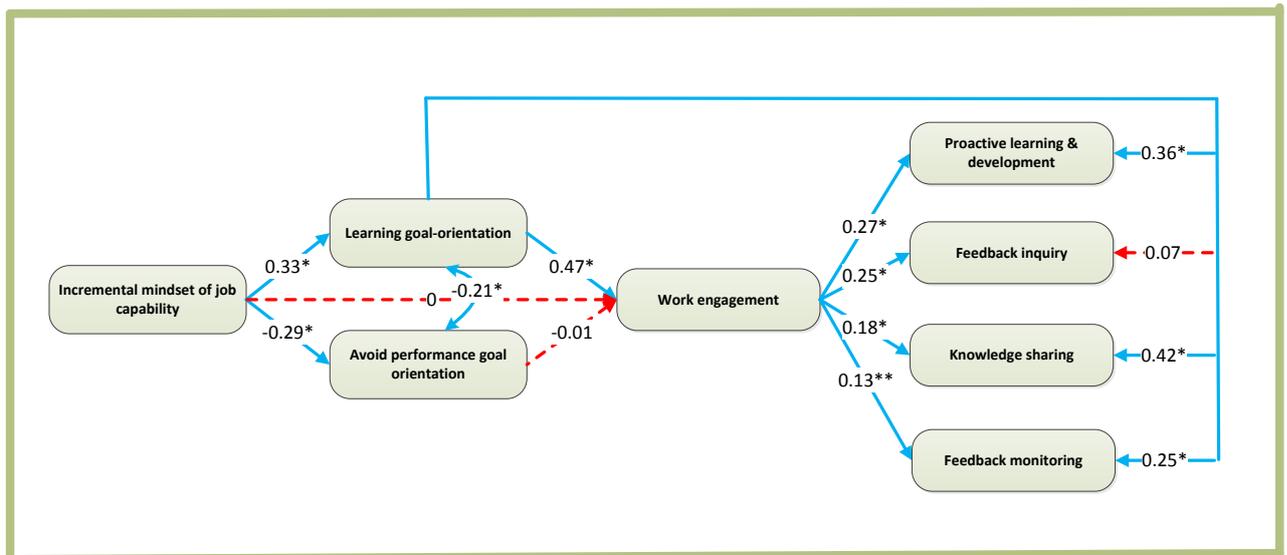
#### 5.0331 The mindset of job capability model

The structural model was tested in successive stages. First of all, an overall structural model was fitted with paths representing all the hypotheses discussed in Chapter Four, section 4.02. Following Preacher and Hayes (2008), the residuals of the two parallel mediators, learning goal orientation and

## Antecedents and outcomes of work engagement: The role of mindsets.

avoid performance goal orientation, were allowed to covary. The structural model is shown below in Figure 1. This structural model fit the data well [ $\chi^2$  (544, N = 410) = 1287.37,  $p < 0.001$ ,  $\chi^2 / df = 2.37$ , CFI = 0.93, RMSEA = 0.06 with CI<sub>90</sub>: (0.054, 0.062), SRMR = 0.09.].

Figure 1. Results of mindset of capability model

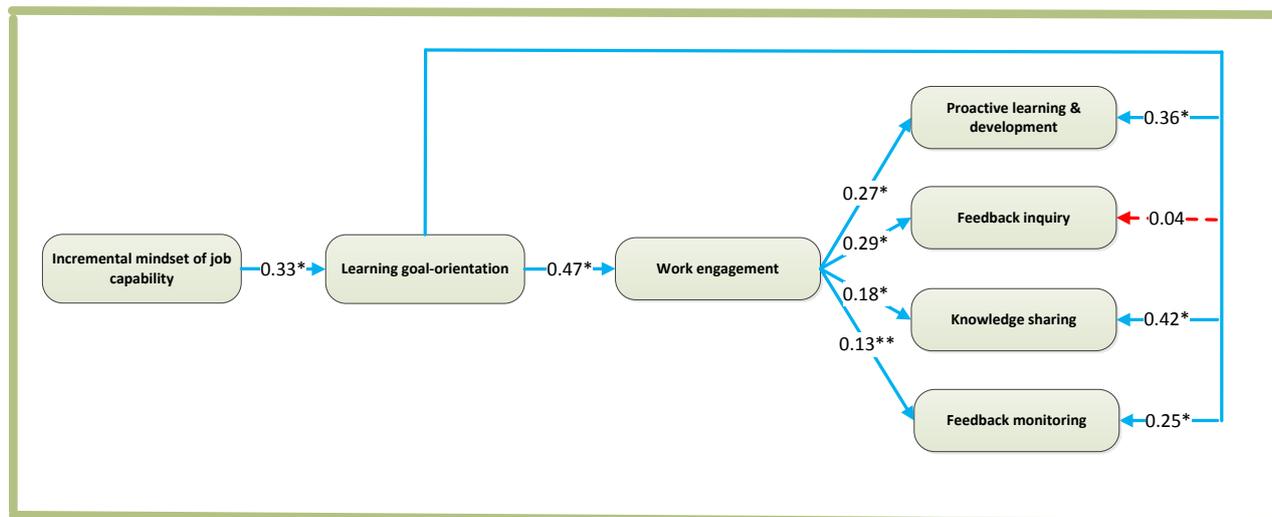


Note. \* $p < 0.001$  \*\* $p < 0.05$ .  $N = 694$ . Dashed paths are non-significant. All paths are standardised regression paths.

The model showed a set of three non-significant paths: (1) incremental mindset of job capability to work engagement (hypothesis 5), (2) avoid performance goal orientation to work engagement (hypothesis 4), and (3) learning goal orientation to feedback inquiry (hypothesis 8). Thus the hypothesised model of partial mediation of incremental mindset of job capability on work engagement through both learning goal orientation and avoid performance goal orientation is unsupported (more on this below). The model was re-specified by removing avoid performance goal orientation. The direct link from the mindset of job capability to work engagement was still non-significant and was therefore removed. This re-specified model, Figure 2 below, fit the data well [ $\chi^2$  (245, N = 410) = 815.62,  $p < .001$ ,  $\chi^2 / df = 3.33$ , CFI = 0.92, RMSEA = 0.06 with CI<sub>90</sub>: (0.056, 0.066), SRMR = 0.08.]. This shows that the effect of the incremental mindset of job capability on work engagement is fully mediated by learning goal orientation.

## Antecedents and outcomes of work engagement: The role of mindsets.

Figure 2. Results of mindset of capability, re-specified model



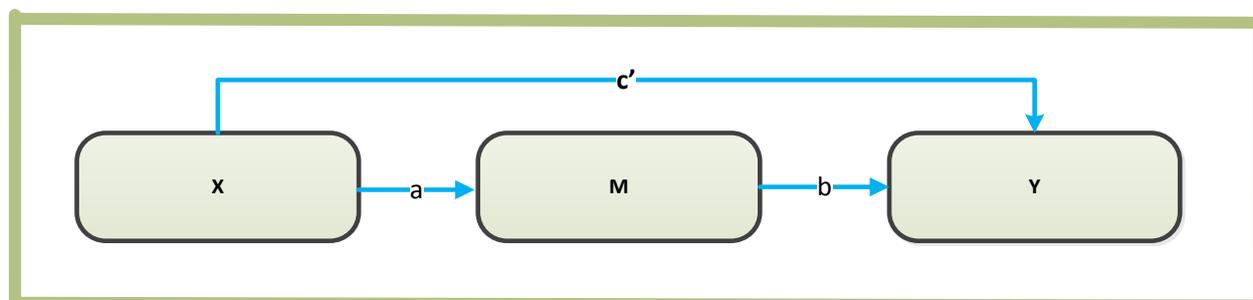
Note. \* $p < 0.001$  \*\* $p < 0.05$ .  $N = 694$ . Dashed path is non-significant. All paths are standardised regression paths.

Before proceeding further with the analysis, the marker variable method was implemented to obtain CMV adjusted estimates. This was done following the steps outlined by Williams, Hartman, and Cavazotte (2010). The structural model in Figure 2 was converted into a CFA by including the marker variable of tendency to forgive. The factor loadings of the indicators of the latent marker variable were noted. Then the marker variable was implemented again in the structural model with paths from the latent marker variable to all indicators in the structural model. The factor loadings of the indicators of the marker variable were fixed to the values noted earlier from the CFA. The structural model was estimated. As expected, because of the low correlations of the marker variable with the other variables in the structural model (specifically the outcome variables), the CMV adjusted estimates were only marginally different from the unadjusted ones. Thus CMV was not an issue in the study. The further analysis of the structural model was thus done without the inclusion of the marker variable.

The effect decomposition statistics of AMOS were used to obtain the indirect effect of incremental mindset of job capability on work engagement through the bootstrap approach (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2005; Shrout & Bolger, 2002). This recommended method for testing mediation is used throughout in this thesis, so the basics of mediation method used are here explained in some detail before proceeding further. Figure 3 below represents a

chain of effects from  $X \rightarrow M \rightarrow Y$ , where  $X$  is an antecedent,  $M$  is the mediator and,  $Y$  is the outcome variable.

Figure 3. The process of mediation.



In Figure 3 above, the directional paths  $a$  and  $b$  represent the indirect effects of variable  $X$  (the antecedent) on variable  $Y$  (the outcome), and  $c'$  represents the direct effect of  $X$  on  $Y$ . Furthermore, the total effect of  $X$  on  $Y$  is expressed as  $c = a * b + c'$ . In essence, mediation can be analysed by computing the significance of  $a * b$ , following the procedures of MacKinnon, Lockwood, & Williams (2004). This product of coefficients method estimates the statistical significance of difference between  $c$  (the total effect) and  $c'$  (the direct effect, i.e., the effect of  $X$  on  $Y$ , controlling for the effect of  $M$ , the mediator). Traditionally, the Sobel test (1982) can be used to estimate the significance of the mediation effect but it has limitations as it assumes a normal distribution of  $a * b$ . Thus, bootstrapping is a recommended approach (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2005; Shrout & Bolger, 2002). In this approach, a specified number of samples (e.g.,  $k$  samples) of the original size are taken from the study data (this is done with replacements) and, mediation effects based on  $a*b$  are calculated for each of the sample. Then, the mean of the  $k$  samples are computed, this serves as the point estimate for the indirect effect. Applied to this procedure is the use of confidence intervals (CI). More commonly, a 95% CI is used, representing the 2.5 and 97.5 percentile values of the distribution with a  $Z$ -score correction for bias. When the confidence intervals exclude zero, the point estimate for the mediation effect is considered significant at the level at which it is estimated (Preacher & Hayes, 2004). In this thesis, 2000 bootstrap samples are used throughout, and both the 95% percentile bootstrap (BP) confidence intervals (CI) and 95% bias-corrected bootstrap (BCP) confidence intervals are computed for the indirect effects, as recommended by Shrout & Bolger (2002). AMOS version 22 has an automatic procedure for computing indirect effects based on this procedure and it can also compute indirect effects in complex process models with sequential and parallel mediators.

Referring back to Figure 2 above, both the 95% percentile bootstrap (BP) confidence intervals (CI) and 95% bias-corrected bootstrap (BCP) confidence intervals (CI) were calculated for the indirect effect using 2000 bootstrap samples. The indirect effect of incremental mindset of job capability on work engagement through learning goal orientation is:  $\beta = 0.15$ , ( $p < 0.001$ ), with BP confidence interval: (95% CI: 0.10, 0.21) and, BCB confidence interval: (95% CI: 0.10, 0.22). As can be seen, the two bootstrap approaches yield consistent results and exclude zero. Thus the effect of the incremental mindset of job capability on work engagement is fully mediated by learning goal orientation.

Learning goal orientation has significant positive paths with proactive learning and development, knowledge sharing and feedback monitoring, supporting hypotheses 7, 8, and 10. Controlling for the effects of learning goal orientation, work engagement has significant paths with all outcomes. Thus, hypotheses 11, 12, 13, and 15 were supported. Furthermore, controlling for learning goal orientation, work engagement is more strongly related with feedback inquiry ( $\beta = 0.18$ ) than to feedback monitoring ( $\beta = 0.13$ ), although this difference is appears too small to be of importance. Thus, to further evaluate the importance of the magnitude of the difference between these two paths, the model in Figure 2 was compared with, an equality model, where the paths from work engagement to feedback inquiry and feedback monitoring were fixed with equality constraints. These two models were not significantly different as shown in Table 3 below.

Table 3. Fit indices for nested model comparisons

Model	Description	$\chi^2$ (N = 410)	df	$\chi^2$ /df	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta$ df
Equality (not shown)	Equality model	1068.45	424	2.52	.93	.06	.10		
Figure 2	Hypothesised model	1065.44	423	2.52	.93	.06	.10	3.01*	1

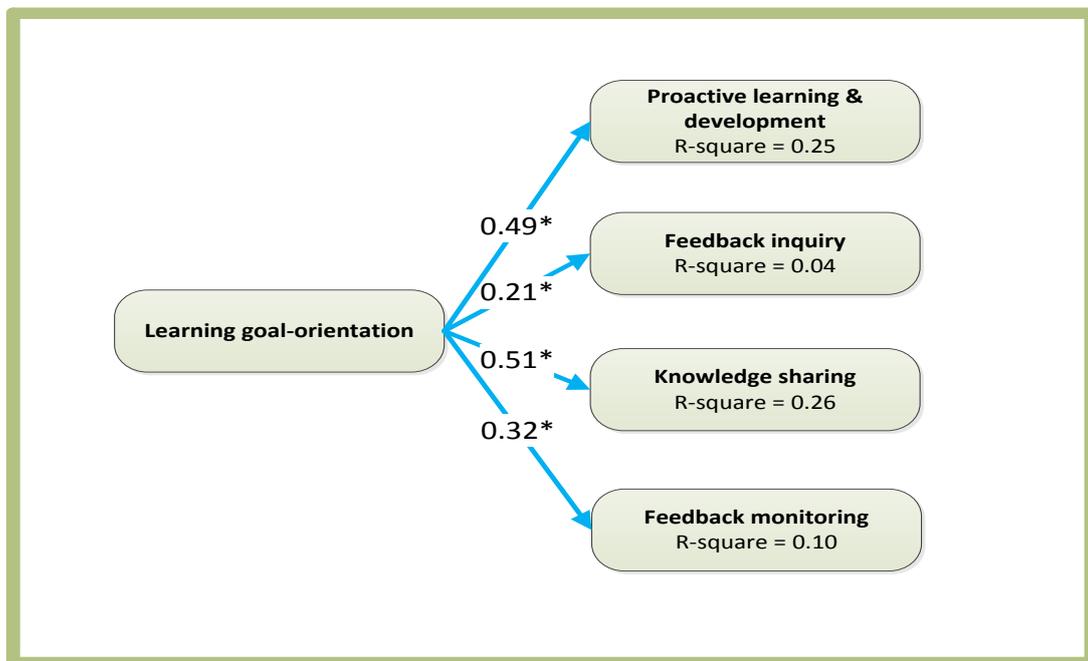
Note. \* $p = 0.08$

This comparison was repeated with a set of two reduced structural models where the incremental mindset of job capability and the other two outcomes variables (proactive learning and development and knowledge sharing) were removed. In the first model, the paths from work engagement to feedback monitoring and feedback inquiry were freely estimated by controlling for the effect of learning goal orientation on feedback monitoring. In the second model, the paths were constrained to be equal. A test of chi-square difference did not reveal any significant difference

between the two models. Work engagement is not differentially related with feedback inquiry and feedback monitoring. Therefore, Hypothesis 13 was unsupported.

Next, controlling for the effect of learning goal orientation, the incremental importance of work engagement on the outcome variables were tested. To this end, two models were compared. In the first model (Figure 4 below) learning goal orientation was included as sole predictor of the outcome variables. Overall this model had poor fit, although all paths were significant [ $\chi^2(224, N = 410) = 704.23, p < 0.001, \chi^2/df = 3.14, CFI = 0.92, RMSEA = 0.07$  with  $CI_{90}: (0.066, 0.078), SRMR = 0.13.$ ].

Figure 4. Learning goal orientation as predictor of outcomes.

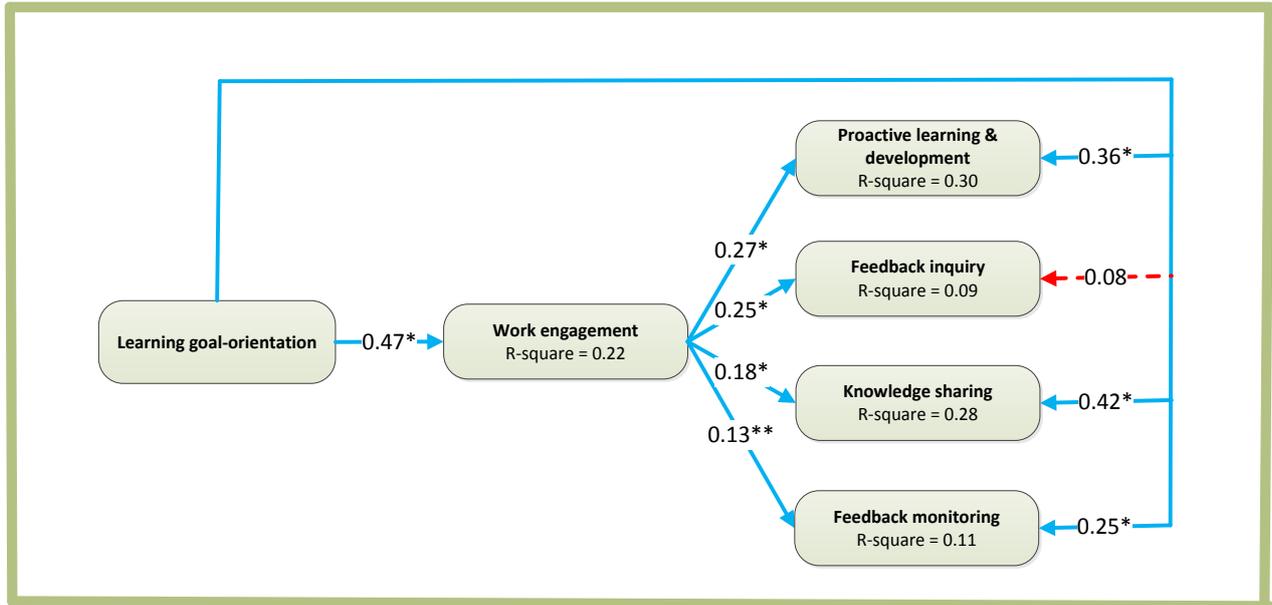


Note.  $*p < 0.001$ . All paths are standardised regression paths.

Upon inclusion of work engagement as a predictor of outcomes and as an outcome of learning goal orientation (see Figure 4 below), the model showed improvement in fit indices and in R-square. [ $\chi^2(313, N = 410) = 835.56, p < 0.001, \chi^2/df = 2.67, CFI = 0.93, RMSEA = 0.06$  with  $CI_{90}: (0.059, 0.069), SRMR = 0.11.$ ]. However, the path from learning goal orientation to feedback inquiry was reduced and became non-significant (from 0.21 to 0.08).

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Figure 5. The incremental importance of work engagement.



Note. \* $p < 0.001$  \*\* $p < 0.05$ . Dashed path is non-significant. All paths are standardised regression paths.

Table 4 below shows that the model depicted in Figure 5 has a higher CFI value compared model in Figure 4. Furthermore, the chi-square difference between the two models is significant. The chi-square difference test is used here (and beyond) following the recommendations of Brown (2006) who treat nested models as models having different number of latent variables rather than models with same number of latents with difference in paths numbers. Thus, work engagement explains incremental variance over learning goal orientation in predicting all the four outcomes, supporting further hypotheses 11, 12, 13, and 15.

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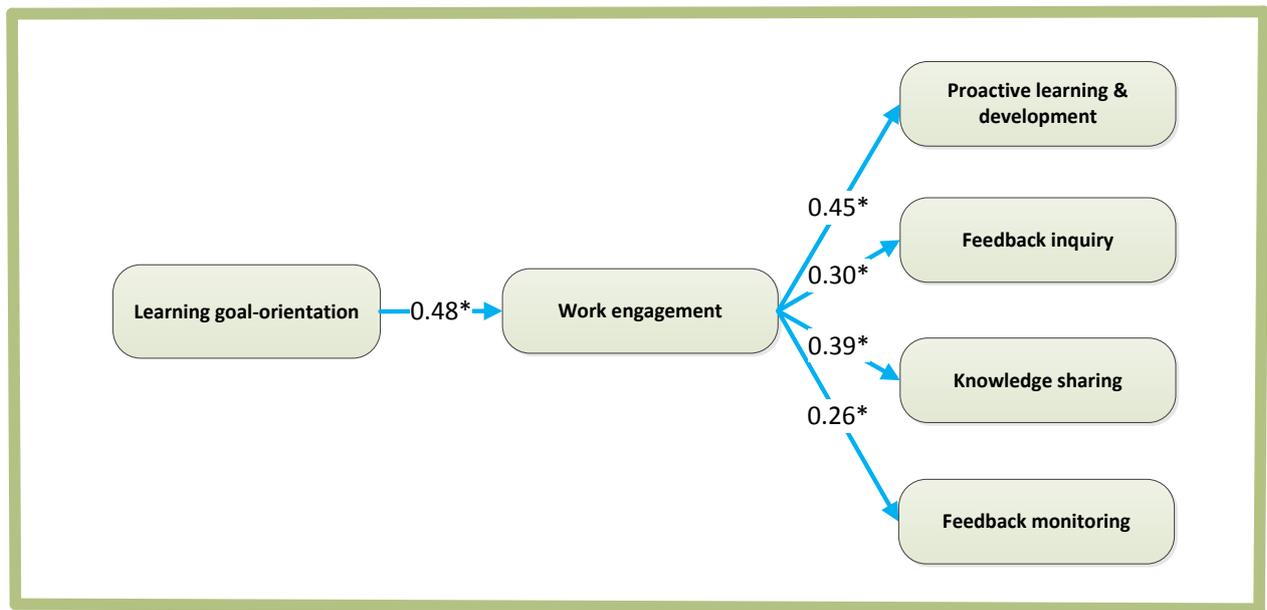
Table 4. Fit indices for nested model comparisons

Model	Description	$\chi^2$ (N= 410)	df	$\chi^2$ /df	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta$ df
Figure 4	Model with learning goal orientation only	704.23	224	3.14	.92	.07	.13		
Figure 5	Model with learning goal orientation & work engagement	607.29	163	3.72	.93	.08	.08	96.94*	61

\* Note.  $p < 0.001$

To test that work engagement is a partial mediator between learning goal orientation and outcomes, two reduced structural models were compared. A partial mediation model, i.e., Figure 5 above, was compared to a full mediation model, Figure 6 below.

Figure 6. Work engagement as full mediator.



Note. \* $p < 0.001$ . All paths are standardised regression paths.

Table 5 below shows the partial mediation model has better fit and the change in chi-square is significant. Thus, hypothesis 16, was fully supported.

Table 5. Fit indices for nested model comparisons

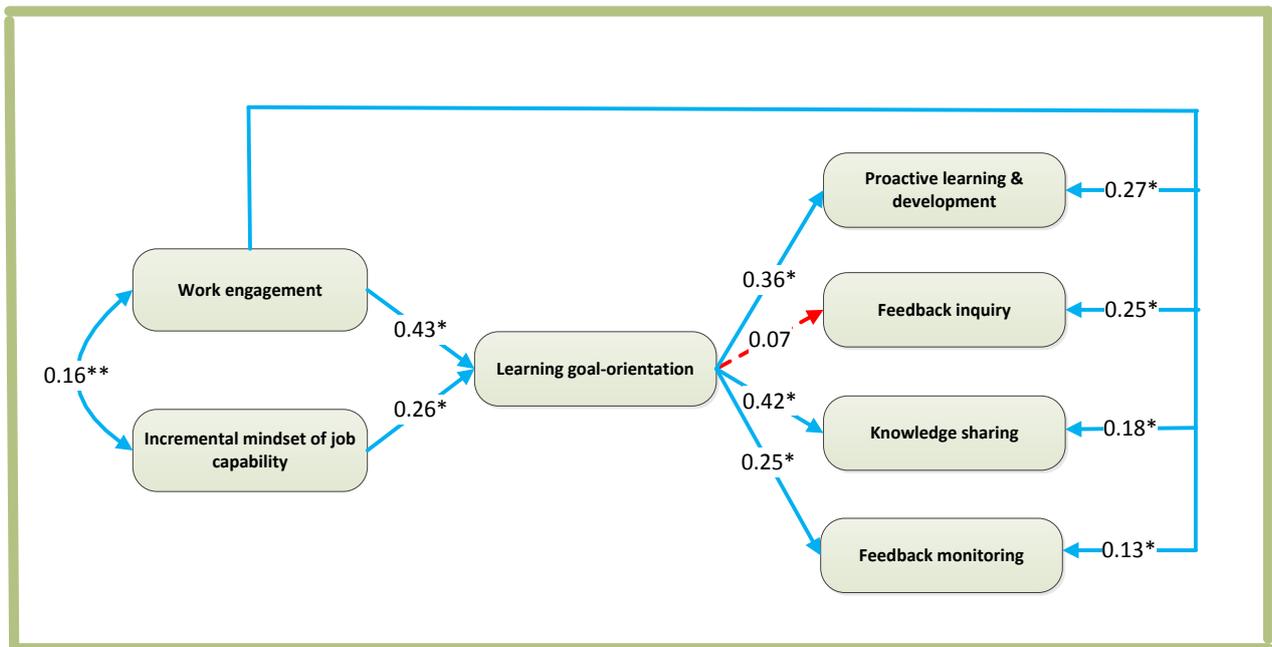
Model	Description	$\chi^2$ (N = 410)	df	$\chi^2$ /df	CFI	RMSEA	SRMR
Figure 6	Full mediation	945.62	317	2.98	.92	.07	.14
Figure 5	Partial mediation	607.29	163	3.72	.93	.08	.08

Note. \* $p < 0.001$

5.0332 Testing the alternative model of mindset of job capability

An alternative model, as explained in Chapter Four section 4.025, was tested by re-specifying the structural model of Figure 2. That is, alongside the incremental mindset of job capability, work engagement was positioned as a predictor of learning goal orientation (see Figure 7 below). This model fit the data [ $\chi^2(421, N = 410) = 1063.92, p < 0.001, \chi^2/df = 2.53, CFI = 0.93, RMSEA = 0.06$  with  $CI_{90}: (0.057, 0.066), SRMR = 0.09$ ]. Of note is that the alternative model is theoretically different from the hypothesized modified model depicted in Figure 2. However, both models are statistically equivalent and longitudinal testing is one of the means by which they can be further compared. This is addressed further in Chapter 6 in the longitudinal analyses.

Figure 7. The alternative model of mindset of job capability.



Note. \* $p < 0.001, p < 0.05$ . All paths are standardised regression paths. Dashed path is non-significant

5.0333 The mindset of emotion model

First of all, the hypothesised higher-order factor of adaptive emotion regulation was tested. The latent variable of cognitive reappraisal (represented by three item parcels) and the latent variable of learning goal orientation for emotion were specified to load onto a latent higher-order latent factor. As this higher order is under-identified, because a higher order factors requires at least three first-order factors (Kline 2011), both of the loadings were set to 1 to reduce the number of estimated parameters.

The higher-order factor fit the data [ $\chi^2 (13, N = 410) = 12.69, p < 0.001, \chi^2 /df = 1.67, CFI = 0.99, RMSEA = 0.04$  with  $CI_{90}: (0.00, 0.069), SRMR = 0.02$ ]. This model was compared with a unidimensional model (i.e., with all the items of both latent variables loading on a single latent factor). The results are shown in Table 6 below. The unidimensional model has poor fit [ $\chi^2 (14, N = 410) = 657.54, p < 0.001, \chi^2 /df = 46.97, CFI = 0.60, RMSEA = 0.34$  with  $CI_{90}: (0.314, 0.357), SRMR = 0.19$ .] and the chi-square test of difference between the two models is significant, showing that cognitive reappraisal and learning goal orientation for emotion are better represented through a higher-order factor. Thus hypothesis 19 was supported.

Table 6. Fit indices for nested model comparisons of unidimensional and higher-order two factor model for adaptive emotion regulation

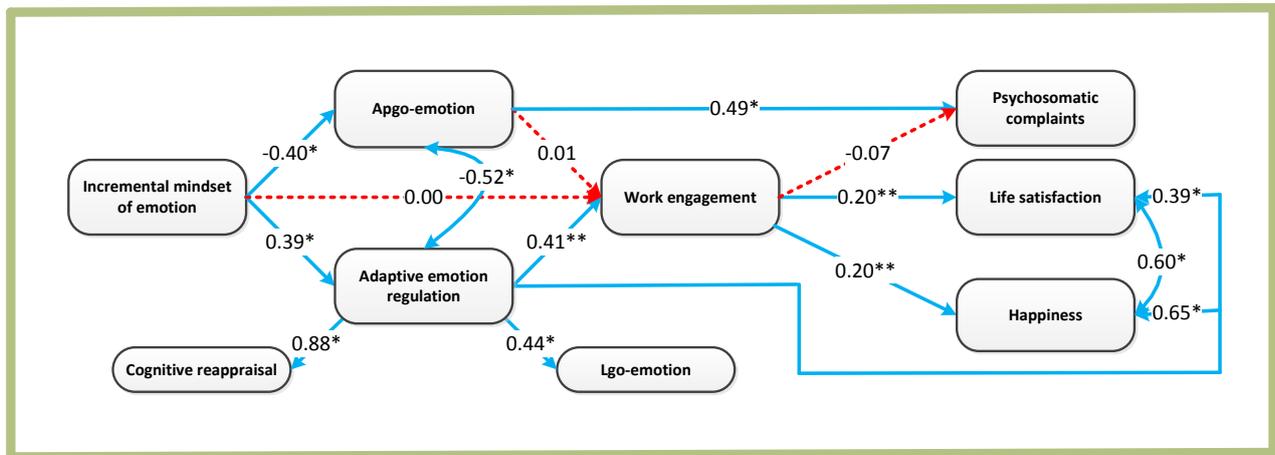
Model and Description	$\chi^2 (N= 410)$	df	$\chi^2 /df$	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta df$
Unidimensional model	657.54	14	46.97	.60	.34	.19		
Higher-order two factor model	12.69	13	1.67	.99	.04	.02	644.85*	1

Note. \* $p = 0$ .

An overall structural model was fitted with paths representing all the hypotheses, as shown below in Figure 7 below. Following Preacher and Hayes (2008), the residuals of the two parallel mediators, adaptive emotion regulation and avoid performance goal orientation for emotion, were allowed to covary. Moreover, the model required correlation of error disturbances (i.e. error terms of latent variable) between happiness and life satisfaction as these two constructs are related in indeterminate ways (Busseri & Sadava, 2011) (this was discussed in Chapter Four, section 4.032). This correlation is in line with Joreskog and Long's (1993) advice that there should be strong theoretical justification behind correlation of error terms. The structural model fit the data well [ $\chi^2 (420, N = 410) = 837.43, p < 0.001, \chi^2 /df = 2.00, CFI = 0.95, RMSEA = 0.05$  with  $CI_{90}: (0.045, 0.054), SRMR = 0.07$ ].

## Antecedents and outcomes of work engagement: The role of mindsets.

Figure 8. Results of mindset of emotion model

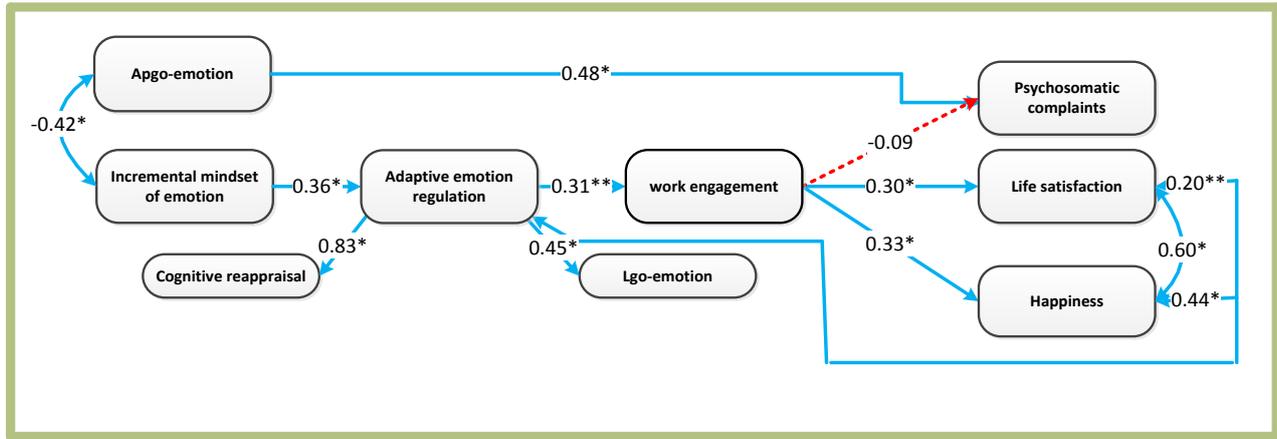


Note. \* $p < 0.001$ .  $N = 410$ . All paths are standardised regression paths. Dashed paths are non-significant

Three insignificant paths were found: (1) the incremental mindset of emotion to work engagement path (hypothesis 24) (2) the avoid performance goal orientation to work engagement path (hypothesis 23) and (3) the work engagement to psychosomatic path (hypothesis 29). The model was re-specified by removing the incremental mindset of emotion to work engagement path. The latent variable of avoid performance goal orientation for emotion was kept as an exogenous variable so as to continue to provide a means of control for re-assessing the work engagement to psychosomatic path. It was allowed to covary freely with the incremental mindset of emotion. This modified model, Figure 8 below, fit the data well [ $\chi^2(422, N = 410) = 879.68, p < 0.001, \chi^2/df = 2.08, CFI = 0.95, RMSEA = 0.05$  with  $CI_{90}: (0.047, 0.056), SRMR = 0.10$ ]. As can be seen, excluding the insignificant work engagement and psychosomatic complaints path, all the other paths are significant.

## Antecedents and outcomes of work engagement: The role of mindsets.

Figure 9. Results of mindset of emotion, re-specified model ( $N = 410$ ).



Note.  $*p < 0.001$ . All paths are standardised regression paths. Dashed path is non-significant

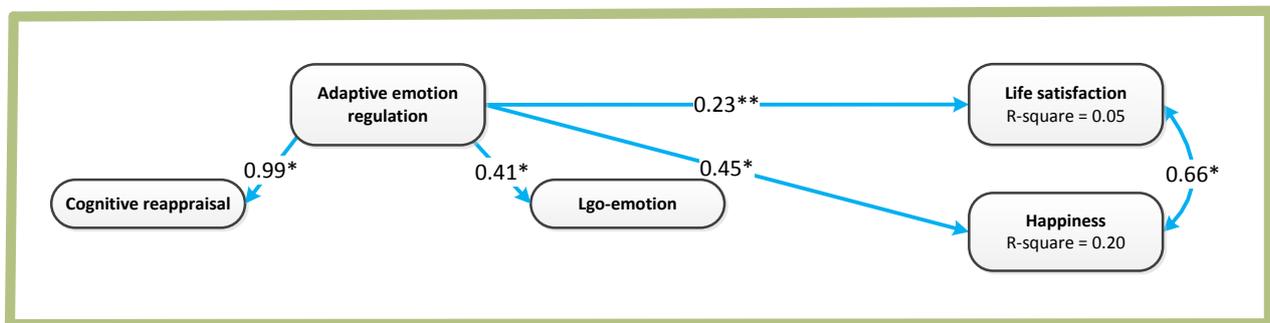
Before proceeding further with the analysis, the marker variable method was implemented to obtain CMV adjusted estimates. This was done following the steps outlined by Williams, Hartman, & Cavazotte (2010). The structural model in Figure 9 was converted into a CFA by including the marker variable of knowledge sharing. The factor loadings of the indicators of the latent marker variable was noted. Then the marker variable was implemented again in the structural model with paths from the latent marker variable to all indicators in the structural model. The factor loadings of the indicators of the marker variable were fixed to the values noted earlier from the CFA. The structural model was estimated. As one would expect, because of the low correlations of the marker variable with the other variables in the structural model (specifically the outcome variables), the CMV-adjusted estimates were marginally different from the unadjusted ones. CMV was not an issue in the study. The further analysis of the structural model was thus done without the inclusion of the marker variable.

Both the 95% percentile bootstrap (BP) confidence intervals (CI) and 95% bias-corrected bootstrap (BCP) confidence intervals (CI) were calculated for the indirect effect using 2000 bootstrap samples. The indirect effect of incremental mindset of emotion on work engagement through adaptive emotion regulation is:  $\beta = 0.08$  ( $p < 0.001$ ), with PB confidence interval: (95% CI: 0.01, 0.18) and with BCB confidence interval (95% CI: 0.02, 0.20). As can be seen, the two bootstrap approaches yield consistent results, and exclude zero. Thus, the effect of the incremental mindset of emotion on work engagement is fully mediated by adaptive emotion regulation.

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Next, controlling for the effect of adaptive emotion regulation, the hypotheses of the incremental variance of work engagement in explaining happiness and life satisfaction was tested. The construct of psychosomatic complaints was excluded as it has a non-significant path with work engagement. For this purpose two sets of models were compared. In the model in Figure 10 below, adaptive emotion regulation was included as the sole predictor of happiness and life satisfaction. Overall, this model had a poor fit [ $\chi^2(169, N = 410) = 1916.79, p < 0.001, \chi^2/df = 11.34, CFI = 0.73, RMSEA = 0.16$  with  $CI_{90}: (0.153, 0.165), SRMR = 0.19.$ ], although all paths were significant.

Figure 10. Adaptive emotion regulation as predictor of outcomes.

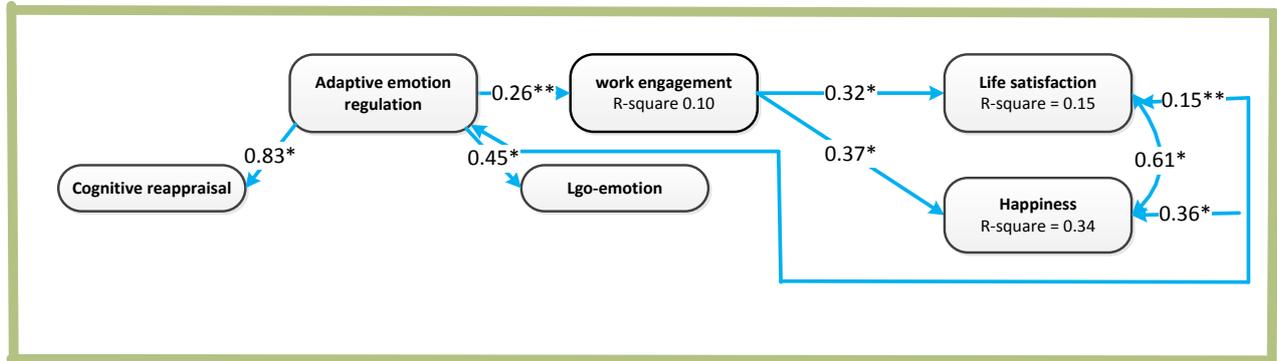


Note.  $*p < 0.001$ . All paths are standardised regression paths.

Then a second model (Figure 11 below) with work engagement as a predictor of outcomes and as an outcome of adaptive emotion regulation was tested. The model showed improvement in fit indices and in R-square. [ $\chi^2(162, N = 410) = 273.69, p < 0.001, \chi^2/df = 1.7, CFI = 0.98, RMSEA = 0.04$  with  $CI_{90}: (0.032, 0.069), SRMR = 0.04.$ ]. As can be seen, in Figure 10 below, R-square in the two outcome variables improved.

## Antecedents and outcomes of work engagement: The role of mindsets.

Figure 11. Incremental importance of work engagement.



Note. \* $p < 0.001$ . All paths are standardised regression paths.

Table 7 below shows that the model in Figure 10 has a higher CFI value compared with that of the model in Figure 10. Furthermore, the chi-square difference between the two models is significant. Thus, work engagement explains incremental variance over adaptive emotion regulation in predicting happiness and life satisfaction.

Antecedents and outcomes of work engagement: The role of mindsets.

Table 7. Fit indices for nested model comparisons of figure 9 and 10

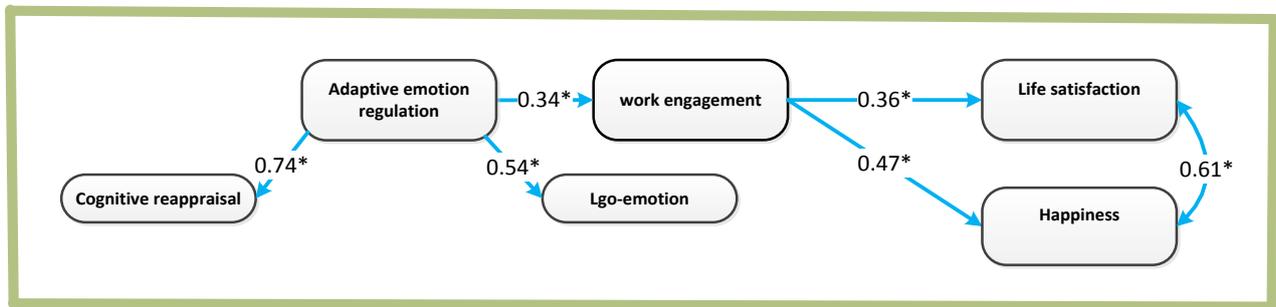
Model	Description	$\chi^2$ (N= 410)	df	$\chi^2$ /df	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta$ df
Figure 10	Model with adaptive emotion regulation only	1916.79	169	11.34	.73	.16	.19		
Figure 11	Model with adaptive emotion regulation & work engagement	273.69	162	1.7	.98	.08	.08	644.85*	7

Note. \* $p = 0$ .

Antecedents and outcomes of work engagement: the role of mindsets.

Then the hypothesis that work engagement is a partial mediator between adaptive emotional regulation and life satisfaction and happiness was tested (Hypothesis 28). Two models were compared for this purpose. A partial mediation mode, Figure 10 above, was compared to a full mediation model, Figure 12 below. Of note here is that hypothesis 29 (Work engagement is a partial mediator between avoid performance goal orientation and psychosomatic complaints.) could not be tested as the work engagement and psychosomatic complaints was not significant as illustrated above in Figure9.

Figure 12. Work engagement as full mediator



Note. \* $p < 0.001$ . All paths are standardised regression paths.

Table 8 below shows that the chi-square difference test between the two models is significant and the partial mediation model has a higher CFI value than the full mediation model.

Table 8. Fit indices for nested model comparisons

Model	Description	$\chi^2$ (N= 410)	df	$\chi^2$ /df	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta$ df
Figure 12	Full mediation	325.51	164	1.98	0.97	.05	.05		
Figure 11	Partial mediation	273.69	162	1.70	0.98	.08	.08	51.82*	2

Note. \* $p = 0$ .

#### 5.04 Discussion: General overview

This brief interim discussion of each mindset model is organised in two parts. The first part, discusses the overall results broadly, and the second part discusses the implications for the next stage of model testing in Chapter Six.

##### 5.041 Mindset of job capability model: current findings

Corroborating previous work in the domain of mindsets (Burnette et al., 2012), the incremental mindset of job capability showed the expected pattern of associations with its self-regulated variables. That is, the incremental mindset of job capability was positively related with learning goal orientation and negatively related with avoid performance goal orientation. The incremental mindset of job capability is related with work engagement. Preliminary evidence suggests that this causal nexus is fully mediated (i.e., the direct link between the incremental mindset of job capability and work engagement is non-significant). However, the indirect link operates through the mediating role of learning goal orientation only as avoid performance goal orientation was unrelated with work engagement. Therefore, the predicted partial mediation model linking the incremental mindset of job capability to work engagement through a parallel set of mediators, namely learning goal orientation and avoid performance goal orientation, was not supported. Instead, support for a full mediation model, with one mediator, learning goal orientation, was found.

As hypothesised, learning goal orientation is positively related with proactive learning and development, knowledge sharing and feedback monitoring but it has a non-significant path with feedback inquiry. The link between learning goal orientation and proactive learning and development confirms previous findings in this domain. That is, those with a learning goal orientation report undertaking learning and development activities. The finding also re-emphasizes the distinction<sup>26</sup> between attitudes and intentions (Ajzen & Fishbein, 2005; Sheeran, 2002) in that learning goal orientation as a predictor is distinct from learning behaviours (Hurtz & Williams, 2009) as discussed in section 5.0314. The link between learning goal orientation and knowledge sharing confirms the theoretical predictions of Wang and Noe (2010) and others (Swift, Balkin, & Matusik, 2010; Matzler & Mueller, 2011), suggesting that those with a learning goal orientation engage in knowledge sharing to increase and rehearse their own knowledge about work tasks. These individuals are driven by the goal

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<sup>26</sup>This is applicable in the feedback seeking literature as well. As Anseel et al. (2013, p. 12, original emphasis ) note “... empirical studies have shown that feedback-seeking *intentions and preferences* are quite different from FSB [feedback seeking behaviour] as they often do not result in actual feedback-seeking *behavior* (e.g., Anseel & Lievens, 2007; Levy et al., 1995)”

of continually learning, always looking for new learning goals. They also share their knowledge because they are not anxious in revealing any knowledge gaps that might become evident as they interact with peers. On the other hand, the absence of a relationship between learning goal orientation and feedback inquiry is in sharp contradiction with the proposal and empirical findings of Vandewalle (2003). Vandewalle (2003) reported that adopting a learning goal orientation promotes feedback inquiry as those who value learning and improvement equally value feedback because it has diagnostic value, and is thus often sought directly. In addition, individuals with a learning goal orientation also cognitively process feedback costs adaptively by attributing less importance to costs.

Controlling for the effect of learning goal orientation on the three proactive learning outcomes, work engagement had significant positive association with all the four proactive learning outcomes. At this stage this is very promising and indicates that, at a cross-sectional level of analyses, work engagement has incremental validity over learning goal orientation in predicting these outcomes. These findings suggest work engagement has potential value. The psychological connection that workers have with their work — which results in them investing their full selves into their work tasks — seem to have beneficial effects for proactive learning outcomes. Therefore, the benefits of work engagement are not confined to task performance alone, but appear to mediate self-development. This is possibly the first study showing the incremental importance of work engagement in predicting outcomes over another competing predictor that has no conceptual overlap with engagement. The hypothesis postulating that work engagement will be more strongly related with feedback seeking than with feedback monitoring was not supported. Furthermore, the hypothesis that work engagement is a partial mediator between learning goal orientation and the outcomes was supported, adding credence to the findings of Christian et al. (2011).

#### 5.042 Mindset of job capability model: Implications for main studies

##### 5.0421 The incremental mindset of job capability and work engagement causal nexus

The links between the incremental mindset of job capability and goal orientations are in agreement with the literature in mindset research. These findings are new in that the mindset of job capability has not been studied directly with respect to goal orientations. Thus, this now requires more testing so the consistency of these links can be evaluated. In line with current theorising in the mindset domain, these links can be posited to exist over time. However, recent empirical studies suggest that

bidirectional links between mindsets and related self-regulatory variables are possible (Martin 2014) because, essentially mindsets and goals influence each other (Cadwallader, 2009). This prediction stems from cybernetic or self-control theory (Carver & Scheier, 1998). As Burnette et al. (2012) note:

This view that beliefs, self-regulatory processes, and goal achievement mutually influence one another also aligns with self-control theory (Carver & Scheier, 1998), which conceptualizes such dynamics in terms of a feedback loop rather than in terms of unidirectional linear associations. Future research could fruitfully explore such feedback loops. (p. 25)

Indeed, unidirectional causality is more easily observed in the physical sciences. Perhaps the most robust example is in the statement of Sagan (1994, p. 34), on the deep link we have with the cosmos: “We are caused by the cosmos, but we are not a cause of it”. However, within the social and life sciences causality is overwhelmingly complex (Laland, et al., 2011). As Barrett (2007b) notes,

As a scientist, one thinks about phenomena, their qualities, attributes, and potential cause, and in the case of psychological phenomena, the system (i.e. the human being) which is part of the cause and the effect of a phenomenon, i.e. human beings are both recipients of cause – as well as initiators – sometime *simultaneously*. This is unlike the world of physics – where the objects under examination do not themselves decide of their own volition to cause phenomena”. (p. 1 emphasis added)

So an implication from the findings is to test the reciprocal nature of the incremental mindset of job capability and goal orientation link.

The zero-order negative correlation between avoid performance goal orientation and work engagement is weak, although it is significant ( $r = -0.13$   $p < 0.001$ ). Within the structural model, the path has a zero parameter value. The theoretical propositions formulated in Chapter Four postulating that high approach and low avoidance motivation co-occur in goal striving were not validated. Further testing of the current bivariate avoid performance goal orientation to work engagement is needed. The parallel mediation will be re-tested in the main study.

The incremental mindset of job capability and work engagement causal nexus needs to be tested longitudinally as mediation observed cross-sectionally is subject to bias (Kline, 2015). Moreover, there

is an alternative incremental mindset of job capability model as well in which work engagement and the incremental mindset of job capability are the main exogenous variables causing learning goal orientation. The directional work engagement to learning goal orientation link is predicated on the empirical work engagement and intrinsic motivation relationship. These two variables are highly correlated,  $r = 0.80$  (as discussed in Chapter Four, section 4.025) and they can be treated as equivalent constructs. As intrinsic motivation predicts learning goal orientation (Cerasoli & Ford, 2014), by substitution, work engagement can predict learning goal orientation. As discussed in Chapter Four, it is possible that both models are valid, but testing these two configurations over time may shed more light on the stability of the links. Furthermore, the learning goal orientation and work engagement link can also co-exist within a reciprocal relationship as well because work engagement is often found to relate reciprocally with its resources. This needs to be tested.

#### 5.0422 Relationships with outcomes of work engagement

The path from learning goal orientation to feedback inquiry was not significant in the structural model. Early research on work domain learning goal orientation found a moderate to strong relationship with feedback seeking behaviour (VandeWalle, 1997; VandeWalle & Cummings, 1997<sup>27</sup>). Further theoretical work (VandeWalle, 2003) suggested that those with a learning goal orientation allocate more importance to the value and diagnostic utility of feedback and do not engage in costly cognitive processing of feedback costs. Recent meta-analytic work on feedback seeking (Anseel et al., 2013) sheds some light on this inconsistency. Anseel et al. (2013) report that the link between learning goal orientation and overall feedback seeking behaviour (this includes both feedback inquiry and monitoring as a single construct) is positive but it is inconsistent. However, they could not find enough studies to investigate the differential relationship of feedback inquiry and feedback monitoring with respect to antecedents and outcomes. The present research shows that the inconsistency they found can be explained by looking at the differential effects of learning goal orientation on feedback inquiry and feedback monitoring. It appears that feedback costs might outweigh feedback benefits for those with a learning goal orientation since, within the structural model, learning goal orientation is related with feedback monitoring only (feedback monitoring has low or zero cost). This is in contrast with the literature which argues that learning goal orientation is negatively related with cost (see Anseel, 2013). The present research sought to use learning goal orientation as a strong benchmark against which the

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<sup>27</sup> This study was scenario and vignette based, hence not grounded in a real setting. Indeed Anseel et al. (2013) excluded this from their meta-analytic work.

relationship of work engagement and feedback seeking (feedback inquiry and feedback monitoring) could be assessed. However, at this point this is not problematic since learning goal orientation still serves to comparatively evaluate the value the work engagement to feedback seeking. As mentioned above, work engagement is not differentially related with feedback inquiry and feedback monitoring.

To sum up, the hypothesis that work engagement is a partial mediator between learning goal orientation and outcomes was supported. The hypothesis that work engagement has incremental variance over learning goal orientation in predicting the outcomes was also supported. Both of these findings now require further cross-sectional and longitudinal testing so the stability of the links can be assessed. Moreover, there are reverse hypotheses and research questions on the work engagement and outcomes link, these require longitudinal analyses.

#### 5.043 Mindset of emotion model: current findings

This study sought to integrate the construct of the mindset of emotion and its self-regulatory variables within an explanatory model investigating the causes and outcomes of work engagement. That is, the model proposed the incremental mindset of emotion as a potential dispositional antecedent of work engagement that can explain the affective part of work engagement. Within this theoretical proposition, the model sought to investigate the incremental value of work engagement, over the self-regulatory variables of adaptive emotion regulation and avoid performance goal orientation for emotion, in predicting subjective well-being outcomes of happiness, life satisfaction, and psychosomatic complaints. In addition, work engagement was posited to function as a partial mediator between the self-regulatory variables and the outcomes.

In line with previous work in the domain of mindsets (Burnette et al., 2012), the incremental mindset of emotion showed the expected pattern of associations with its proposed domain-specific self-regulated variables. The incremental mindset of emotion was positively related with adaptive emotion regulation (the shared variance between learning goal orientation for emotion and cognitive reappraisal) and negatively related with avoid performance goal orientation. This adds to the work of Tamir et al. (2007) and other researchers who have reported the link between incremental mindset of emotion and cognitive reappraisal. However, this study is possibly the first investigating the links between incremental mindset of emotion and goal orientations for emotion. The negative relationship between incremental mindset of emotion and avoid performance goal orientation is in line with the

literature on mindsets. This implies that those holding an incremental mindset of emotion do not seek to avoid showing evidence of inability to manage emotions.

The incremental mindset of emotion is related with work engagement. This causal nexus is indirect, operating through the mediating role of adaptive emotion regulation only, and not jointly in parallel with avoid performance goal orientation for emotion as was hypothesised. Thus, while the incremental mindset of emotion is positively related with adaptive emotion regulation and negatively related with avoid performance goal orientation for emotion, the full support for the pattern of predicted directional associations from these self-regulatory variables and work engagement was not obtained. That is, adaptive emotion regulation is positively related with work engagement ( $\beta = 0.41$ ) but avoid performance goal orientation for emotion has a nil path to work engagement although the zero-order correlation between the latter two variable was significant ( $r = 0.21$ ). In addition, controlling for the effect of adaptive emotion regulation on work engagement, the direct effect of incremental mindset of emotion on work engagement is zero. Thus, the predicted partial mediational causal nexus linking the incremental mindset of emotion to work engagement through a parallel set of mediators (adaptive emotion regulation and avoid performance goal orientation for emotion) was not supported.

As hypothesized, adaptive emotion regulation is positively related with happiness and life satisfaction. In the same vein, avoid performance goal orientation for emotion was also positively related with psychosomatic complaints. This adds to the long-standing claims that adaptive emotion regulation has a non-negligible effect on subjective wellbeing (Berkin, Wirtz, Svaldi, & Hofmann, 2014). Cognitive reappraisal is crucial for adaptive coping patterns in daily life, it has direct adaptive value and hence it is logical to see it is more related with happiness than life satisfaction. So far, the effects of learning goal orientation for emotion on subjective wellbeing has been reported by Rusk et al. (2011) only, they argued that learning goal orientation for emotion allows individuals to use feedback diagnostically to learn to manage their emotions. From this vantage point, the current finding lends support to this in that learning goal orientation for emotion is related with happiness and life satisfaction through its shared variance with cognitive reappraisal. Avoid performance goal orientation for emotion has a significant relationship with psychosomatic complaints. Indeed, Rusk et al. (2011) found that with the adoption of an avoid performance goal orientation for emotion is predictive of depressive symptoms and this was true even when controlling for domain-specific self-efficacy with regard to negative affect alleviation through cognitive strategies.

Controlling for the effect of adaptive emotion regulation on happiness and life satisfaction work engagement had significant positive effects on happiness and life satisfaction. Therefore, at a cross-sectional level of analyses, work engagement has incremental validity over adaptive emotion regulation in predicting these outcomes. However, work engagement had a non-significant negative path with psychosomatic complaints. This disconfirmation is noteworthy in that, to date, no previous study has reported such a finding. All previous studies have reported significant negative links between work engagement and psychosomatic complaints, without implementing any other known predictor variable of psychosomatic complaints. It seems that the scepticism of Maslach (2011) needs further evaluation. Maslach (2011, p. 51) stated that health "... is determined by much more than the workplace [and that]... the rationale for arguing that engagement ought to play an important role in physical health outcomes is questionable". At this stage the disconfirmation needs more testing. The hypothesis that work engagement is a partial mediator between the self-regulatory variables and outcomes was partially supported. That is, work engagement is partial mediator between adaptive emotion regulation and happiness and life satisfaction. This hypothesis could not be tested with psychosomatic complaints because its link with work engagement was not significant.

#### 5.044 Mindset of emotion model: Implications for main studies

##### 5.0441 The incremental mindset of emotion and work engagement causal nexus

As noted above, the directional links between the incremental mindset of emotion and the self-regulatory variables are in accordance with the general research on mindsets. In parallel to what was discussed in the mindset of job capability above these links need longitudinal testing so their consistency can be assessed. Furthermore reciprocal links between the incremental mindset of emotion and self-regulatory variables may also exist, so this need verification as well.

The negative zero-order significant correlation between avoid performance goal orientation for emotion and work engagement is weak ( $r = -0.13$ ), and within the structural model the path from avoid performance goal orientation for emotion to work engagement is reduced to nil. Hence, low levels of avoid performance goal orientation in the emotion domain is not related with high levels of work engagement. However, at this stage this finding needs to be tested again for further interpretation.

#### 5.0442 Relationship with outcomes of work engagement

As mentioned above, work engagement had a non-significant negative path with psychosomatic complaints. However, this link needs to be tested further before any further conclusion can be drawn. At the same time, the current disconfirmation sheds some light on the reverse question too. That is, are psychosomatic complaints a potential predictor of work engagement? This will be tested in the longitudinal studies.

#### 5.05 Addressing CMV and social desirability.

As evidenced by the Harmon one-factor test and the implementation of marker variable, CMV was not an issue in both studies. Furthermore, the correlation matrices showed that the correlations do not show any erratic patterns that would suggest poor data quality. However, as mentioned in section 5.013, CMV is more adequately addressed through research design. Therefore, part of the data will be source from other sources to manage CMV at the outset. Thus, where it is applicable, data on criterion variables (e.g. feedback seeking behaviours, proactive learning and development) are sought from work supervisors and co-workers. Furthermore, the mindset of emotion scale used (Tamir et al., 2007) has two incremental items. As mentioned in Chapter Three, incremental mindsets scales across domains are prone to social desirability bias. Although there is no indication of such bias here, the full use of entity items only is desirable, as was the case in the mindset of job capability model where only entity items were used. For the next studies, new entity items are implemented in replacement of the incremental items.

## **Chapter Six**

### **Main studies**

#### 6.00 General overview

This chapter is the empirical nerve centre of the thesis where the main testing of both mindset models is undertaken using a common employee sample.

#### 6.01 Strategy of study design and analysis

The chapter builds on the results of the foundational models, testing each mindset model through cross-sectional and two-wave repeated measures studies. In what follows, firstly, the theoretical and statistical underpinnings guiding the methods implemented are explained (sections 6.011 to 6.012). Then, the method and data analysis follow.

#### 6.011 Cross-sectional analysis

As explained in Chapter Five, SEM is implemented in this research because it is an appropriate for testing models with multiple hypotheses (Bollen, 2011). However, SEM has limitations with regard to causality (Hoyle, 2012). This limitation is related with time. More precisely, in each SEM model, at the level of each hypothesis, causality and time are deeply intertwined. Indeed, fundamental questions can be raised with regard to the link between causality and time in any SEM model where constructs are measured concurrently in support of directional hypotheses (MacCallum & Austin, 2000). According to Gollob and Reichardt (1991), causality in an SEM model depends on three essential conditions.

The first condition relates to the temporal dimension. That is, for an effect to occur, a defined amount of time must be specified. The second is that a dependent variable may be also influenced by its own prior level, other than a predictor. The third is that the magnitude of an effect can vary as a function of the time lag (MacCallum & Austin, 2000, Selig, Preacher, & Little, 2012). Therefore, causality through a cross-sectional SEM model is largely untenable given the first key requirement of time (Gollob & Reichardt, 1991; MacCallum & Austin, 2000). However, a cross-sectional SEM model is partly defensible if near-instantaneous directional effects between predictors and criteria are assumed (MacCallum & Austin, 2000). In fact, near-instantaneous directional effects are not entirely implausible and can exist in many causal situations in applied psychology. Examples are the causal links between

service climate<sup>28</sup> and customer satisfaction; and self-efficacy in mathematics and performance on mathematics tests (Pajares & Miller, 1995).

As mentioned in Chapter One section 1.053, most theories in I-O psychology are underdeveloped and do not propose precise time lags between cause and effect (Edwards & Berry, 2010). In addition, current work engagement theory is lacking with regard to precision on temporal dimensions (this was also noted in Chapter One section 1.053). However, near-instantaneous time frames cannot be totally excluded in any of the causal links of the models. These time frames are possible because the contexts for explanations in psychology are infinitely numerous (Smedslund, 2015), meaning that there are work and life contexts where causality between the predictors and criteria in both models could exist as near-instantaneous links. In addition, MacCallum and Austin (2000, p. 214) have argued that one way to deal with the directional causality and the time link problem within a cross-sectional SEM model is to assume that the “causal variables under study do not change over the time period of interest, i.e. between the time the causal effect occurs and the time the causal variable is measured”. Thus, because the predictor variables in both models are investigated at the trait level, with the important assumption that the variables exhibit stability over time, additional support for allowing flexibility around the temporal requirements required for causality is thus available. This imprecision with regard to time lag is not synonymous with theoretical laxity, but it is a necessity at a stage where theory is still under development. Monge (1990) notes that:

Realistically, the current state of knowledge in organizational science rarely permits precise time specification. Nonetheless, even general time notions such as lag, sequence, duration of change, etc., are important theoretical specifications. Vague and inexact specifications of process characteristics are preferable to no specifications at all. (p. 408-409)

Thus, building on all these assumptions, the cross-sectional analysis allows the testing of SEM models that are causally plausible. However, it must be emphasised that the assumptions underlying causality in the cross-sectional models are weak assumptions that cannot be verified. Thus, further ahead, the temporal aspect of causality within the models is addressed with the implementation of longitudinal research based on two-wave repeated studies using a time lag of 3.5 months. The theoretical background to the longitudinal studies is discussed next.

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<sup>28</sup> Service climate is defined as “...employees’ shared perceptions of the practices, procedures, and behaviors that are rewarded, supported, and expected by the organization with regard to customer service and customer service quality (Schneider et al., 1998)” (Salanova et al., 2005, p. 1217).

## 6.012 Longitudinal analysis

### 6.0121 The temporal aspect of process models

As stated in Chapter Five, the mindset models are foremost process models (Monge 1990; Spector & Meier, 2014). As such, process models have process hypotheses. An essential feature of any process hypothesis is that it not only posits that a change in a predictor is related with a change in an outcome, but it also specifies how this process unfolds over time (Monge, 1990). Hence the temporal dimension of a process is an indissociable part of the causal chain. However, time has been largely absent in psychological theorizing. Roe (2008) remarks that:

Little knowledge exists about the factors that are related to the emergence of particular behaviors, their duration, their stability, the sequence of their occurrence, and so on. Although time is implied in virtually all phenomena under study – no form of behavior could possibly be defined without reference to time, and no behavior could be observed if the time interval were limited to zero – most handbooks and journal articles in applied psychology have presented essentially timeless descriptions and explanations of human behavior. Only certain areas – such as developmental psychology and the psychology of learning – provide exceptions to this rule. (p. 37)

Of note is that when time is incorporated in explicating a process, it is used in the prediction sense, in line with the hypothetico-deductive method. This theory-laden prediction is strictly demarcated from prediction in the temporal sense, as related to foretelling the future — which is unrelated with science (Ayala, 1996).

The correct procedure for structuring a longitudinal inquiry is to ground it using dynamic theory and process hypotheses. Ideally, it is said that:

A good process theory describes, at least in broad outline, plausible time parameters associated with change within and between the phenomena of interest. Given general theoretical specification of changes over time, it is relatively easy to develop a research design to correspond to the theoretical specifications [and] scholars should address the issue of time

specification in the theoretical phase of their work before they address it in the research phase. (Monge, 1990, p. 408)

But additionally, the implementation of time requires clarification with regard to the nature of the change phenomenon as well as the correct theoretical model of change and its associated statistical model with which it can be tested (Collins, 2006). In any sound longitudinal research, these three components are well integrated together with the research hypotheses.

Importantly, the nature of the change phenomenon refers not only to the effect but also to the nature of the constructs involved. The effect and the nature of the constructs are deeply related. Together, as a unit, this informs the nature of the change posited — this is explained in more detail in section 6.01224. For now, it suffices to say that change over time can take many possible forms. The change is a function of how a variable behaves over time when the variable is observed in isolation as well as when it operates in conjunction with other variables. Once the correct theoretical model of change is articulated, the research design can progress with regards to the selection of the most appropriate timing, frequency, and the spacing of observations (Collins, 2006) ensuring that the temporal aspect of the research design is consonant with the research hypothesis.

At this stage, a critical point regarding the definition of longitudinal design must be mentioned. Many researchers, most prominently Rogosa (1988/1995) and others (e.g. Ployhart & Vandenberg, 2010; Ployhart & Ward, 2011), have cautioned that at a minimum of three waves of data are needed for a longitudinal study, or at least one variable requires three repeated measurements. They argue that two waves of data show only the effect of one predictor on a criterion over time and, although this is better than a cross-sectional design, it cannot provide enough information to fully explicate processes. However, as mentioned above, the longitudinal studies here are limited to two waves only. This is due to logistics and funding limitations as data are sourced from a market research organisation and it has overhead costs on top of participant remunerations. Thus the limitations of the two-wave design are here acknowledged. Furthermore, another key feature of longitudinal research (Ployhart & Ward, 2011) is that when theory is underdeveloped with regard to temporal aspects, researchers often resort to articulating hypotheses that are only moderately more sophisticated than cross-sectional ones (e.g. in a cross-sectional study '*A is related with B*', and in the longitudinal version, '*A is related with B over time*'). This is a very sound observation. However, it must be emphasised here that while the mindset models postulate longitudinal hypotheses in the form of '*A is related with B over time*', the hypotheses

also include a component of theoretical precision through the inclusion of an additional competing predictor such that the effect of the main predictor (i.e., work engagement) on the criteria over time is observed by controlling for the longitudinal effect of another competing predictor (i.e. self-regulatory variables). In addition, as will be explained shortly in section 6.0123, the auto-regressive effects of variables are also included in the longitudinal design (MacCallum & Austin, 2000). This adds another level of precision to the longitudinal hypotheses.

The determinants for the time lag and the frequency of waves are based on a mix of theoretical and logistical rationales. The time lag implemented for the two-wave studies is 3.5 months. Currently, time lags in most longitudinal work engagement studies are greater than four months (Hakanen & Schaufeli, 2012; Innstrand et al., 2012) and in the absence of theoretical clarity and for the sake of exploring new time lags — which is recommended practice when theory is still in development and needs progress (see Chapter One section 1.053) — a time lag of 3.5 months is suitable. As mentioned earlier, ideally the number of waves must be three. This allows to test, mediation over time and, the stability of effects with more confidence. But only two waves of repeated measures were possible. However, the half-longitudinal mediation approach (Cole & Maxwell, 2003) is implemented for mediation analyses, as an acceptable option when only two waves of data are available.

#### 6.0122 The theoretical model of change

Postulating longitudinal process hypotheses requires the correct theoretical model of change. This requires clarity on the nature of the change phenomenon (Collins, 2006). To attain this clarity, in-depth knowledge is needed with regard to how a variable behaves over time, as well as details on how the variable behaves in relation to other relevant variables over time. All this information provides the necessary input for postulating processes from a temporal angle.

As mentioned in earlier chapters, the predictors (mindsets, self-regulatory variables of goal orientations and emotion regulation strategies, and work engagement) are posited to exist at a dispositional level. Indeed, empirical work show that mindsets, self-regulatory variables (goal orientations and emotion regulation strategies) and work engagement are all fairly linear, stable constructs over long periods of time (Gross, 2015; Payne et al., 2007; Schaufeli, 2012; ). In addition, the outcomes are also assumed to be stable. Essentially, the longitudinal hypotheses postulate stability of the effects of predictors on outcomes over time. However, stability as a single dimension is not sufficiently informative for discussing the multiples ways in which variables behave over time. There

are a set of five dimensions that describe how any single variable exhibits processes over time. These are “continuity, magnitude, rate of change, trend, periodicity and duration” (Monge, 1990, p. 408). In addition, there are dimensions that describe how two variables co-vary over time. These are “the history of the variables, the time lag, the rate of change, the magnitude of change, and the permanence of change” (Monge, 1990, p. 408). Finally, feedback loops are essential characteristics that describe relationships between two variables over time, “Feedback loops are one or more links that eventually relate a variable to itself at a later point in time” (Monge, 1990, p. 420). There are three types of feedback loops — self loops, mutual causal loops and regular loops. The five attributes at the level of the single variable are now described, followed by description of attributes that exist at the level of relationships between and among variables, and explications of feedback loops. Once all these dimensions are explicated, a more comprehensive definition of stability is articulated in line with the longitudinal hypotheses in section 6.0123. This theoretical model of change — or stability in the present case — is crucial as it informs the statistical model of change implemented in section 6.0124.

#### 6.01221 Dimensions of dynamic behaviour of a single variable

Continuity refers to whether a variable has a constant non-zero value over time, that is a continuous-time variable, with zero signifying non-existence of the variable itself. An example is work engagement. It always has some value within an employment period, although it might reach a zero value under some conditions (e.g., as one develops turnover intentions and reaches the low point of resignation). On the other hand, a discontinuous-time variable is one that occurs at single points in time (e.g., a yearly or half-yearly pay rise) and then disappears completely until it can occur again. Magnitude is the quantitative size of the variables at time points with respect to how constant it remains within upper and lower bounds defined on the scale on which the magnitude is based. The rate of change defines how fast a magnitude increases or decreases per unit with respect to time; magnitudes can fluctuate instantaneously, rapidly, and slowly. Changes in customer loyalty, for example, can be viewed as something that occurs slowly over time, whereas changes in the share value of an organisation can occur rapidly following any social crisis that affects an economy. Trend defines the long term increase or decrease in the magnitude of a variable; the magnitude can be large or small such that we may have a small or large long-term change in magnitude. For example, over time, intelligence appears to have an increasing trend due to the Flynn effect (Trahan et al., 2014). On the other hand variables that increase and decrease randomly, and variables that stay rigorously stable, are deemed to be trendless. Periodicity relates to the length of time that elapses between the regular reoccurrences of

values of a variable, controlling for the attribute of trend. If the reoccurrences of the values of a variable are not characterised by regularity then the variable has no period. “Periods are usually measured from peaks to peaks (highest magnitude) or from valleys to valleys (lowest magnitude) in continuous-time variables” (Monge, 1990, p. 410). Periods can be long or short. An example of short term period is the number of workers in a call centre as they rise and fall in number due to turnover. An example of a long period can be found in the economic sciences with long term cycles called Kondratieff cycles, describing series of industrial dominations (e.g., steam engine, railroad, electrotechnology, automobile, information technology etc.) with a period of 50 years. Finally, duration is for discontinuous-time variables only; it defines the length of time during which a variables exist at a certain non-zero value.

#### 6.01222 Dimensions of dynamic behaviour of multiple variables

The dimensions that characterise how more than two variables behave over time as a system is complex to unravel and describe. However, it is possible to describe the simple case of two variables, as a bivariate system. First of all, the independent history of any two set of variables influences how they relate together in a cause and effect hypothesis, such that changes in the cause precedes changes in the outcome over time. Secondly, as explained previously, lag refers to the length of time it takes for a predictor to cause change in an outcome variable, but in more precise terms lag “specifies the immediacy with which a change in one variable begins to effect the other variable” (Monge, 1990, p. 414), that is the effect within that time lag can occur either rapidly, slowly or temporality (Monge, 1990). Thirdly, the rate of change in a relationship refers to the “rapidity of change in the causal variable and the rapidity with which the effect occurs, once it begins to take place. Rate of change can vary from very slow to virtually instantaneous” (Monge, 1990, p. 414). Fourthly, magnitude is the amount of change in each variable, predictor and outcome, and these changes can range from small amount over time to highest possible variation over time. Finally, permanence refers to:

The degree to which a cause or effect continues throughout time. If an effect is permanent, then once the effect has occurred, the value of the variable remains unchanged until some other event causes it to change. If it is temporary, then the effect will terminate at some later point in time, if no intermediate events occur to sustain it. (Monge, 1990, p. 414)

#### 6.01223 Dimensions of feedback loops over time

As mentioned above, relationships between two variables over time are also subject to feedback loops. A self-loop is defined as the effect of a single variable on itself over time, in other words it is an autoregressive effect. It is thus intricately related to the own history of a variable. A mutual causal loop relates to the simultaneous or near-simultaneous causal influence of two distinct variables over each other, i.e., a reciprocal effect occurring at a single time point. Finally, a standard or regular loop is the "... effect a variable has on itself through its influence on a chain of other variables" (Monge, 1990, p. 420). In order to be modelled, these feedback loops do not only require precise definition in terms of time but also details on whether the variables increase or decrease and by what magnitudes these occur. Furthermore, the frequency at which each cycle occurs is another important dimension to consider. All these are only possible under well-developed theoretical frameworks.

#### 6.01224 The dimensions informing the theoretical model of change

As mentioned earlier, the longitudinal hypotheses in this research postulate stability rather than change per se. However, other dimensions of how variables behave over time need to be taken into consideration alongside the dimension of stability. Thus, building on the above list, a number of approximate assumptions are here made. First of all, the variables in the models are continuous and have magnitude. But given the time lag involved (3.5 months) the dimensions of trend and periodicity are not applicable. Moreover, the precise nature of the immediacy of the effect within the set time lag is unknown and unspecified. The dimension of duration is not applicable because it relates to discontinuous variables. In line with the propositions that effects precede causes, the predictors are posited to precede the outcomes, and the effects are posited to occur within the chosen time lag of 3.5 months. Additionally, the autoregressive effect of the variables (i.e., self-loop discussed above) is another relevant characteristic. However, the rate of change, magnitude of change and permanence of change cannot be investigated as all these require multiple time lags over a long period of time.

#### 6.0123 The statistical model of change

All the longitudinal hypotheses and research questions proposed can be tested with the autoregressive cross-lagged model (ARCL) (Biesanz, 2012). The ARCL is the most applicable statistical model of change that aligns with the theoretical model of change and longitudinal hypotheses

posited in this research. Essentially, the ARCL is a repeated-measures design that is used to inspect structural associations of constructs measured at different times. The ARCL allows one to (1) investigate the effect of a variable on another one measured at a later occasion. It can be used for “...evaluating whether parameters of interest are stable across occasions or intervals” (MacCallum & Austin, 2000, p. 206), (2) control for the effects of a variable on itself, i.e. an autoregressive effect, (3) investigate the reverse causation effects between two variables with the benefit of determining temporal precedence and directionality, (4) investigate potential reciprocal links between two variables measured from two different time points.

In addition, the ARCL allows for the control of the effect of extraneous factors such as occasion factors (e.g. time of day, transient mood factors) and nonconstant variables (e.g. social desirability) as error terms of outcome variables are allowed to correlate (Zapf, Dormann, & Frese, 1996). Finally, a limitation is that although the ARCL can test mediation over time, a full test of mediation requires three waves of data. But given the two-wave data limitation, the half-longitudinal design (Cole & Maxwell, 2007) can be implemented with the ARCL.

## 6.02 Method

### 6.021 Sample and procedure

English-speaking members of a Dutch-based online panel of a market research agency (Panelclix<sup>29</sup>) were approached for research participation. Although it was possible to source a representative sample of the Dutch workforce through stratified-random sampling techniques, and applied to a well-defined organisational sample using an organisational sample frame such as workers in the transport, or communications sector (Kalleberg, 1994), the required research funds were unavailable for this option. Instead, invitation was sent to a pool of 2000 participants on the database who were classified as employed (either full-time or part-time). Participants worked for a variety of organisations. Although the sample is biased, it is nevertheless the closest option to a household-based approach that can be taken in recruiting workers (Kalleberg, 1994). Data were collected at two time points, T1 and T2, with a time lag of 3.5 months. Participants were remunerated through a loyalty rewards scheme operated by the market research agency. As detailed in Chapter Five section 5.021, the same steps were implemented to avoid satisficing. The data collection procedure, including ethics approval and anonymity features, were as previously described in Chapter Five. In addition, identification codes were used to identify and match the responses of participants at T2. The market

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<sup>29</sup> Data collected through this organisation has appeared in the Journal of Applied psychology; see De Dreu & Nauta (2009).

research company had no access to the data, but only participants name and contact details. As mentioned in Chapter Five, CMV is best dealt with through study-design features rather than through statistical control. Thus, data on applicable outcome measures were collected from work supervisors and co-workers. Participants were requested to forward, through email, a questionnaire to their work supervisor and co-workers. These questionnaires had modified versions of questions on outcome measures.

At T1, 694 participants completed the survey. At T2, 373 participants provided responses. Thus, the response rate of 53%. Three participants at T2 could not be matched with their respective identification code of T1 so these three cases were discarded for longitudinal analysis.

The demographics of participants at T1 were as follows: There were 412 males and 282 females. The mean age was 42.51 years,  $SD = 10.56$ . The majority of the participants were Dutch (658), followed by Surinamese ( $N = 14$ ), Dutch Antilleans ( $N = 3$ ), Turkish ( $N = 3$ ), and other ( $N = 16$ ). The majority had a master's degree (52.2%), followed by undergraduate (29.1%) and other qualifications (18.7%). There were more full-time (91.8%) than part-time workers (8.2%). The majority were team members (52.6%), followed by supervisors (13.8%). The rest (33.6%) included middle managers, executive managers and other roles. Organisational tenure was 11.72 years,  $SD = 10$ . Participants came from a diverse source of organisations (IT, education, sales, government, science, finance, advertising and various other sectors).

#### 6.022 Measures for mindset of job capability model

All scales used were as described previously in Chapter Five, section 5.022. Unfortunately, there was an unfortunate omission of one item in the feedback monitoring scale ('observe what behaviour your manager rewards and use this as feedback on your own performance'). However, as the measurement model of the feedback monitoring scale is reflective, it implies that all the items are interchangeable, hence the only potential problem here is the risk of reduced reliability rather than reduced bandwidth of the domain of the construct (Borsboom et al., 2003). Cronbach's alpha reliabilities and test-retest reliabilities of the scales are reported in the results section.

### 6.023 Measures for mindset of emotion model

Excluding the mindset of emotion scale, all the scales used were those reported previously in Chapter Five, section 5.022. A new scale was devised for the mindset of emotion by using only entity items. This modification was effected because incremental items are more sensitive to social desirability bias (Dweck & al., 1995). As will be recalled, the scale in Chapter Five had two incremental items. The new scale can be found in Appendix A. The Cronbach's alpha reliabilities and test-retest reliabilities of all the scales are reported in the results section.

### 6.03 Results

Only four questionnaires from supervisors were obtained at T1 and T2. Likewise, only three questionnaires were received from co-workers. Hence, these data sources could not be used. There was no missing data at both waves, this was prevented as previously explained in Chapter Five (i.e., participants were required to respond to each and every question item so they could progress through the survey). The results are now presented in the rest of this section. In common with Chapter Five, the indicators of the latent variables in the structural models depicted are not shown for ease of presentation.

#### 6.031 Cross-sectional analysis: measurement models

Analysis of the measurement models follow the same approach described earlier in Chapter Five section 5.032. In each mindset model, the same variables were parcelled using the single-factor method of Landis et al. (2000). However, no piecemeal analyses were done here for discriminant validity between pairs of variables as described in Chapter Five. The evidence obtained in the foundational studies was deemed strong enough. Thus each model was tested directly through CFA which served as an overarching discriminant validity analysis as well as the test for the relationship between observed variables and latent counterparts (i.e., measurement model).

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6.0311 The mindset of job capability model

Table 1. Descriptive statistics, zero-order correlations, and alphas for the mindset of job capability model.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Incremental mindset of job capability	4.11	0.88	<b>.84</b>							
2. Learning goal orientation	5.43	0.88	.37**	<b>.86</b>						
3. Work engagement	5.20	0.95	.17**	.47**	<b>.92</b>					
4. Avoid performance goal orientation	3.50	1.09	-.29**	-.27**	-.18**	<b>.81</b>				
5. Proactive learning and development	2.90	0.76	.18**	.53**	.34**	-.10**	<b>.84</b>			
6. Knowledge sharing	4.10	0.69	.30**	.37**	.33**	-.37**	.13**	<b>.92</b>		
7. Feedback inquiry	2.70	0.78	.05	.22**	.16**	.00	.34**	.14**	<b>.84</b>	
8. Feedback monitoring	3.10	0.66	.09*	.21**	.09*	.07	.25**	.21**	.43**	<b>.82</b>

Note. \* $p < 0.01$  \*\* $p < 0.05$ , two-tailed.  $N = 694$ . The numbers in bold on the diagonal are the alphas.

Table 1 above shows the descriptive statistics and correlations among all the variables in the mindset of job capability model. As expected, incremental mindset of capability is positively correlated with: learning goal orientation and is negatively related with avoid performance goal orientation. Furthermore, work engagement is positively related to feedback inquiry and monitoring, proactive learning and development, and knowledge sharing. Likewise, learning goal orientation is positively related with all the four outcome variables. The incremental mindset of capability is positively related with work engagement. Work engagement is also more related with feedback inquiry than with feedback monitoring. However, in contrast with what was found in the foundational studies, feedback inquiry has a stronger correlation with learning goal orientation ( $r = 0.23$ ) than with work engagement ( $r = 0.17$ ). Also learning goal orientation is more strongly related with feedback monitoring than with inquiry. The inter-correlations between pairs of the outcome variables of proactive learning behaviours (i.e., proactive learning and development, feedback inquiry, knowledge sharing and feedback monitoring) are not so high as to suggest redundancy of constructs. An unrotated principle components factor analysis with SPSS version 22 on all the eight variables was conducted (Harman's one-factor test). Results showed eight factors with eigen values greater than 1.0. Altogether, the eight factors accounted for 56.43% of the total variance. The first and largest factor did not account for a majority of the variance (23.34%). This was indicative of low or no method bias.

The measurement model was assessed with CFA using AMOS version 22. For the latent variables of work engagement, proactive learning and development, and knowledge sharing parcel indicators were used; the other four latent variables (learning goal orientation, avoid performance goal orientation, feedback inquiry and feedback monitoring) were represented by their indicators. Of note here is that a separate measurement model was run on feedback inquiry and feedback monitoring to determine which of the indicators needed inter-correlations in each scale using the modification indices (MI) (the rationales of this were discussed in Chapter Five section 5.0333). The overall measurement model freely estimated the relationships among all the eight variables. The model, with all the eight variables showed an adequate fit to the data [ $\chi^2(497, N = 694) = 1274.78, p < 0.001, \chi^2/df = 2.56, CFI = 0.94, RMSEA = 0.05$  with  $CI_{90}: (0.044, 0.051), SRMR = 0.05$ ]. All indicators and parcels had significant loadings on the intended factors (range = 0.51 – 0.88,  $p < 0.001$ ). The reliability values of the indicators in the model ranged from 0.30 to 0.78. All the variables had acceptable levels of skewness ( $< 2.0$ ) with kurtosis ( $< 2$ ) for M.L implementation in AMOS (Arbuckle, 2012). Mardia's normalised multivariate kurtosis value (204.87), was less than  $p(p+2)$ , (1224), where  $p$  = number of indicators in the model. Thus according to Bollen (1989) there is multivariate normality.

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6.0312 The mindset of emotion model

Table 2. *Descriptive statistics, zero-order correlations, and alphas for the mindset of emotion model*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Incremental mindset of emotion	3.63	0.01	<b>.88</b>							
2. Avoid performance goal orientation for emotion	2.83	0.95	-.29**	<b>.78</b>						
3. Learning goal orientation for emotion	4.00	0.87	.20**	.08*	<b>.87</b>					
4. Happiness	5.13	1.06	.28**	-.33**	.18**	<b>.85</b>				
5. Life satisfaction	4.75	1.16	.08*	-.28**	.00	.57**	<b>.87</b>			
6. Psychosomatic complaints	2.43	0.86	-.19**	.38**	.00	-.43**	-.41**	<b>.82</b>		
7. Cognitive reappraisal	4.60	0.83	.26**	-.06	.31**	.22**	.08*	-.11**	<b>.85</b>	
8. Work engagement	5.22	0.95	.16**	-.24**	.10**	.37**	.39**	-.36**	.16**	<b>.92</b>

Note. \* $p < 0.01$  \*\* $p < 0.05$ , two-tailed.  $N = 694$ . The numbers in bold on the diagonal are the alphas

Table 2 above shows the descriptive statistics and correlations among all the variables in the mindset of emotion model. As expected, incremental mindset of emotion is positively correlated with cognitive reappraisal and learning goal orientation for emotion (in contrast with the foundational studies here learning goal orientation for emotion has a significant zero-order correlation with the incremental mindset of emotion). The incremental mindset is negatively related with avoid performance goal orientation for emotion. Happiness and life satisfaction are correlated as expected (this was discussed in Chapter Four, and in Chapter Five, in analysis of the structural model). Both cognitive reappraisal and learning goal orientation for emotion are positively correlated with work engagement. Work engagement is positively correlated with happiness and life satisfaction and is negatively correlated with psychosomatic complaints. An unrotated principle components factor analysis with SPSS version 22 was conducted (Harman's one-factor test). Results showed eight factors with eigen values greater than 1.0. Altogether, the eight factors accounted for 55.44% of the total variance. The first and largest factor did not account for a majority of the variance (21.34%). This was indicative of low or no method bias.

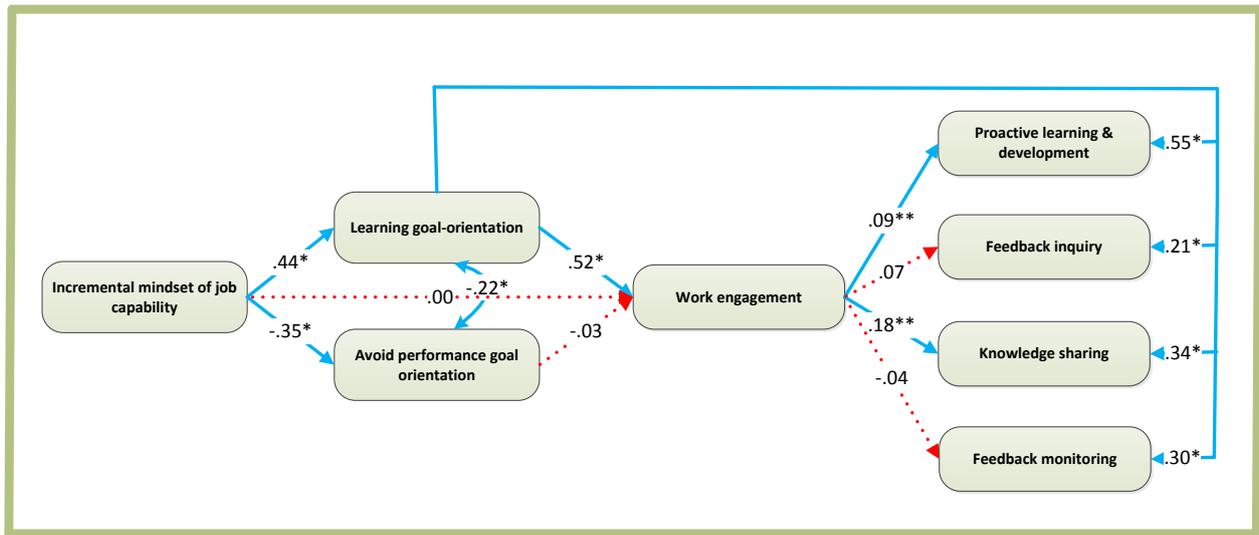
The measurement model was assessed using AMOS version 22. For the latent variables of work engagement, cognitive reappraisal and psychosomatic complaints, parcel indicators were used, the other four latent variables were represented by their indicators. The model freely estimated the relationships among all the seven variables. This measurement model showed an adequate fit to the data [ $\chi^2(472, N = 694) = 1241.14, p < 0.001, \chi^2/df = 2.63, CFI = 0.94, RMSEA = 0.05$  with  $CI_{90}: (0.048, 0.045), SRMR = 0.05$ ]. All indicators and parcels had significant loadings on the intended factors (range = 0.54 – 0.91,  $p < 0.001$ ). The reliability values of the indicators in the model ranged from 0.39 to 0.86. All the variables had acceptable levels of skewness ( $< 2.0$ ) with kurtosis ( $< 2$ ) for ML implementation in AMOS (Kline, 2011). Mardia's normalised multivariate kurtosis value (228) was less than  $p(p+2)$ , (1155), where  $p$  = number of indicators in the model, thus according to Bollen (1989) there is multivariate normality.

### 6.032 Cross-sectional analysis: Structural models

#### 6.0321 The mindset of job capability

The mindset of job capability model depicted in Figure 1 below was tested. It fit the data well [ $\chi^2(512, N = 694) = 1538.23, p < 0.001, \chi^2/df = 3.00, CFI = 0.90, RMSEA = 0.05$  with  $CI_{90}: (0.051, 0.057), SRMR = 0.08$ ].

Figure 1. Results of mindset of capability model



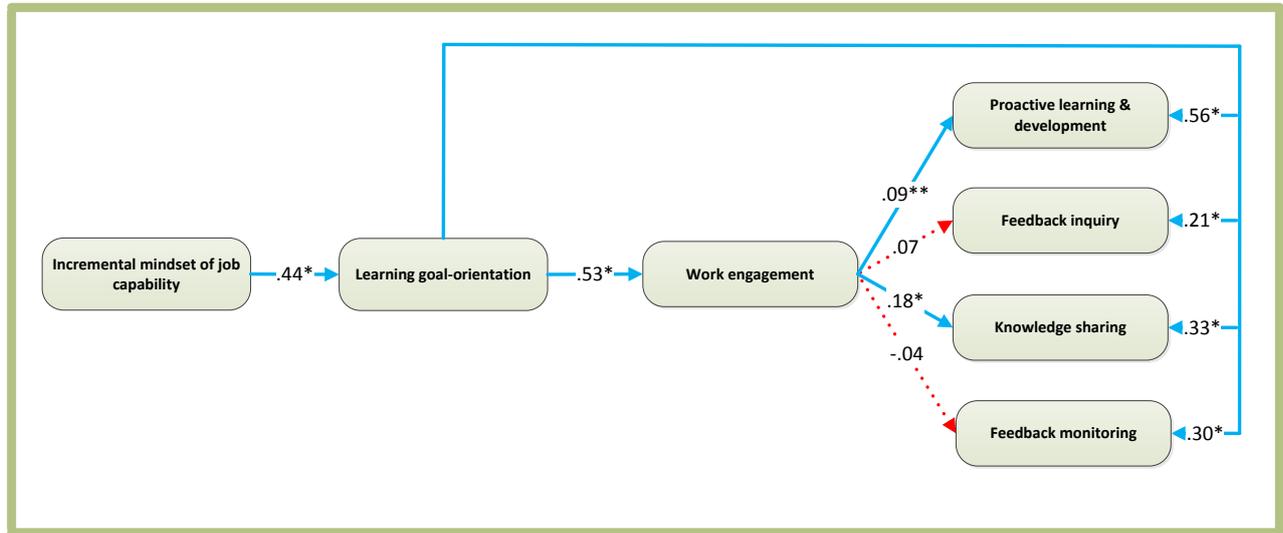
Note. \* $p < 0.001$  \*\* $p = 0.05$ .  $N = 694$ . Dashed paths are non-significant. All paths are standardised regression paths.

The directional path from avoid performance goal orientation to work engagement is nil, this is in agreement with what was found earlier in Chapter Five section 5.0331. Likewise, the direct effect of incremental mindset of job capability on work engagement is nil. Thus, the predicted indirect effect of the incremental mindset of job capability on work engagement through the parallel mediation was not supported. Furthermore, the directional paths of work engagement to outcomes were not all supported, i.e., work engagement has non-significant paths with feedback inquiry and feedback monitoring (i.e. hypotheses 11 and 12 were unsupported). This is in contrast with the model in Chapter Five section 5.0331 (Figure 1) where all the work engagement to outcomes paths were positive and significant. Learning goal orientation, however has significant positive links with all the outcomes, supporting hypotheses 6 to 9. Of note is that learning goal orientation had a non-significant path with feedback inquiry in Chapter Five section 5.0331, but this is significant here.

The model was re-specified and avoid performance goal orientation was removed as shown in Figure 2 below. Furthermore, the direct link from the mindset of job capability to work engagement was still non-significant and was therefore removed. This modified model fit the data [ $\chi^2(393, N = 694) = 1215.35, p < 0.001, \chi^2/df = 3.09, CFI = 0.93, RMSEA = 0.05$  with  $CI_{90}: (0.051, 0.058), SRMR = 0.08$ ]. Thus, this shows that the effect of the incremental mindset of job capability on work engagement is fully mediated by learning goal orientation.

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Figure 2. Results of mindset of capability model, re-specified model

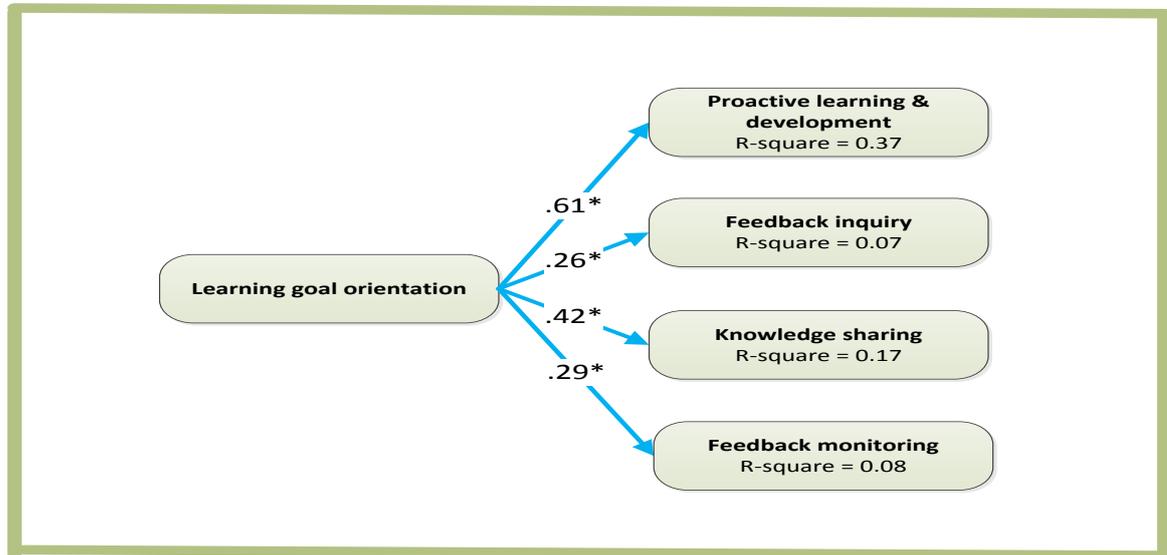


Note. \* $p < 0.001$  \*\* $p = 0.05$ .  $N = 694$ . Dashed paths are non-significant. All paths are standardised regression paths.

The effect decomposition statistics of AMOS were used to obtain the indirect effect of incremental mindset of job capability on work engagement through the bootstrap approach (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2005; Shrout & Bolger, 2002). Both the 95% percentile bootstrap (PB) confidence intervals (CI) and 95% bias-corrected bootstrap (BCB) confidence intervals (CI) were calculated for the indirect effect using 2000 bootstrap samples. The standardised indirect effect of incremental mindset of job capability on work engagement through learning goal orientation is:  $\beta = 0.26$ , ( $p < 0.001$ ), with PB confidence interval: (95% CI: 0.20, 0.34) and, with BCB confidence interval: (95% CI: 0.20, 0.34). The two bootstrap approaches yield consistent results and exclude zero. Thus the effect of the incremental mindset of job capability on work engagement is fully mediated by learning goal orientation and the point estimate is significant.

As work engagement has significant paths with proactive learning and development and knowledge sharing, the hypotheses of the incremental importance of work engagement were tested. Two sets of models were compared. In the first model (Figure 3 below) learning goal orientation was included as the predictor of the outcome variables. This model fit the data well [ $\chi^2$  (203,  $N = 694$ ) = 779.09,  $p < 0.001$ ,  $\chi^2 / df = 3.84$ , CFI = 0.93, RMSEA = 0.06 with CI<sub>90</sub>: (0.059, 0.069), SRMR = 0.10.]

Figure 3. Learning goal orientation as predictor of outcomes

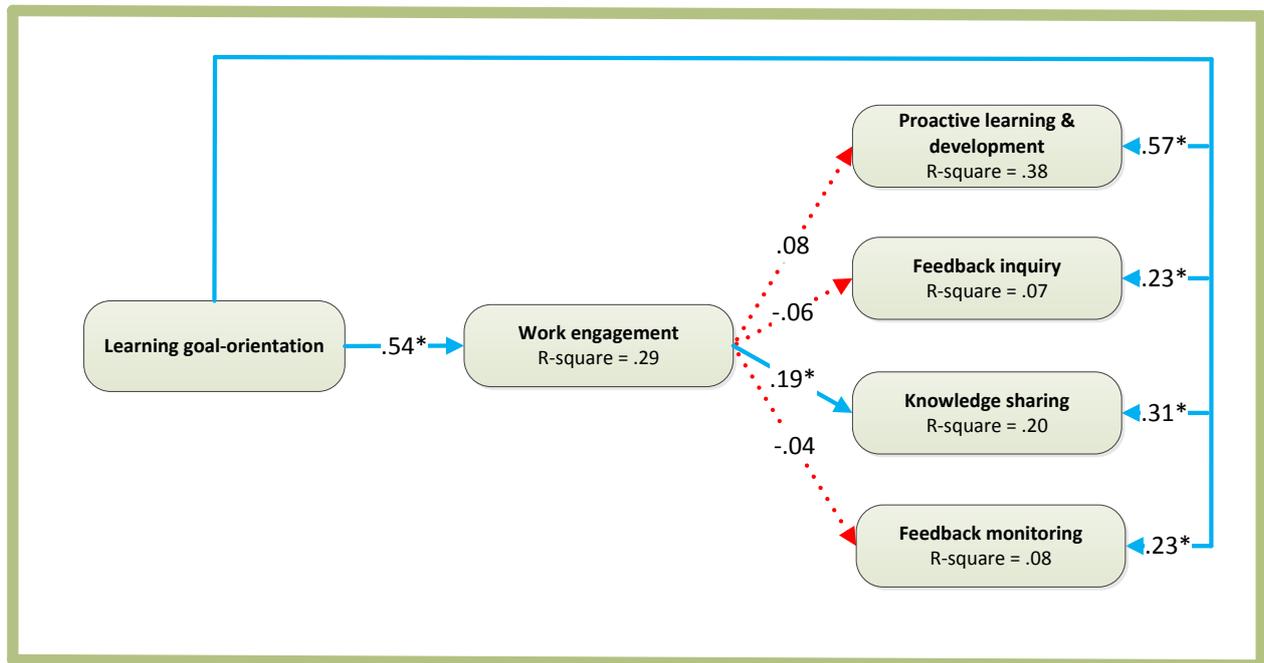


Note. \* $p < 0.001$ .  $N = 694$ . All paths are standardised regression paths

Upon inclusion of work engagement as a predictor of outcomes and as an outcome of learning goal orientation (Figure 4 below) an improvement in R-square was noted for knowledge sharing which increased from 0.17 to 0.20. However, the work engagement to proactive learning and development path became non-significant. The model fit the data well [ $\chi^2 (288, N = 694) = 779.09, p < 0.001, \chi^2 / df = 3.45, CFI = 0.93, RMSEA = 0.06$  with  $CI_{90}: (0.055, 0.063), SRMR = 0.08$ ]. As can be seen in Table 3, there is no difference between the incremental fit indices of the two models although the chi-square test shows a significant difference. Thus, there is only suggestive and limited evidence (i.e. in the case of knowledge sharing only) that work engagement has incremental variance over learning goal orientation in predicting proactive learning-related outcomes.

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Figure 4. Incremental importance of work engagement.



Note. \* $p < 0.001$   $N = 694$ . Dashed paths are non-significant. All paths are standardised regression paths.

Antecedents and outcomes of work engagement: the role of mindsets.

Table 3. Fit indices for nested model comparisons of Figure 3 and 4

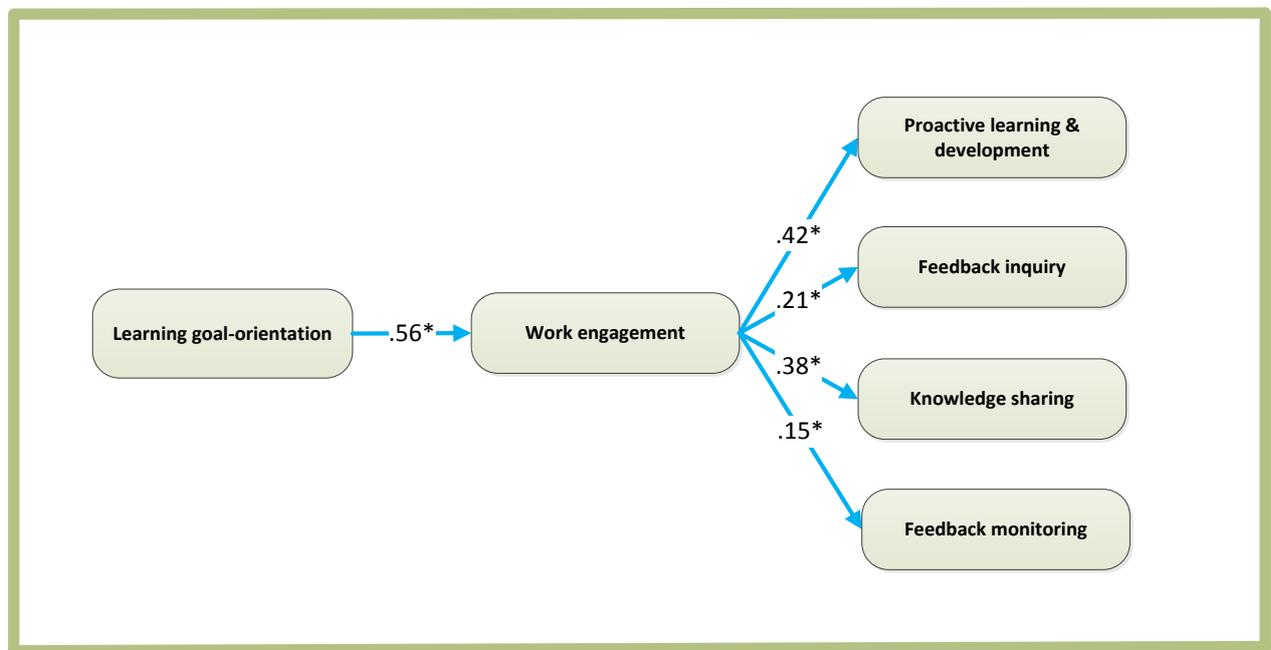
Model	Description	$\chi^2$ (N = 694)	df	$\chi^2$ /df	$\Delta\chi^2$	$\Delta$ df	CFI	RMSEA	SRMR
Figure 3	Model with learning goal orientation	779.09	203	3.84			.93	.06	.10
Figure 4	Model with learning goal orientation & work engagement	992.79	288	3.45	213.7*	85	.93	.06	.08

\* $p < 0.00001$

Antecedents and outcomes of work engagement: the role of mindsets.

Then, the hypothesis that work engagement is a partial mediator between antecedents and outcomes was tested by comparing two submodels: a partial mediation, (Figure 4 above), with a full mediation model (Figure 5 below). Table 4 below shows that the partial mediation model has a higher CFI value, and the chi-square difference between the models is significant. Of note here is that support for the partial mediation is relevant to the outcome of knowledge sharing only as work engagement has non-significant paths with the other three outcomes. Thus hypothesis was 15 was only partially supported but it is clear that it positions work engagement as a partial mediator.

Figure 5. Work engagement as full mediator



Note. \* $p < 0.001$ .  $N = 694$ . All paths are standardised regression paths.

Table 4. Fit indices for nested model comparisons of figure 4 and Figure 5

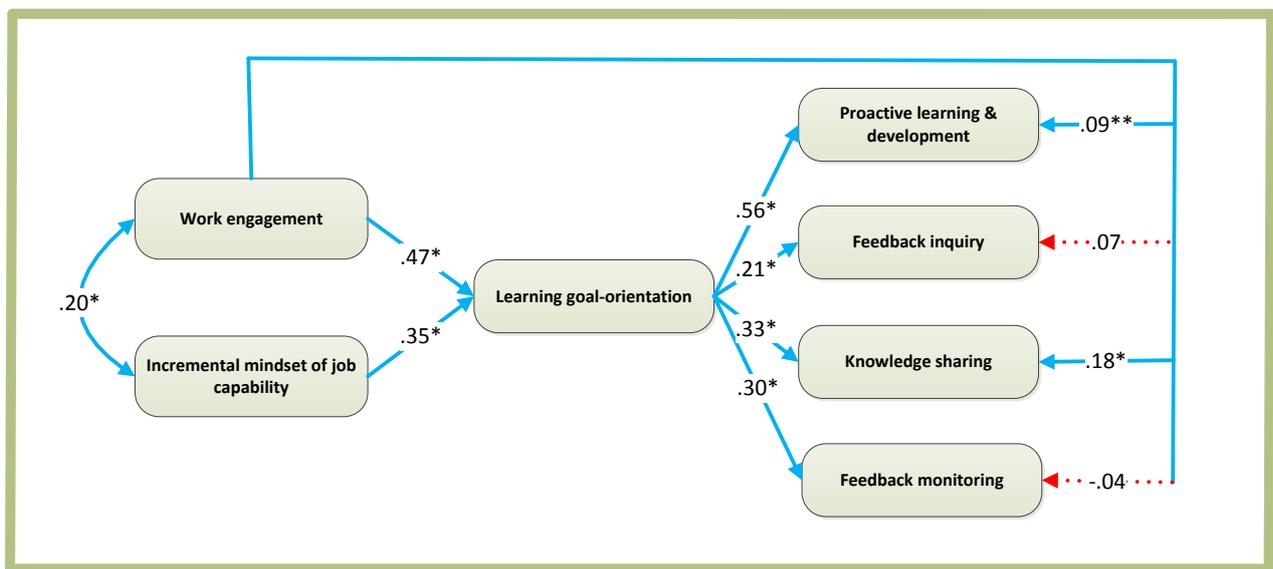
Model	Description	$\chi^2$ (N= 694)	df	$\chi^2$ /df	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta$ df
Figure 5	Full mediation model	1210.41	292	4.14	.91	.07	.11		
Figure 4	Partial mediation model	992.79	288	3.48	.93	.06	.08	217.62*	4

\* $p < 0.00001$

6.03211 The alternative mindset of job capability model

Next, the alternative model of mindset was tested. As will be recalled, in the alternative model, work engagement, together with the incremental mindset of job capability are posited as predictors of learning goal orientation. As can be seen in Figure 6 below the model fit the data [ $\chi^2$  (392, N = 694) = 1213.92,  $p < 0.001$ ,  $\chi^2 / df = 3.09$ , CFI = 0.93, RMSEA = 0.05 with CI<sub>90</sub>: (0.052, 0.059), SRMR = 0.08.].

Figure 6. Results of alternative mindset of capability model



Note. \* $p < 0.001$  \*\* $p = 0.05$ .  $N = 694$ . Dashed paths are non-significant. All paths are standardised regression paths.

This alternative mindset of job capability model is theoretically different from the original counterpart (Figure 2). However, both models are statistically equivalent and longitudinal testing is one of the means by which they can be further compared. This is in line with the recommendation of Lee and Hershberger (1990) who noted that as effects follow causes in time, some proposed causal orderings that differ between models could be eliminated if some of the key variables are measured at different points in time<sup>30</sup>. Indeed, in these cases reverse causation analysis can be conducted through cross-lagged analysis. This is described below in the longitudinal analysis section.

<sup>30</sup> However, as MacCallum and Austin (2000, p.214), building on Cliff (1983) note, “a temporal sequence in itself is not sufficient to imply causality. Even given a temporal sequence, an apparent causal influence may be due to an intervening variable or to some correlate of the putative cause”

6.03212 Supplementary analysis: Indirect effects of mindset of job capability on outcomes

The mindset of job capability model (Figure 2) is a complex structural model and it did not propose indirect effects of the incremental mindset of job capability on the four outcomes although the structural model implies these links. As noted in Chapter Four, section 4.02, the indirect effect of the incremental mindset of job capability on the outcomes can be expected to be weak as distal relationships have effects that are small in magnitude because they operate through intervening variables (see Edwards & Christian, 2014).

The standardised indirect effects of the incremental mindset of job capability on outcomes through learning goal orientation and work engagement were computed using the effects decomposition function of AMOS using the Bootstrap method (2000 bootstrap samples were used). Results are shown in Table 5 below. Both the 95% percentile bootstrap (BP) and 95% bias corrected bootstrap (BPB) intervals yield consistent results and do not include zero, indicating that the indirect point estimates are significant. As projected, the effects are weak.

However, within the structural model, it must be emphasised that the effect of incremental mindset of job capability on the outcomes are partially mediated by learning goal orientation as the latter has direct link with the outcomes. Indeed when, in Figure 2, the direct links from learning goal orientation to all the outcome are fixed to zero a lower CFI is obtained (.91), supporting the hypothesised model in Figure 2 (CFI = 0.93). Furthermore, with the direct path of learning goal orientation to outcomes fixed to zero all the point estimates reported in Table 5 below are further reduced although they still remain significant.

## Antecedents and outcomes of work engagement: the role of mindsets.

Table 5. Indirect effect of incremental mindset of job capability on outcomes.

Total indirect effects	estimate	95 % CI (BP)	95% (BCB)
Incremental mindset of job capability → learning goal orientation → work engagement → proactive learning & development	.24*	0.19, 0.33	0.19, 0.30
Incremental mindset of job capability → learning goal orientation → work engagement → knowledge sharing	.16*	0.11, 0.21	0.11, 0.21
Incremental mindset of job capability → Learning goal orientation → work engagement → feedback inquiry	.11*	0.07, 0.11	0.07, 0.16
Incremental mindset of job capability → Learning goal orientation → work engagement → feedback monitoring	.07*	0.05, 0.11	0.05, 0.11

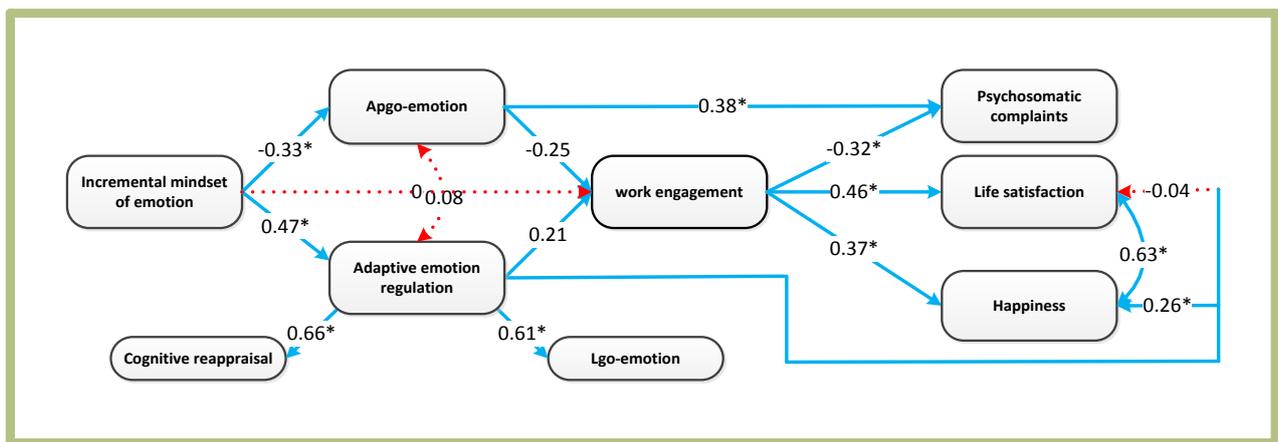
\* $P < 0.001$

Following this, additional exploratory analysis was undertaken by adding paths from the incremental mindset of job capability to the four outcomes. The path to knowledge sharing was significant ( $\beta = 0.21$ ,  $p < 0.001$ ). The CFI remained unchanged (0.93) but the chi-square test of difference was significant ( $p = 0$ ) (chi-square difference = 22.76 with 1 df) suggesting that this nested model with the added path explains the data better (lower chi-square) than the one in Figure 2. Also, this did not affect the significance of the existing paths in the model. The Model (Figure B1) is shown in Appendix B. This shows that the incremental mindset of job capability has direct effects too.

6.0322 The mindset of emotion

The mindset of emotion model, as shown in Figure 7 below, was tested, and showed an adequate fit to the data [ $\chi^2$  (481, N = 694) = 1364.03,  $p < 0.001$ ,  $\chi^2 / df = 2.84$ , CFI = 0.93, RMSEA = 0.05 with CI<sub>90</sub>: (0.048, 0.055), SRMR = 0.08.]. Of note is that in the model shown in Chapter Five section 5.0334, avoid performance goal orientation for emotion had a non-significant directional link with work engagement, and work engagement had a non-significant link with psychosomatic complaints. Here, both of these directional links are significant. However, adaptive emotion regulation has a non-significant path with life-satisfaction. The incremental mindset of emotion to work engagement path is non-significant.

Figure 7. Results of mindset of emotion model

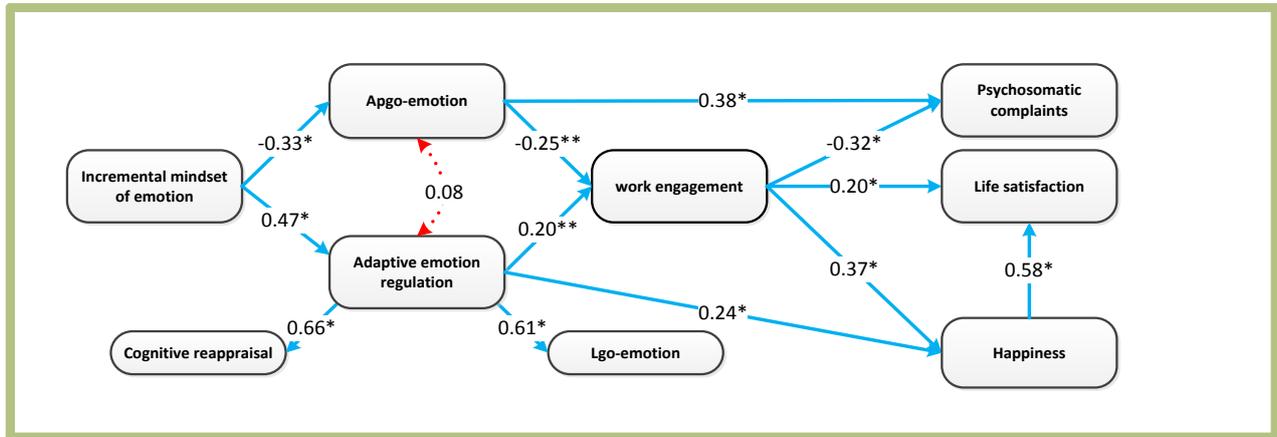


Note. \* $p < 0.001$ . N = 694 Dashed paths are non-significant. All paths are standardised regression paths.

Therefore the model was re-specified. First of all, the direct link from incremental mindset of emotion to work engagement was removed. Then, the non-significant path from adaptive emotion regulation to life satisfaction was removed as well. Given that the factor structure of subjective well-being is indeterminate (see Busseri & Sadava, 2011) the effect of adaptive emotion regulation on life satisfaction was re-specified so it is mediated by happiness. The re-specified model is shown below in Figure 8. This re-specified model had an adequate fit to the data [ $\chi^2$  (482, N = 694) = 1382.99,  $p < 0.001$ ,  $\chi^2 / df = 2.86$ , CFI = 0.93, RMSEA = 0.05 with CI<sub>90</sub>: (0.048, 0.055), SRMR = 0.08.].

## Antecedents and outcomes of work engagement: the role of mindsets.

Figure 8. Results of mindset of emotion model, re-specified



Note. \* $p < 0.001$ .  $N = 694$ . Dashed paths are non-significant. All paths are standardised regression paths.

Next, the total indirect effect of the incremental mindset of emotion on work engagement through the parallel mediators of adaptive emotion regulation and avoid performance goal orientation was calculated. Amos version 22 provides this value through the ‘product of coefficients’ approach of MacKinnon et al. (2002) where mediation can be demonstrated by the statistically significant product of the independent variable → mediator and mediator → outcome. Both the 95% percentile bootstrap (PB) confidence intervals (CI) and 95% bias-corrected bootstrap (BCB) confidence intervals (CI) were calculated for the indirect effect using 2000 bootstrap samples. The total indirect effect of incremental mindset of job capability on work engagement through avoid performance goal orientation for emotion and adaptive emotion regulation is:  $\beta = 0.16$ , ( $p < 0.001$ ), with PB confidence interval (95% CI: 0.10, 0.21) and BCB confidence interval (95% CI: 0.11, 0.22). The two bootstrap approaches yield fairly consistent results and exclude zero. Thus, the effect of incremental mindset of emotion on work engagement is fully mediated by parallel mediators of adaptive emotion regulation and avoid performance goal orientation for emotion.

Furthermore, the effect of each mediator was isolated (i.e., the paths from the incremental mindset of emotion to mediator, and from mediator to work engagement were fixed to zero) to verify if the effects of the incremental mindset of emotion on work engagement is independently mediated by each mediator (adaptive emotion regulation and avoid performance goal orientation for emotion). The same testing procedure as above was followed. The indirect effect of incremental mindset of emotion on work engagement through avoid performance goal orientation for emotion is:  $\beta = 0.10$ , ( $p < 0.001$ ),

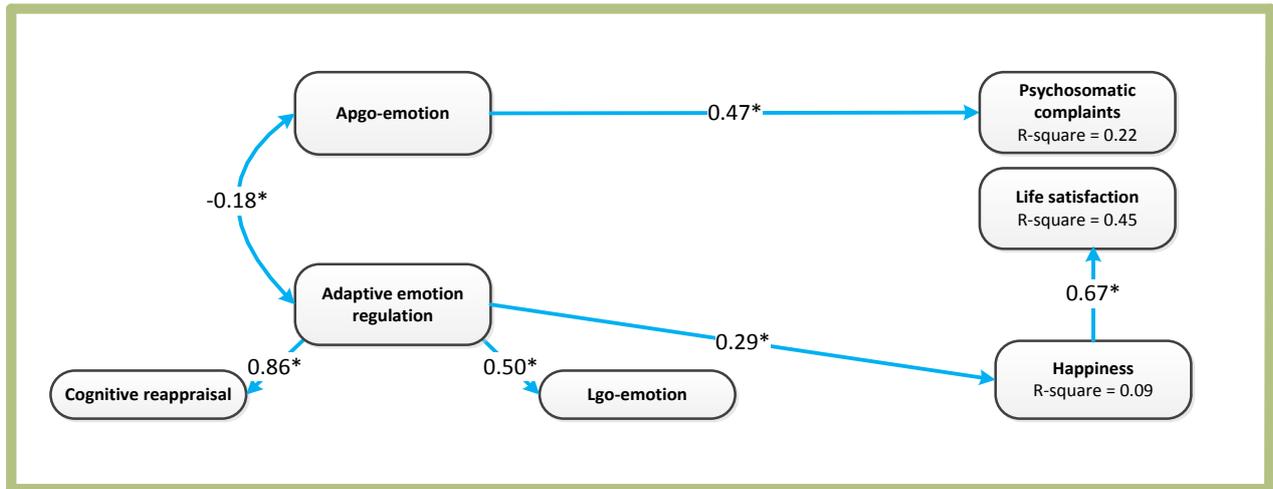
with PB confidence interval (95% CI: 0.06, 0.15) and BCB confidence interval (95% CI: 0.06, 0.25). In the same vein, the indirect effect of incremental mindset of job capability on work engagement through adaptive emotion regulation is:  $\beta = 0.12$ , ( $p < 0.001$ ), with PB confidence interval (95% CI: 0.06, 0.19) and BCB confidence interval (95% CI: 0.06, 0.19). Thus, both mediators independently transmit the effect of the incremental mindset of emotion to work engagement.

This re-specified model (Figure 8) implies an indirect effect of adaptive emotion regulation on life satisfaction through happiness. The mediating role of happiness was tested as well using the same procedure as above. This was estimated by isolating the direct effect of work engagement on life satisfaction (i.e. the path parameter was set to zero). The indirect effect of adaptive emotion regulation on life satisfaction through happiness is  $\beta = 0.21$ , ( $p < 0.001$ ), with PB confidence interval (95% CI: 0.126, 0.287) and BCB confidence interval (95% CI: 0.136, 0.294). The confidence intervals from both methods are reasonably consistent and exclude zero. Thus the mediating role of happiness between adaptive emotion regulation and life satisfaction is significant.

Next, controlling for the effect of avoid performance goal orientation for emotion and adaptive emotion regulation the hypotheses on the incremental importance of work engagement on the outcomes was tested. For this purpose two sets of models were compared. In the first model (Figure 9 below) adaptive emotion regulation was included as the predictor of happiness and life satisfaction, and on the other hand, avoid performance goal orientation for emotion was included as predictor of psychosomatic complaints. This model fit the data [ $\chi^2(246, N = 694) = 902.59, p < 0.001, \chi^2/df = 3.66, CFI = 0.92, RMSEA = 0.06$  with  $CI_{90}: (0.058, 0.067), SRMR = 0.12$ ].

## Antecedents and outcomes of work engagement: the role of mindsets.

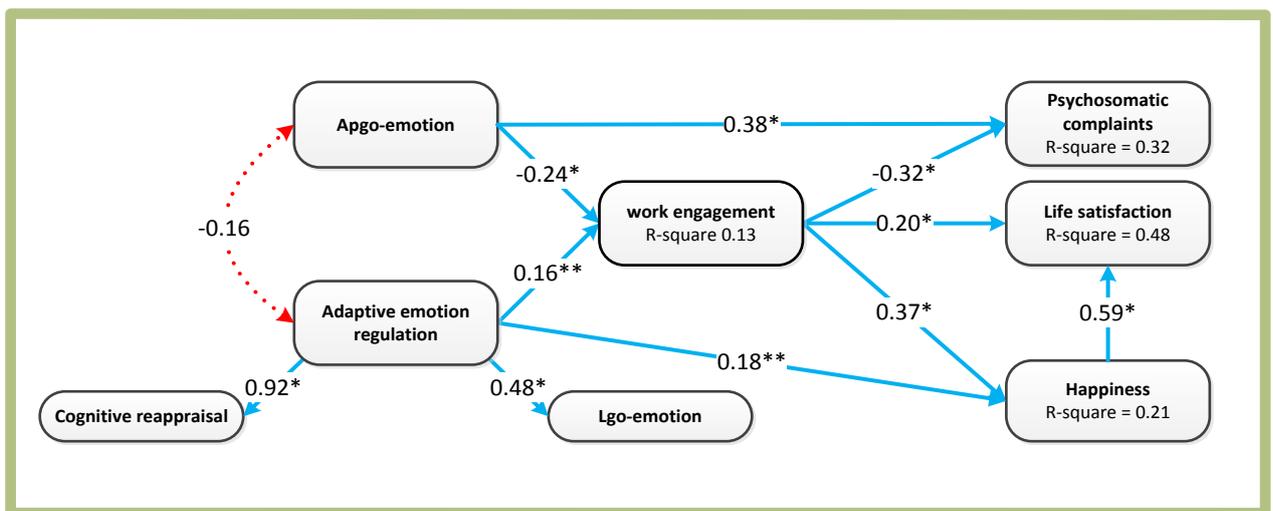
Figure 9. Adaptive emotion regulation and avoid performance goal orientation as predictors of outcomes



Note.  $*p < 0.001$ .  $**p < 0.05$ .  $N = 694$ . All paths are standardised regression paths

Then, a second model (Figure 10 below) with work engagement added, as a predictor of outcomes and as an outcome of avoid performance goal orientation for emotion and adaptive emotion regulation, was tested.

Figure 10. Incremental importance of work engagement.



Note.  $*p < 0.001$   $**p < 0.05$ .  $N = 694$  Dashed paths are non-significant. All paths are standardised regression paths.

## Antecedents and outcomes of work engagement: the role of mindsets.

The model fit the data [ $\chi^2(339, N = 694) = 1085.22, p < 0.001, \chi^2/df = 3.20, CFI = 0.93, RMSEA = 0.06$  with  $CI_{90}: (0.053, 0.060), SRMR = 0.08.$ ]. All the three outcomes showed an improvement in R-Square. As can be seen in Table 6 below the CFI in Figure 10 is higher than that of Figure 9 by 0.01 and the chi-square test of difference is significant. Thus, this shows that work engagement has incremental variance in predicting the three outcomes.

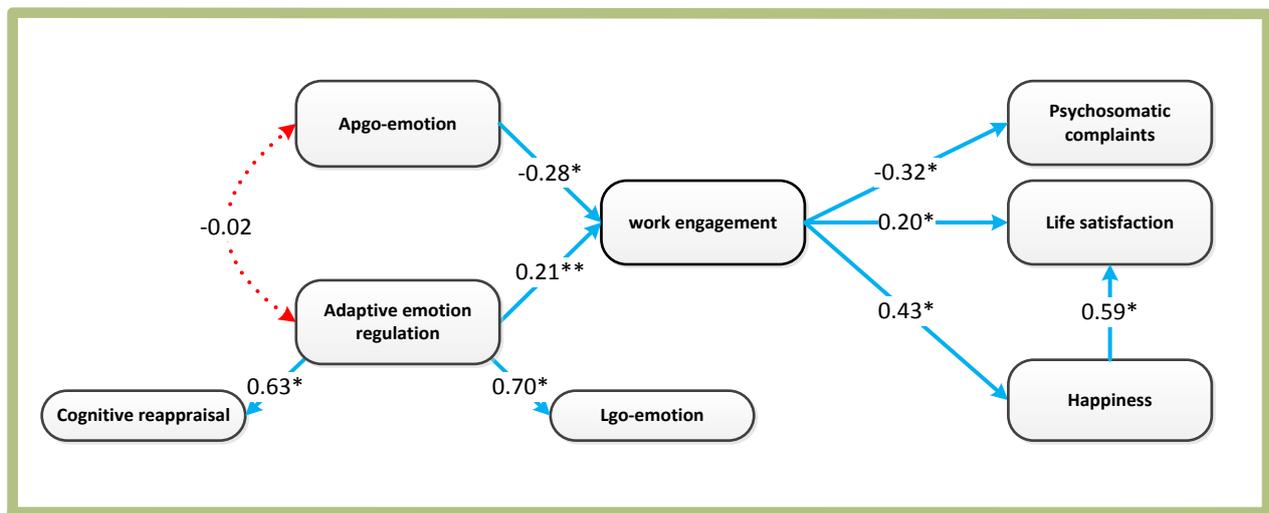
Antecedents and outcomes of work engagement: the role of mindsets.

Table 6. Fit indices for nested model comparisons for figure 9 and figure 10

Model	Description	$\chi^2$ (N = 694)	df	$\chi^2$ /df	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta$ df
Figure 9	Model with adaptive emotion regulation & avoid performance goal orientation for emotion	902.54	246	3.66	.92	.06	.12	182.46*	93
Figure 10	Model including work engagement	1085.22	339	3.20	.93	.06	.08		

Then the hypothesis postulating work engagement as a partial mediator between adaptive emotional regulation and life satisfaction and happiness was tested (Hypothesis 28). Likewise, the hypothesis postulating work engagement as a partial mediator between avoid performance goal orientation and psychosomatic complaints was also tested (hypothesis 29). Two models were compared for this purpose. A partial mediation model, Figure 10 above, was compared to a full mediation model, Figure 11 below.

Figure 11. Work engagement as full mediator



Note. \* $p < 0.001$  \*\* $p < 0.05$ .  $N = 694$ . Dashed paths are non-significant. All paths are standardised regression

Table 7 below shows there is a significant chi-square difference between the two models as well as change in the CFI supporting the partial mediation model. Thus hypotheses 28 and 29 were supported.

Table 7.  
Fit indices for nested model comparisons

Model	Description	$\chi^2$ (N= 694)	df	$\chi^2$ /df	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta$ df
Figure 10	Partial mediation	1085.22	339	3.20	.93	.06	.08	103.64*	3
Figure 11	Full mediation	1188.86	342	3.47	.92	.06	.09		

\* $p = 0$ .

6.03221 Supplementary analysis: indirect effects of mindset of emotion on outcomes

The mindset of emotion model is a complex structural model and it did not propose indirect effects of the incremental mindset of emotion on the three outcomes although the model implies these links. As noted in Chapter Four, section 4.03, the indirect effects of the incremental mindset of emotion on the outcomes can be expected to be weak as distal relationships have effects that are small in magnitude because they operate through intervening variables (see Edwards & Christian, 2014).

The standardised indirect effects of the incremental mindset of emotion on happiness and life satisfaction through adaptive emotion regulation and work engagement were computed using the effects decomposition function of AMOS using the Bootstrap method (2000 bootstrap samples were used). Likewise, the indirect effect of the incremental mindset of emotion on psychosomatic complaints through avoid performance goal orientation and work engagement was also computed. Results are shown in Table 5 below. Both the 95% percentile bootstrap (BP) and 95% bias corrected bootstrap (BPB) intervals yield consistent results and do not include zero, indicating that all the indirect effects are significant.

However, within the structural model, it is must be emphasised that the effect of incremental mindset of emotion on the outcomes are partially mediated by adaptive emotion regulation and avoid performance goal orientation for emotion. That is, adaptive emotion regulation has direct effect on happiness and an indirect on life satisfaction. Avoid performance goal orientation for emotion has a direct effect on psychosomatic complaints. Indeed when, in Figure 8, the direct links from learning goal orientation to all the outcome are fixed to zero, a lower CFI is obtained (.92) supporting the hypothesised model in Figure 8 (CFI = 0.93). Furthermore, with the direct path from work engagement to outcomes fixed to zero all the point estimates are further reduced but they all remain significant as before.

## Antecedents and outcomes of work engagement: the role of mindsets.

Table 8. Indirect effect of incremental mindset of emotion on outcomes.

Total indirect effects	estimate	95 % CI (BP)	95% (BCB)
Incremental mindset of emotion → avoid performance goal orientation for emotion → work engagement → psychosomatic complaints	-.17*	-.221, -.118	-.222, -.119
Incremental mindset of emotion → adaptive emotion regulation → work engagement → happiness	.21*	.121, .306	.127, .312
Incremental mindset of emotion → adaptive emotion regulation → happiness → life satisfaction	.17*	.123, .266	.128, .274

Note\_ \* $P < 0.001$

Following this, additional exploratory analysis was undertaken by adding paths from the incremental mindset of job capability to the outcomes. The path to happiness was significant ( $\beta = 0.16, p < 0.001$ ). The CFI remained unchanged (0.93) the chi-square test of difference was significant ( $p < 0.0003$ ) (chi-square difference = 12.17 with 1 df) suggesting that this nested model with the added path explains the data better than the one in Figure 8. Also, this did not affect the significance of the existing paths in the model. The Model (Figure B 2) is shown in Appendix D. This shows that the incremental mindset of emotion has direct effects too.

### 6.033 Multigroup analyses

To test the stability of the effects in each cross-sectional mindset model, cross-validation through multi-group analyses were undertaken (Kline, 2011). In principle, cross-validation requires a different sample, termed the validation sample that should be selected from the same parent population from which the initial sample, termed calibration sample, belongs. Essentially, cross-validation through multigroup analyses investigates whether a hypothesized model structure is invariant across the calibration and the validation samples (Byrne, 2002). However, in the absence of a validation sample from the same parent population, cross-validation can be carried out with the same sample across time to test the stability of the structure of the model (Kline, 2011).

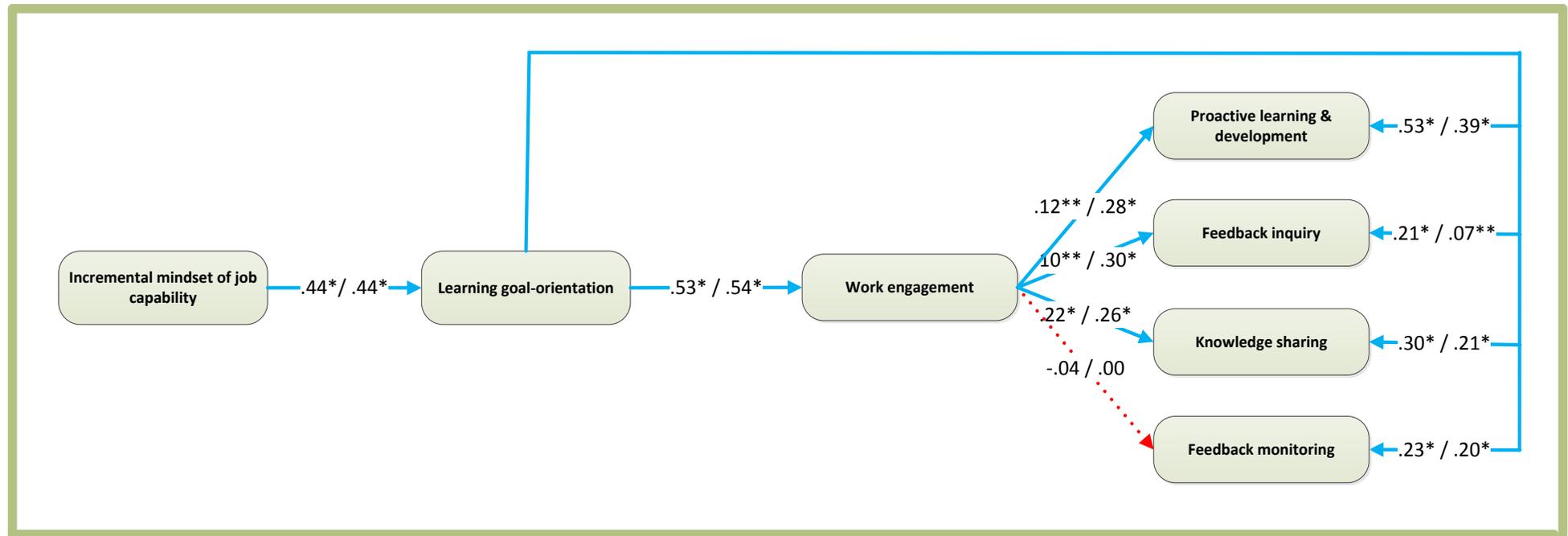
Therefore, two groups were compared as follows: (1) Those who took part in both T1 and T2, and (2) Those who took part in T2 (N = 373) and T1 only (N = 321). As mentioned earlier, 3 participants at T2 (N = 373) could not be matched with their respective T1 data, hence for (1) T2 data are based on a sample of N = 370. The multigroup comparison was conducted through the multiple-group automated procedure available in AMOS version 22. The procedure examines the changes in fit of a series of five models with constrained parameters that are progressively compared with the multigroup configural model, an unconstrained model which imposes no equality constraints between the T1 and T2 models. Each of the five constrained model is more restrictive than its predecessor in that an additional set of constrained parameters are added at each step. The following parameters are constrained at each step: measurement weights, structural weights, structural covariances, structural residuals, and measurement residuals. In line with the guidelines of Byrne (2002),  $\Delta CFI$  was used to adjudicate if the hypothesized model is invariant across the two samples (the chi-square test of difference is deemed too stringent for this purpose). According to Meade et al. (2008) if  $\Delta CFI$  do not exceed a value of 0.01 then the null hypothesis of invariance cannot be rejected, implying that the most constrained model is invariant across the two samples. The results of the multigroup analyses of the mindset of job capability and mindset of emotion follow below.

### 6.0331 The mindset of job capability: Multigroup analyses

The structural model with parameter values at T1 and T2 is shown below in Figure 12. No significant differences between the constrained and unconstrained models were found as shown in Table 10 below. Therefore the mindset of job capability model was consistent across both time points.

Antecedents and outcomes of work engagement: the role of mindsets.

Figure 12. Mindset of job capability at T1 (N = 370) / T2 (N = 370).



Note. \* $p < 0.001$  \*\* $p < 0.01$ . (N = 370) / (N = 370). Dashed paths are non-significant. All paths are standardised regression paths (regression path values on left are T1 and on right are T2).

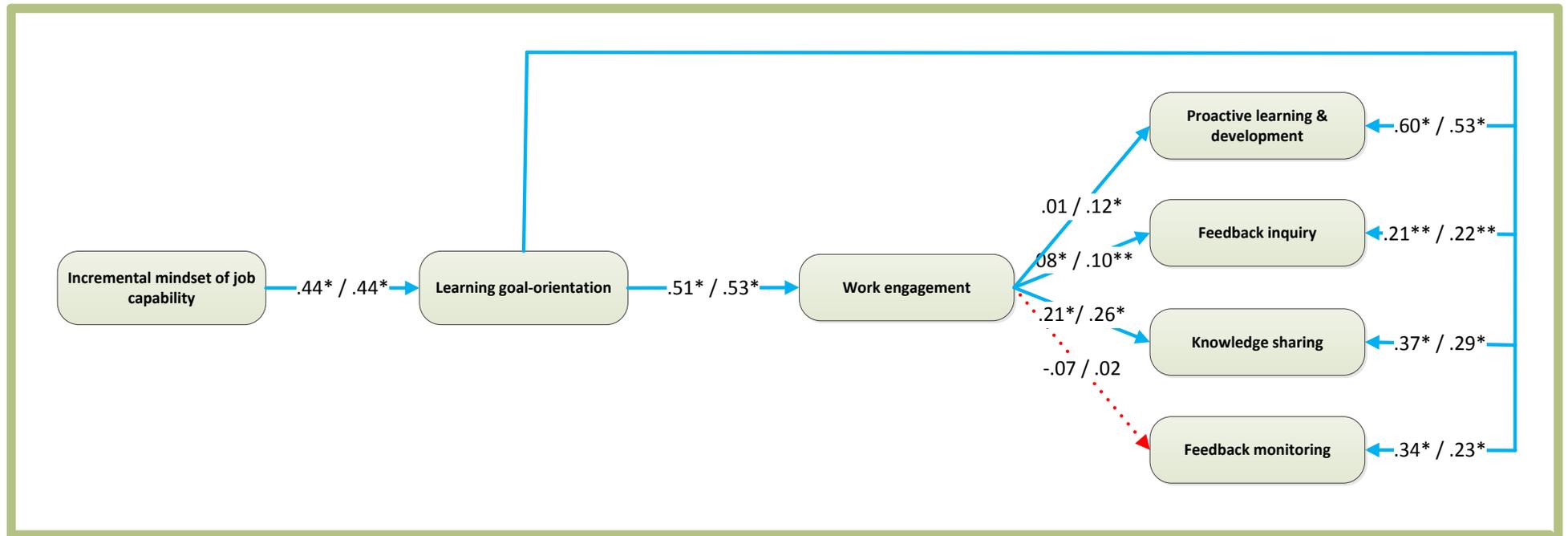
Table 10. Baseline comparisons for Figure 11

Model	CFI
Unconstrained	.93
Measurement weights	.93
Structural weights	.93
Structural covariances	.93
Structural residuals	.93
Measurement residuals	.93

Next, multigroup analyses was conducted to determine model equivalence between the participants who had taken part at T2 ( $N = 370$ ) and those who had taken part at T1 only ( $N = 321$ ). The structural model, showing parameter values of both groups, is shown in Figure 13 below. Of note is that the work engagement to proactive learning and development path was non-significant for the T1 only group ( $N = 321$ ). There were no differences between the constrained and unconstrained models as shown in Table 10 below.

Antecedents and outcomes of work engagement: the role of mindsets.

Figure 13. Mindset of job capability at T1 (N = 321: those who did T1 only) / T1 (N = 373: those who took part in T2).



Note. \* $p < 0.001$  \*\* $p < 0.01$ . Dashed paths are non-significant (work engagement to proactive learning & development path for T1, N= 321 is n.s) All paths are standardised regression paths.

Table 11. Baseline comparisons for Figure 13

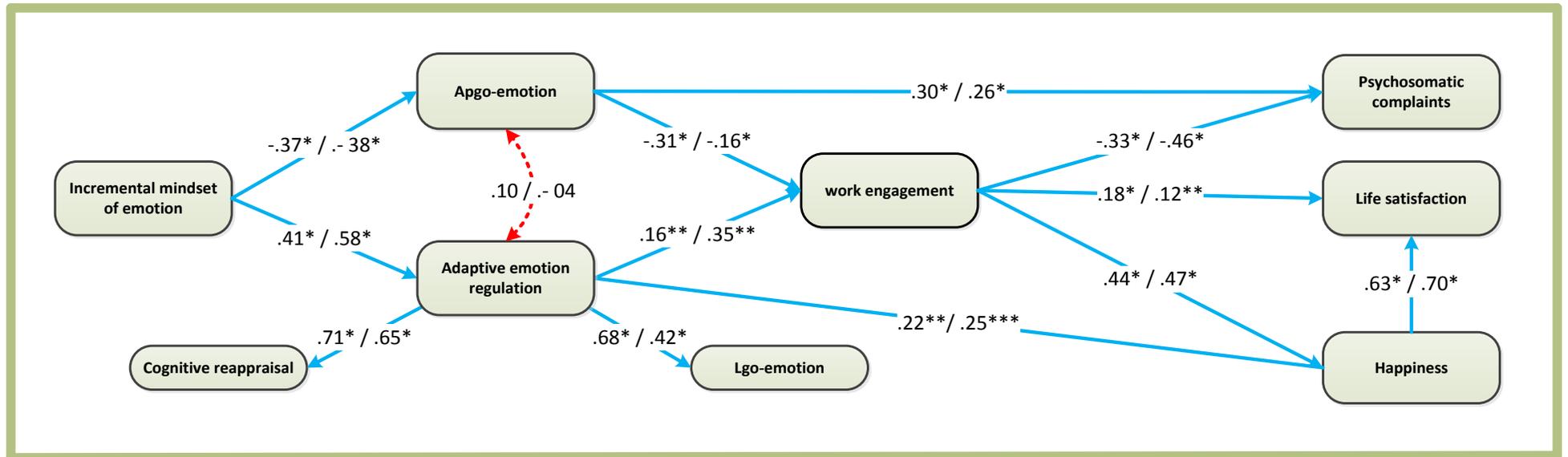
Model	CFI
Unconstrained	.92
Measurement weights	.92
Structural weights	.92
Structural covariances	.92
Structural residuals	.92
Measurement residuals	.92

6.0332 The mindset of emotion: Multigroup analyses

The structural model with parameter values of T1 and T2 is shown below in Figure 14. No significant differences between the constrained and unconstrained models were found as shown in Table 12 below. Therefore the mindset of emotion model was consistent across both time points.

Antecedents and outcomes of work engagement: the role of mindsets.

Figure 14. Mindset of emotion model at T1 (N = 370) / T2 (N = 370)



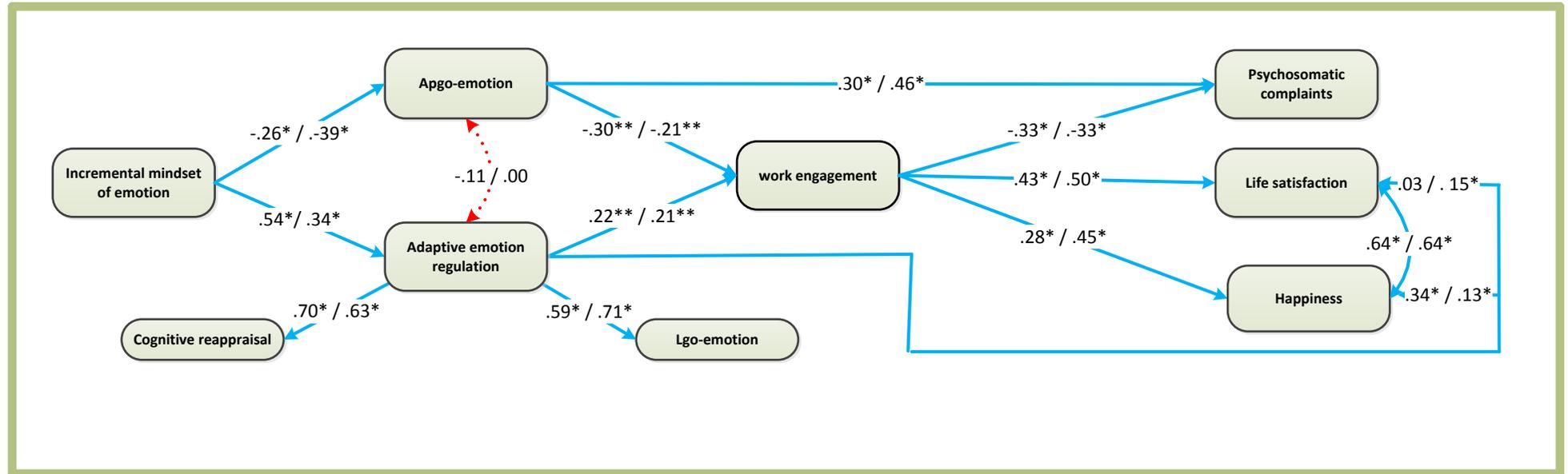
Note.  $*p < 0.001$   $p < 0.05$   $**p < 0.01$ . (N = 370) / (N = 370). Dashed path is non-significant, the T2 covariance between adaptive emotion regulation and avoid performance goal orientation for emotion is non- significant. All paths are standardised regression paths (regression paths values on left are T1 and on right are T2).

Table 12. Baseline comparisons for Figure 14

Model	CFI
Unconstrained	.92
Measurement weights	.92
Structural weights	.92
Structural covariances	.92
Structural residuals	.92
Measurement residuals	.92

Next, multigroup analyses was conducted to determine model equivalence between the participants who had taken part at T2 ( $N = 373$ ) and those who had taken part at T1 only ( $N = 321$ ). The structural model, with both group parameter values, is shown in Figure 15 below. There were no differences between the constrained and unconstrained models as shown in Table 13 below.

Antecedents and outcomes of work engagement: the role of mindsets.



Note.  $*p < 0.001$   $**p < 0.01$ . Dashed paths are non-significant. All paths are standardised regression paths.

Figure 15. Mindset of emotion model at T1 (N = 321: those who did T1 only) / T1 (N = 373: those who took part in T2)

Table 13. Baseline comparisons for Figure 15

Model	CFI
Unconstrained	.92
Measurement weights	.92
Structural weights	.92
Structural covariances	.92
Structural residuals	.92
Measurement residuals	.92

## Antecedents and outcomes of work engagement: the role of mindsets.

### 6.034 Longitudinal analysis: The mindset of job capability model

Table 14. Descriptive statistics, zero-order correlations, and alphas for T1 and T2 variables for the mindset of job capability model.

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Incremental mindset of job capability T1	4.11	0.88	<b>.83</b>															
2. Learning goal orientation T1	5.43	0.88	.36**	<b>.87</b>														
3. Work engagement T1	5.20	0.95	.22**	.47**	<b>.93</b>													
4. Avoid performance goal orientation T1	3.50	1.09	-.22**	-.30**	-.16**	<b>.63</b>												
5. Proactive learning and development T1	2.90	0.76	.19**	.53**	.36**	-.13**	<b>.84</b>											
6. Knowledge sharing T1	4.10	0.69	.30**	.36**	.36**	-.30**	.14**	<b>.92</b>										
7. Feedback Inquiry T1	2.70	0.78	.02	.25**	.18**	-.03	.35**	.16**	<b>.83</b>									
8. Feedback monitoring T1	3.10	0.66	.15**	.19**	.14**	.00	.28**	.26**	.41**	<b>.81</b>								
9. Incremental mindset of job capability T2	4.07	0.92	<b>.51**</b>	.27**	.17**	-.22**	.11*	.28**	.07	.15**	<b>.87</b>							
10. Learning goal orientation T2	5.36	0.97	.27**	<b>.62**</b>	.39**	-.35**	.36**	.33**	.20**	.17**	.39**	<b>.90</b>						
11. Work engagement T2	5.08	0.98	.19**	.36**	<b>.73**</b>	-.19**	.34**	.37**	.15**	.11*	.27**	.49**	<b>.93</b>					
12. Avoid performance goal orientation T2	3.60	1.13	-.25**	-.32**	-.19**	<b>.53**</b>	-.15**	-.26**	-.06	-.01	-.22**	-.32**	-.17**	<b>.85</b>				
13. Proactive learning and development T2	2.89	0.79	.17**	.48**	.31**	-.19**	<b>.71**</b>	.18**	.34**	.23**	.19**	.48**	.42**	-.14**	<b>.86</b>			
14. Knowledge sharing T2	4.19	0.67	.22**	.27**	.24**	-.24**	.13**	<b>.67**</b>	.12*	.21**	.28**	.31**	.35**	-.20**	.23**	<b>.92</b>		
15. Feedback inquiry T2	2.69	0.76	.03	.18**	.30**	-.12*	.33**	.12*	<b>.53**</b>	.24**	.07	.21**	.31**	-.07	.41**	.13*	<b>.80</b>	
16. Feedback monitoring T2	3.23	0.62	.13**	.13**	.04	-.04	.20**	.11*	.18**	<b>.47**</b>	.11*	.15**	.08	-.01	.24**	.15**	.36**	<b>.81</b>

Note. \* $p < 0.01$  \*\* $p < 0.05$ , two-tailed.  $N = 370$ . The numbers in bold on the outer diagonal represent T1 and T2 reliabilities and, those on the inner diagonal represent test-retest reliability.

Table 14 above shows the inter-correlations between all T1 and T2 variables. As expected, T1 incremental mindset of job capability has a significant association with T2 learning goal orientation. T1 learning goal orientation is significantly associated with T2 work engagement. T1 work engagement has significant associations with three T2 outcomes only as the association with feedback monitoring is non-significant. On the other hand, T1 learning goal orientation has significant associations with all T2 outcomes.

As required, before proceeding to the implementation of cross-lagged models, the measurement invariance on each of the latent variables, across T1 and T2, was tested (Preacher et al., 2007; Selig & Little, 2012; Vandenberg & Lance, 2000). Measurement invariance testing is done to ensure that the latent variables have the same meaning across time points. Two types of measurement invariance were examined: configural invariance and metric invariance. Configural invariance ensures the measurement model is sound, that is the items relate to the factors as theoretically suggested by the measurement models. Metric invariance indicates that the relations between the indicator and latent variables, as suggested by tests of configural invariance, have the same meaning over time. Metric invariance is tested by applying equality constraints on the factor loadings, latent variances and synchronous latent covariances. This model is then compared with the configural model. Of crucial importance here is that the parcelling approach (for constructs of work engagement, proactive learning and development and knowledge sharing) adopted in the cross-sectional analysis was implemented again in the same way. However, as the model of a single construct here consisted of a T1 and T2 pair, the single-factor method of parcelling (in highest and lowest indicators are paired until items are exhausted) adopted in T1 was applied to T2 constructs by fixing parcels following the same order in which the indicators were paired in T1. This was done to preserve the symmetry of the parcels across time, so the conditions of invariance are maximised (Little, 2012). The results of these individual invariance tests are reported below in Table 15.

Table 15. Measurement invariance: Mindset of job capability model

Variable	Model	$\chi^2$ (N= 370)	df	CFI	RMSEA
1. Mindset of job capability	Configural	79.09	15	.96	.10
	Metric	79.09	15	.96	.10
	Model difference	0	0	0	0
2. Learning goal orientation	Configural	59.24	29	.98	.05
	Metric	59.24	29	.98	.05
	Model difference	0	0	0	0
3. Work engagement	Configural	50.89	15	.98	.08
	Metric	54.27	17	.98	.07
	Model difference	3.38	2	0	.01
4. Proactive learning & development	Configural	3.47	5	1	0
	Metric	3.47	5	1	0
	Model difference	0	0	0	0
5. Feedback inquiry	Configural	34.19	13	.98	.06
	Metric	34.19	13	.98	.07
	Model difference	0	0	0	.01
6. Feedback monitoring	Configural	85.68	45	.97	.05
	Metric	118.69	46	.97	.06
	Model difference	33.01	1	0	.01
7. Knowledge sharing	Configural	51.12	15	.98	.08
	Metric	51.12	15	.98	.08
	Model difference	0	0	0	0

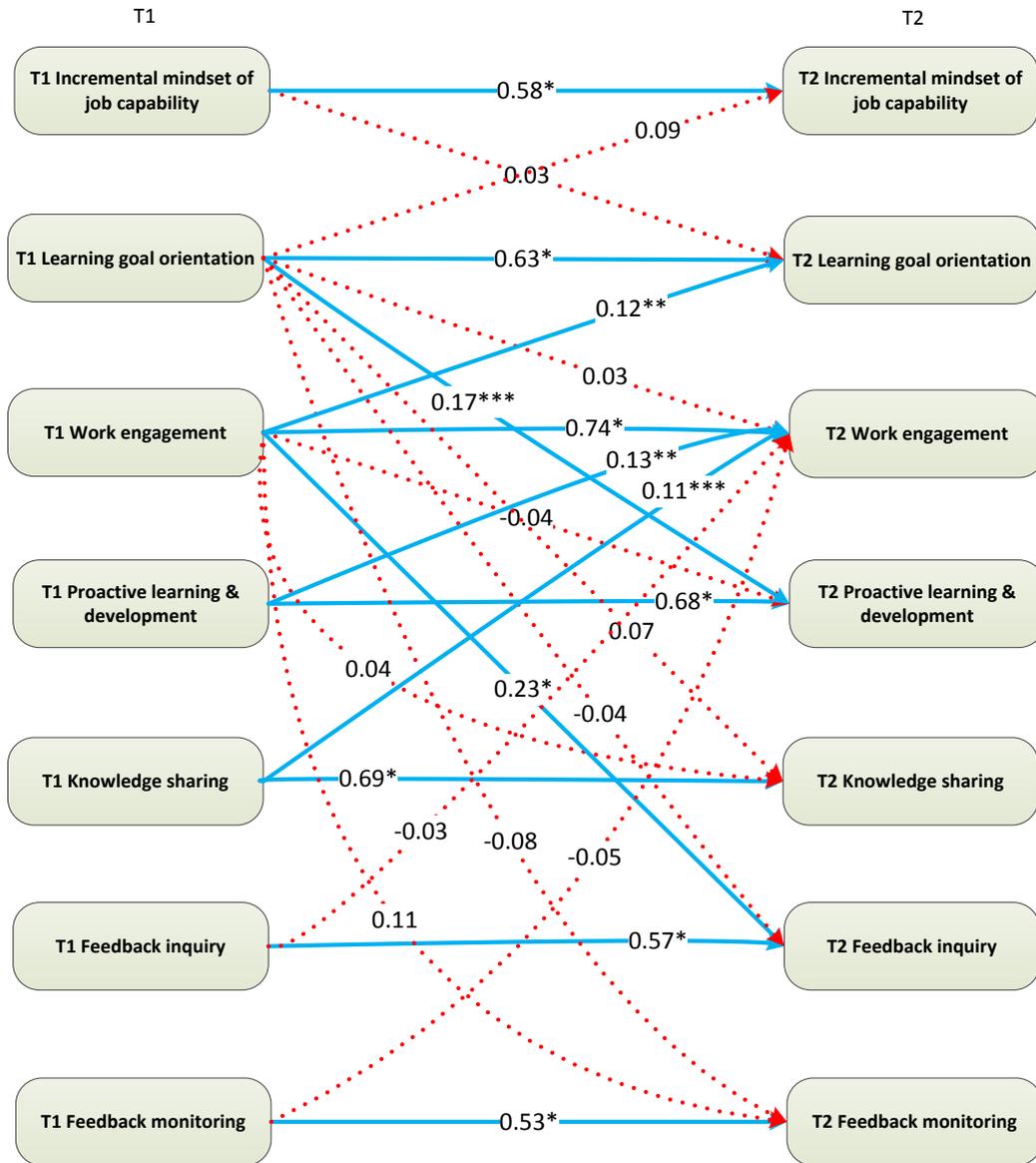
As can be seen in Table 15, there were no differences between the configural models and metric models, the CFI values were unchanged. Hence, the relationships between the indicators and respective latent variables were unchanged across T1 and T2. Thus, all the structural models that are tested below were estimated without constraining any parameters.

Next, the measurement model was tested which showed an adequate fit to the data [ $\chi^2$  (1585, N = 370) = 2470.22,  $p < 0.001$ ,  $\chi^2 / df = 1.52$ , CFI = 0.94, RMSEA = 0.04 with CI<sub>90</sub>: (0.036, 0.042), SRMR = 0.05.]. Then a cross-lagged model was fitted to test all of the hypotheses at once. This included: (1) the causal nexus between the incremental mindset of job capability and work engagement, (2) the reverse causal path of T1 engagement predicting T2 learning goal orientation (i.e. testing the

alternative model of mindset of job capability), (3) the predictive relationships between T1 work engagement and T2 outcomes, controlling for the effects of T1 learning goal orientation on T2 outcomes, (4) the reverse causation between T1 proactive learning and development, T1 knowledge sharing and T2 work engagement (controlling for the effect of T1 learning goal orientation) and (5) the research question of the directional T1 feedback inquiry and T2 work engagement link. Figure 15 below shows the cross-lagged analysis (for ease of presentation, the indicators, the within item correlations of T1 and T2, the covariances between T1 variables, and the correlated error terms between T1 and T2 items are not shown, T2 disturbance errors are not shown). The model had an adequate fit to the data [ $\chi^2(1633, N = 370) = 2757.75, p < 0.001, \chi^2/df = 1.68, CFI = 0.92, RMSEA = 0.04$  with  $CI_{90}: (0.04, 0.05), SRMR = 0.12$ .].

## Antecedents and outcomes of work engagement: the role of mindsets.

Figure 16. Results of cross-lagged analysis, mindset of job capability ( $N = 370$ ).



\*  $p < 0.001$ , \*\* $p < 0.05$ ,  $p < ***0.01$  (two-tailed).  $N = 370$ . All paths are standardised regression paths, dashed paths are non-significant. Factor loadings and covariances between T1 and T2 indicators are omitted for clarity.

The T1 mindset of job capability to T2 learning goal orientation path was non-significant. Likewise the T1 learning goal orientation to T2 mindset of job capability was also non-significant. The T1 learning goal orientation to T2 work engagement path was also insignificant. In case of significance,

the product of these two paths, provides the indirect effect of the incremental mindset of job capability on work engagement through the mediating role of learning goal orientation (Cole & Maxwell, 2007). Controlling for the effect of T1 learning goal orientation, T1 work engagement has a non-significant path with T2 proactive learning and development. T1 Work engagement has a non-significant path with T2 knowledge sharing. On the other hand, controlling for the effect of T1 learning goal orientation (even though these paths were non-significant) T1 work engagement has a significant path with T2 feedback inquiry. With regard to the alternative model of mindset of job capability, the T1 work engagement to T2 learning goal orientation link was significant, with a standardised path of 0.13. With the regard to the reverse work engagement outcome hypotheses, T1 Knowledge sharing and T1 proactive learning and development have significant paths predicting T2 work engagement. In response to research question 1, T1 feedback inquiry was unrelated with T2 work engagement.

## Antecedents and outcomes of work engagement: the role of mindsets.

### 6.035 Longitudinal analysis: The mindset of emotion model

Table 16. Descriptive statistics, zero-order correlations, and alphas for T1 and T2 variables (mindset of emotion model).

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Incremental mindset of emotion T1	3.61	0.95	<b>.89</b>															
2 Avoid performance goal orientation for emotion T1	2.85	0.96	-.33**	<b>.76</b>														
3 Learning goal orientation for emotion T1	3.92	0.88	.22**	.12*	<b>.87</b>													
4 Happiness T1	5.05	1.11	.28**	-.33**	.16**	<b>.84</b>												
5 Life satisfaction T1	4.67	1.25	.12*	-.26**	.01	.63**	<b>.89</b>											
6 Psychosomatic complaints T1	2.42	0.83	-.19**	.33**	.06	-.42**	-.42**	<b>.80</b>										
7 Cognitive reappraisal T1	4.62	0.86	.22**	-.05	.35**	.21**	.10*	-.05	<b>.86</b>									
8 Work engagement T1	5.20	0.98	.20**	-.29**	.10*	.43**	.42**	-.36**	.13*	<b>.93</b>								
9 Incremental mindset of emotion T2	3.55	0.93	<b>.55**</b>	-.24**	.22**	.29**	.14**	-.10*	.21**	.23**	<b>.90</b>							
10 Avoid performance goal orientation for emotion T2	3.60	1.13	-.11*	<b>.15**</b>	-.18**	-.17**	-.09	.15**	-.19**	-.19**	-.10*	<b>.89</b>						
11 Learning goal orientation for emotion T2	3.96	0.89	.13**	.14**	<b>.64**</b>	.10*	.04	.05	.26**	.10*	.18**	-.20**	<b>.89</b>					
12 Happiness T2	5.04	1.14	.26**	-.33**	.15**	<b>.77**</b>	.53**	-.42**	.18**	.43**	.30**	-.18**	.18**	<b>.86</b>				
13 Life satisfaction T2	3.33	1.22	-.17**	.32**	.00	-.61**	<b>-.75**</b>	.41**	-.02	.42**	-.22**	.11*	-.06	-.66**	<b>.81</b>			
14 Psychosomatic complaints T2	2.46	0.88	-.14**	.31**	.05	-.43**	-.40**	<b>.74**</b>	-.06	-.34**	-.12*	.13**	.01	-.52**	.50**	<b>.83</b>		
15 Cognitive reappraisal T2	4.78	0.89	.26**	-.12*	.33**	.23**	.02	-.05	<b>.49**</b>	.16**	.34**	-.16**	.28**	.25**	-.03	-.10*	<b>.87</b>	
16 Work engagement T2	5.09	0.98	.19**	-.26**	.11*	.45**	.39**	-.34**	.09	<b>.73**</b>	.29**	-.17**	.19**	.50**	-.44**	-.45**	.21**	<b>.93</b>

Note. \* $p < 0.01$  \*\* $p < 0.05$ , two-tailed.  $N = 370$

Table 16 above shows the intercorrelations between T1 and T2 variables. T1 incremental mindset of emotion has significant associations with T2 cognitive reappraisal, T2 learning goal orientation for emotion, and T2 avoid performance goal orientation (a negative relationship, as expected). However, T1 cognitive reappraisal has a non-significant association with T2 work engagement. T1 learning goal orientation for emotion is significantly associated with T2 work engagement. T1 avoid performance goal orientation is significantly associated with T2 work engagement. T1 cognitive reappraisal is significantly associated with T2 happiness and not T2 life satisfaction. Likewise, T1 learning goal orientation for emotion is significantly associated with T2 happiness only and not T2 life satisfaction. T2 avoid performance goal orientation is significantly associated with T2 psychosomatic complaints. T1 work engagement is significantly associated with all the three T2 outcomes in the expected directions (i.e. positive relationships with happiness and life satisfaction and negative relationship with psychosomatic complaints). Table 16 below shows the results of invariance testing.

Antecedents and outcomes of work engagement: the role of mindsets.

Table 17. Measurement invariance: Mindset of emotion model

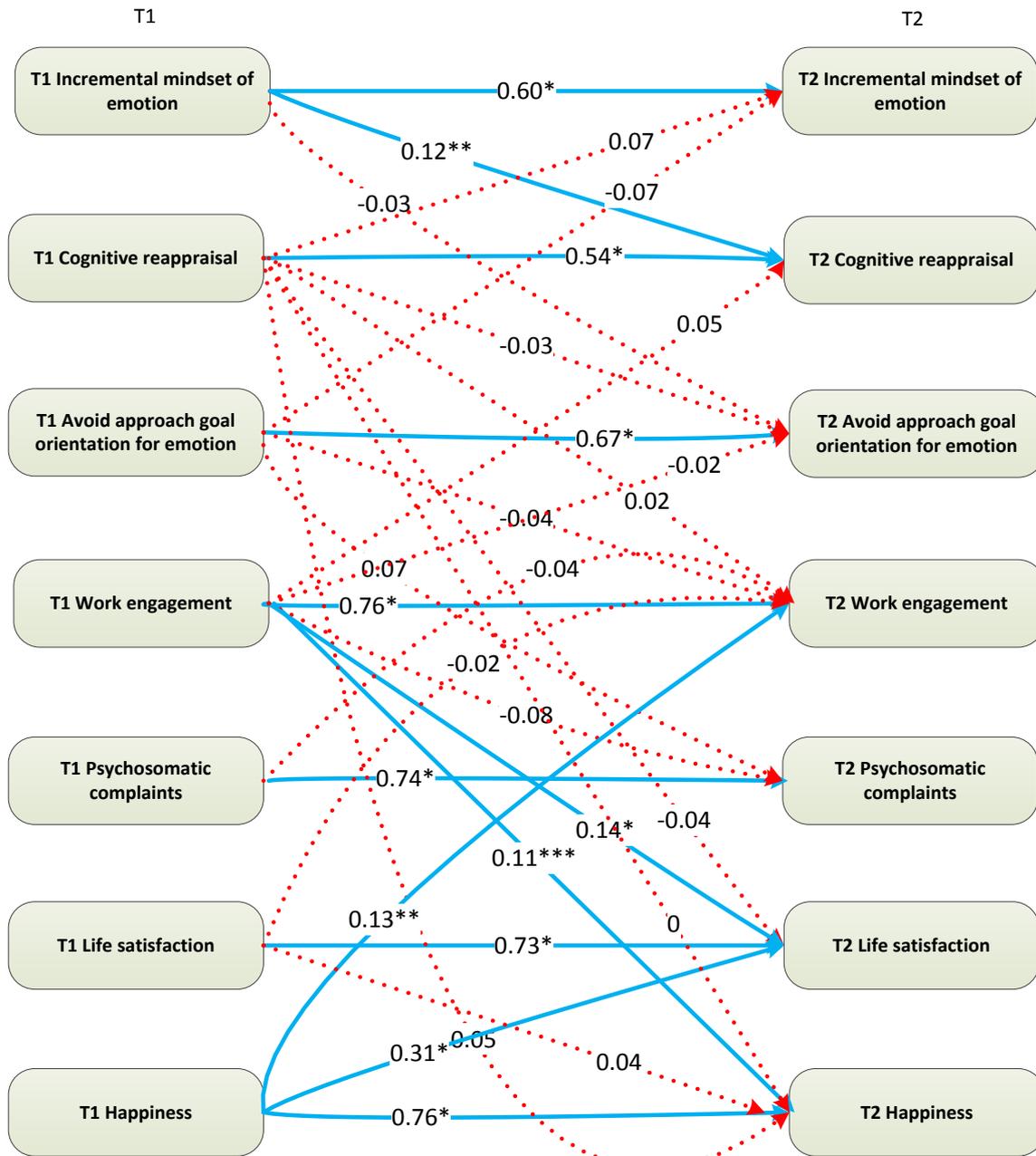
Variable	Model	$\chi^2$ (N= 370)	df	CFI	RMSEA
1. Incremental mindset of emotion	Configural	68.34	29	.98	.06
	Metric	68.34	29	.98	.06
	Model difference	0	0	0	0
2. Avoid performance goal orientation for emotion	Configural	42.49	15	.97	.07
	Metric	42.49	15	.97	.07
	Model difference	0	0	0	0
3. Learning goal orientation for emotion	Configural	182.2	29	.93	.12
	Metric	303.77	30	.87	.16
	Model difference	121.77	1	.06	.04
4. Psychosomatic complaints	Configural	2.71	5	1	0
	Metric	2.71	5	1	0
	Model difference	0	0	0	0
5. Life satisfaction	Configural	45.72	29	.99	.04
	Metric	150.75	32	.96	0.1
	Model difference				
6. Happiness	Configural	15.65	15	1	.01
	Metric	15.65	15	1	.01
	Model difference	0	0	0	0
7. Cognitive reappraisal	Configural	10.08	5	1	.05
	Metric	10.08	5	1	.05
	Model difference	0	0	0	0
8. Adaptive emotion regulation	Configural	425.71	93	.91	.09
	Metric	425.71	93	.91	.09
	Model difference	0	0	0	0

There were no differences in CFI between the configural and metric models for most of the variables excluding life satisfaction and learning goal orientation for emotion. However, in the case of life satisfaction and learning goal orientation for emotion, upon close inspection of the indicators loadings and inspection of the residual the configural and metric models were consistent with the data. Thus, they were deemed invariant. Next, the test of the cross-lagged longitudinal model was carried out. All the hypotheses were tested at once. Before progressing further, a note about the construct of adaptive emotion regulation needs mention. A measurement model of adaptive emotion regulation was tested, as represented in the cross-sectional models (a higher-order factor with two latent variables of cognitive reappraisal and learning goal orientation for emotion). The measurement model consisted of T1 and T2 adaptive emotion regulation. The measurement model fit the data well [ $\chi^2$  (1969, N = 370) =

3499.22,  $p < 0.001$ ,  $\chi^2 / df = 1.77$ , CFI = 0.91, RMSEA = 0.05 with CI<sub>90</sub>: (0.04, 0.05), SRMR = 0.01]. However, when the structural model was tested, the autoregressive path from T1 adaptive emotion regulation to T2 adaptive emotion regulation had a value higher than 1.0, and this resulted in a negative covariance matrix. In cross-lagged models it is not unusual to find that the same variables measured over different times are highly correlated due to multicollinearity (Little, 2012; Hoyle 2012). Thus, to overcome this methodological limitation two separate structural models were tested: One with cognitive reappraisal and one with learning goal orientation for emotion. Figure 16 (with cognitive reappraisal and mediator between the incremental of mindset of emotion and work engagement) and Figure 17 (with learning goal orientation for emotion as mediator between the incremental mindset of emotion and work engagement) below show the results of the cross-lagged analyses.

## Antecedents and outcomes of work engagement: the role of mindsets.

Figure 17. Results of cross-lagged analysis, mindset of emotion with cognitive reappraisal



\*  $p < 0.001$ , \*\*  $p < 0.05$ ,  $p < ***0.01$  (two-tailed).  $N = 370$ . All paths are standardised regression paths, dashed paths are non-significant. Factor loadings and covariances between T1 and T2 indicators are omitted for clarity.

T1 incremental mindset of emotion has a significant link with T2 cognitive reappraisal path, but a non-significant link with T2 avoid performance goal orientation for emotion. T1 cognitive reappraisal

and T1 avoid performance goal orientation for emotion had non-significant links with T2 incremental mindset of emotion. Both T1 cognitive reappraisal and T1 avoid performance goal orientation for emotion had non-significant links with T2 work engagement. Cognitive reappraisal had non-significant paths with T2 happiness and T2 life satisfaction. Likewise, T1 avoid performance goal orientation for emotion did not predict T2 psychosomatic complaints. T1 work engagement had significant paths with T2 happiness and T2 life satisfaction. However, T1 work engagement had a non-significant negative path with T2 psychosomatic complaints. T1 happiness predicted T2 work engagement. However, in response to research question 2, T1 life satisfaction did not relate with T2 work engagement. Moreover, T1 psychosomatic complaints did not predict T2 work engagement. Finally, T1 cognitive reappraisal did not predict T2 happiness but T1 happiness predicted T2 life satisfaction supporting the modification in the model (Figure 8).

Next, nested model comparisons were undertaken to ascertain whether the reciprocal work engagement to happiness link explained the data better than the normal (T1 Work engagement to T2 happiness) and reverse causation links (T1 Happiness to T2 work engagement). Results are shown in Table 17 below. A chi-square test of difference showed that the reciprocal link explained the data more adequately than the normal causation model (T1 work engagement → T2 happiness) but the difference between the reciprocal model and the reverse causation model (T1 Happiness → T2 Happiness) was not significant. Thus, support for the reciprocal link between work engagement and happiness (Hypothesis 32) was not found.

Antecedents and outcomes of work engagement: the role of mindsets.

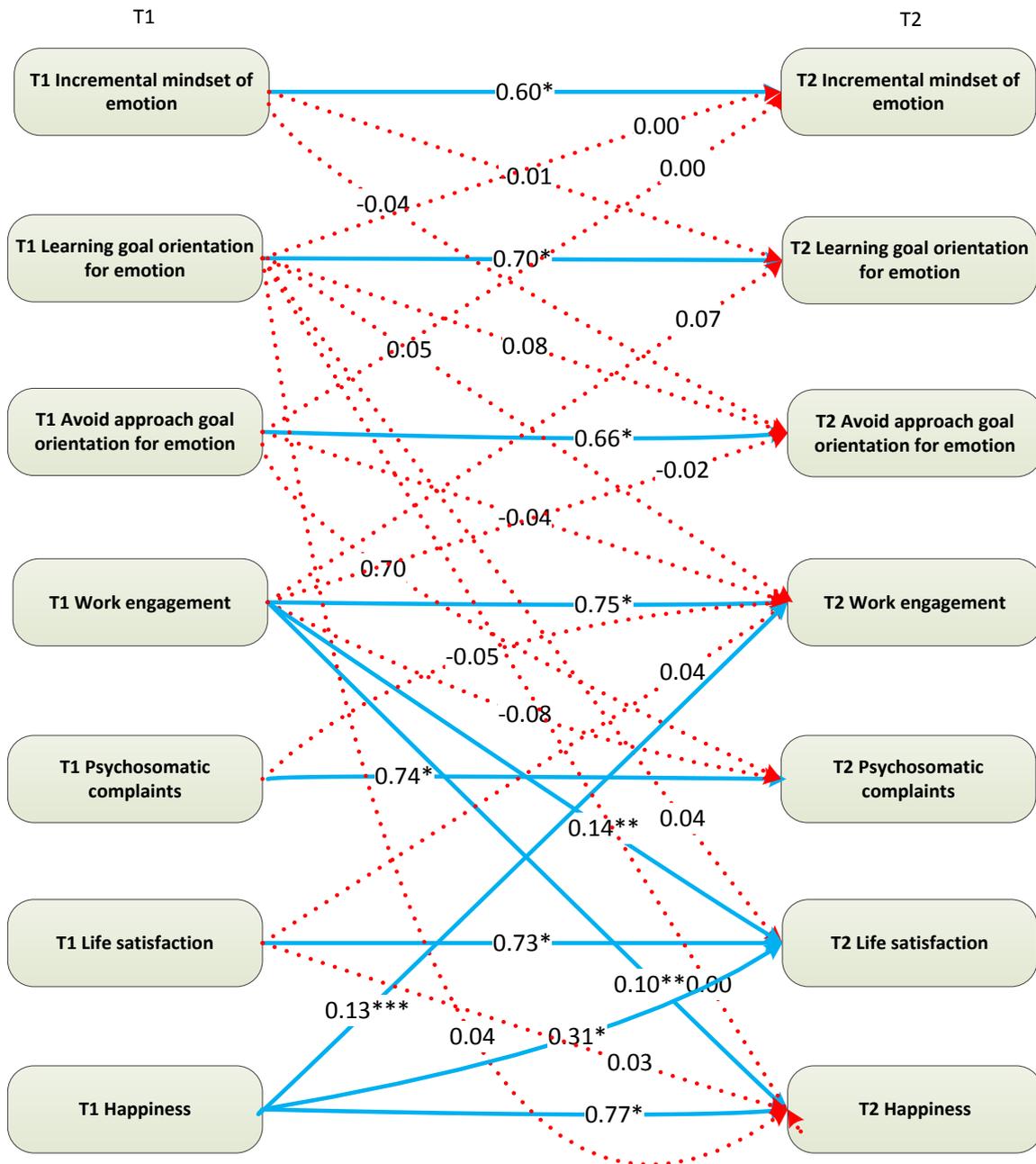
Table 18: Goodness of Fit indices for nested models ( $N = 370$ )

Model	Description	$\chi^2$ ( $N = 370$ )	df	$\chi^2 / df$	CFI	RMSEA	Model comparison	$\Delta\chi^2$	$\Delta df$
M1	Normal causation model	2223.95	1408	1.58	0.95	0.04			
M2	Reverse causation model	2222.78	1408	1.58	0.95	0.04			
M3	Reciprocal model	2219.21	1407	1.57	0.95	0.04			
	T1 Work engagement $\rightarrow$ T2 Happiness						M1-M3	5.744*	1
	T1 Happiness $\rightarrow$ T2 Work engagement						M2-M3	3.574(n.s)	1

Note.\*  $p < 0.05$ , two-tailed.

Antecedents and outcomes of work engagement: the role of mindsets.

Figure 18. Results of cross-lagged analysis, mindset of emotion with learning goal orientation for emotion



\*  $p < 0.001$ , \*\* $p < 0.05$ ,  $p < ***0.01$  (two-tailed). ( $N = 370$ ). All paths are standardised regression paths, dashed paths are non-significant. Factor loadings and covariances between T1 and T2 indicators are omitted for clarity.

T1 incremental mindset of emotion did not predict T2 learning goal orientation for emotion. Likewise, T1 learning goal orientation did not predict the incremental mindset of emotion. T1 learning

## Antecedents and outcomes of work engagement: the role of mindsets.

goal orientation for emotion did not predict T2 work engagement and T1 work engagement did not predict T2 learning goal orientation. Also, T1 learning goal orientation for emotion did not predict T2 happiness and T2 life satisfaction. T1 learning goal orientation for emotion did not predict T2 happiness but as stated above, T1 happiness predicted T2 life satisfaction. All the other paths are identical as described in Figure 16 above. Nested model comparisons yielded similar results as described earlier in Table 17.

## Antecedents and outcomes of work engagement: the role of mindsets.

### 6.036 Summary of results

Table 19. Summary results of hypotheses

Number	Hypotheses	Supported?	
		Cross-sectional	Longitudinal
1	The incremental mindset of job capability will be positively related to learning goal orientation.	<b>Yes</b>	No
2	The incremental mindset of job capability will be negatively related to avoid performance goal orientation.	<b>Yes</b>	No
3	Learning goal orientation will be positively related to work engagement.	<b>Yes</b>	No
4	Avoid performance goal orientation will be negatively related to work engagement.	No	No
5	The mindset of job capability will be positively related to work engagement	No	No
6	The effect of the incremental mindset of job capability on work engagement will be partially mediated by the parallel mediators of learning goal orientation and avoid performance goal orientation.	<b>Partially supported with learning goal orientation</b>	No
7	Learning goal orientation will be positively related to proactive learning and development.	<b>Yes</b>	<b>Yes</b>
8	Learning goal orientation will be positively related to feedback inquiry	<b>Yes</b>	No
9	Learning goal orientation will be positively related to feedback monitoring.	<b>Yes</b>	No
10	Learning goal orientation will be positively related to knowledge sharing.	<b>Yes</b>	No
11	Controlling for learning goal orientation work engagement will positively predict proactive learning and development.	<b>Yes</b>	No
12	Controlling for learning goal orientation, work engagement will predict feedback inquiry.	No	<b>Yes</b>
13	Controlling for learning goal orientation, work engagement will predict feedback monitoring.	No	No
14	Controlling for learning goal orientation, work engagement will be more strongly related with feedback inquiry than with feedback monitoring.	No	No
15	Controlling for learning goal orientation, work engagement will predict knowledge sharing.	<b>Yes</b>	No

## Antecedents and outcomes of work engagement: the role of mindsets.

16	Work engagement is a partial mediator between learning goal orientation and the four outcomes.	<b>Partial support for knowledge sharing only</b>	No
17	Controlling for learning goal orientation, proactive learning and development will predict work engagement.	N/A	Yes
18	Controlling for learning goal orientation, knowledge sharing will predict work engagement.	N/A	<b>Yes</b>
19	Cognitive reappraisal and learning goal orientation for emotion will be represented as a higher order construct of adaptive emotion regulation.	<b>Yes</b>	N/A
20	The incremental mindset of emotion will be positively related to adaptive emotion regulation (higher order construct representing shared variance between cognitive reappraisal and learning goal orientation for emotion).	<b>Yes</b>	N/A
21	The incremental mindset of emotion will be negatively related to avoid performance goal orientation.	<b>Yes</b>	N/A
22	Adaptive emotion regulation will be positively related to work engagement.	<b>Yes</b>	N/A
23	Avoid performance goal orientation for emotion will be negatively related to work engagement.	<b>Yes</b>	No
24	Incremental mindset of emotion will be positively related to work engagement.	No	No
25	The effect of the incremental mindset of emotion on work engagement will be partially mediated by the parallel mediators of adaptive emotion regulation and avoid performance goal orientation for emotion.	<b>Yes</b>	NO
26	Adaptive emotion regulation will be positively related to life satisfaction and happiness.	<b>Yes</b>	No
27	Avoid performance goal orientation for emotion will be positively related with psychosomatic complaints.	<b>Yes</b>	No
28	Controlling for adaptive emotion regulation, work engagement will be positively related to happiness and life satisfaction.	<b>Yes</b>	<b>Yes</b>
29	Controlling for avoid performance goal for emotion, work engagement will be negatively related with psychosomatic complaints.	<b>Yes</b>	No
30	Work engagement is a partial mediator between adaptive emotion regulation and life satisfaction and happiness.	<b>Yes</b>	No
31	Work engagement is a partial mediator between avoid performance goal orientation for emotion and psychosomatic complaints.	<b>Yes</b>	No
32	Work engagement and happiness are reciprocally related over time.	N/A	No

Antecedents and outcomes of work engagement: the role of mindsets.

Table 19. Summary results of research questions

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Number	Research question	Answer
1	Controlling for learning goal orientation, do feedback seeking behaviours predict work engagement?	No
2	Is the work engagement and learning goal orientation link reciprocal?	<b>No, but learning goal orientation predicts work engagement</b>
3	Is life satisfaction related to work engagement over time?	No
4	Are psychosomatic complaints related to work engagement over time?	No

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## Chapter Seven

### Discussion

#### 7.00 General overview

The cross-sectional and longitudinal results presented in Chapter Six are discussed. The mindset of job capability model is addressed first (section 7.01) followed by the mindset of emotion model (section 7.02). In each case, the cross-sectional and longitudinal results are integrated to provide a comprehensive interpretation of all observational findings. Next, in an integrative evaluative section devoted to both mindset models (section 7.03), research limitations are explained, implications for practice are discussed, further critical analysis of the research is undertaken through the lens of the wider socioeconomic context within which I-O psychology is embedded, and suggestions for future research are made. Finally, the conclusion is presented in the last section (section 7.04).

#### 7.01 Discussion: mindset of job capability model

This model integrated the incremental mindset of job capability, learning goal orientation and avoid performance goal orientation as antecedents of work engagement to investigate the proactive learning-related outcomes of work engagement. More precisely, the model proposed the incremental mindset of job capability as a dispositional antecedent of work engagement through the parallel mediating role of learning goal orientation and avoid performance goal orientation. The model also sought to investigate the potential incremental value of work engagement over learning goal orientation in predicting proactive learning and development, feedback inquiry, feedback monitoring, and knowledge sharing. Furthermore, within this framework, the role of work engagement as a partial mediator between learning goal orientation and the four proactive learning-related outcomes was tested. Finally, an alternative configuration of the model was also proposed, with work engagement as a predictor of learning goal orientation (this model did not include avoid performance goal orientation). The discussion below is organised in four parts. The first part addresses the incremental mindset of job capability and work engagement nexus. The second part is devoted to the relation of work engagement and learning goal orientation with the proactive learning related outcomes. The third part discusses the alternative model, and the fourth part discusses the cross-sectional and longitudinal stability of the effects and, the cross-sectional post-hoc results.

#### 7.011 The incremental mindset of job capability and work engagement nexus

The incremental mindset of job capability predicts work engagement; this link is fully mediated as the direct incremental mindset to work engagement path was not significant within the structural model. This indirect link operates through the mediating role of learning goal orientation only because the avoid performance goal orientation to work engagement path was nil. Hence, the predicted parallel mediation, by the co-existence of learning goal orientation and avoid performance goal orientation (representing approach and avoid motivation, respectively), between the incremental mindset of job capability and work engagement was unsupported. All these cross-sectional findings were consistent across Chapters Five (section 5.0331) and Six (section 6.0321).

The incremental mindset of job capability was positively related with learning goal orientation and negatively related with avoid performance goal orientation. As discussed in Chapter Five (section 5.042) this pattern of relationship is in line with previous work in mindset research, adding to the nascent literature on the mindset of job capability. Learning goal orientation was positively related with work engagement, indicating that the dispositional tendency to seek competence is positively related to the motivational component of work engagement. This supports the notion that the pursuit of competence is a driver of intrinsic motivation (Deci & Ryan, 2008) as represented by work engagement. Furthermore, the link suggests that the adaptive cognitive, affective, and behavioural experiences associated with learning goal orientation (Dweck & Leggett, 1988) underpin the positive-affective dispositional basis of work engagement within a learning context. Recently, Poortvliet, Anseel and Theuwis (2015) have also reported that, cross-sectionally, mastery approach goals predict work engagement. To sum up, cross-sectionally, learning goal orientation mediated the effect of the incremental mindset of job capability on work engagement, supporting Heslin's (2010) proposition.

However, at the longitudinal level of analyses, using the autoregressive cross-lagged SEM design (i.e., controlling for auto-regression and correlated residuals), none of the directional links of this causal nexus were significant. That is, Time 1 incremental mindset of job capability did not predict Time 2 learning goal orientation, and Time 1 learning goal orientation did not in turn predict Time 2 work engagement. Within the ARCL framework this implies that in each pair of variables (e.g., incremental mindset of job capability and learning goal orientation) every single variable develops independently, with just the initial covariance that represents the initial relationship between the two (Rosel & Plewis, 2008).

Therefore, the indirect effect of the incremental mindset of job capability on work engagement through learning goal orientation was unsupported over a time lag of 3.5 months. Published work on mindsets and goal orientations, based on the autoregressive cross-lagged SEM designs, are scarce. However, in line with these longitudinal results, one recent study in the domain of mindset of intelligence, using the autoregressive cross-lagged SEM design with a time lag of one year, has not found support for the directional path of mindsets to goals (Martin, 2014). Taking both time lags into consideration, it is possible that the incremental mindset of job capability and learning goal orientation longitudinal link operates within a much shorter time lag than the one used in this study. Indeed, Dormann and Griffin (2015) argue that, in general, shorter time lags are optimal for cross-lagged designs because effects may erode as time lags increase between measurement points. But this claim, in the context of the current study, is speculative and requires empirical work.

Another source of explanation for the nil finding relates to the strength of explanatory mechanisms. That is, even if at the cross-sectional level the effect size reported is close to moderate as per the guidelines of Fergusson (2009), an incremental mindset is not the primary or only dispositional antecedent of learning goal orientation. Apart from an incremental mindset, learning goal orientation has other dispositional antecedents such as need for achievement, intrinsic motivation (Ciani et al., 2011) and the Big Five personality factors (openness to experience, extraversion, emotional stability, conscientiousness and agreeableness) (Payne et al., 2007, on antecedents of goal orientations). Therefore, as the dispositional causes of learning goal orientation are multifactorial, it is likely that the mindset of job capability to learning goal orientation link is not strong enough for it to endure so it is observed over time.

In addition, Time 1 learning goal orientation did not predict Time 2 incremental mindset of job capability. That is, no support was found for the reverse effect. Hence, as predicted in Chapter Five, support for the reciprocal link between the incremental mindset of job capability and learning goal orientation was not found. Of note here is that although Martin (2014) found no longitudinal directional link from mindset to learning goal orientation, he reported a significant reverse effect (however, the variables in his study are not identical to the ones used here). This implies that there are unexplained inconsistencies in the longitudinal relationships between mindset and goals as observed through autoregressive SEM cross-lagged designs. Indeed, there are insignificant correlations between mindsets and goals at cross-sectional level as well (Dinger & Dickhauser, 2013).

Finally, another plausible explanation is that the longitudinal effects of mindsets on goals are more likely to be detected under conditions of challenge (see Burnette et al., 2012), rather than through

passive observational research designs. Thus, in the workplace the incremental mindset of job capability to learning goal orientation can potentially be observed over time during challenging work assignments that tax the worker to learn when challenged, an incremental mind set of job capability will be most likely to trigger the affective, cognitive and behavioural patterns that characterise learning goal orientation, which can then in turn influence work engagement.

Time 1 learning goal orientation did not predict Time 2 work engagement. In common with the explanation advanced above with regard to time lag, it can be theorised that this longitudinal link might exist within a shorter lag. However, as noted in Chapter One section 1.03, the antecedents of work engagement are multifactorial. Thus, it is likely that this link is not strong enough to endure and hence is not observed over time. However, as hypothesised, Time 1 work engagement predicted Time 2 learning goal orientation, supporting the alternative mindset of job capability model — this is discussed shortly in section 7.013.

#### 7.0111 Work engagement as a marker of high approach and low avoidance motivation

Although the zero-order correlation between avoid performance goal orientation and work engagement was significant, the directional link was not significant within the cross-sectional model. This is the first study to investigate the proposition that, in common with other affective-motivational variables such as core-self evaluations (see Chapter One section 1.10), work engagement is a concurrent marker of high approach and low avoidance motivation. This relationship was not supported. That is, controlling for the positive link between learning goal orientation and work engagement, a low motivation to avoid failure and unfavourable judgements from others about one's job capabilities does not imply that one will have a high level of work engagement. While this casts doubts on the low avoidance nature of work engagement within a learning context, a recent study (Prennen, Vianen & Pather, 2012) reported that avoid performance goal orientation, measured by another scale (Janssen & Prins, 2007) was unrelated with the extent to which employees perform challenging tasks. Conceptually equating, "the performance of challenging tasks" with work engagement, the two zero-order correlations of work engagement with avoid performance goal orientation are similar. Although these results are consistent, suggesting that avoid performance goal orientation within a learning context is unrelated with affective-motivational variables, it is still possible that this link might be observed under conditions of challenge rather than under passive conditions. Finally, it must be re-emphasized that in contrast with these results core self-evaluation, as an affective motivational variable, is negatively related with avoid performance goal orientation (see

Ferris et al., 2011). This poses an intriguing question as to the relationship of work engagement with avoidance motivation within a learning context. Indeed, on a more fundamental level it questions work engagement's location within the circumplex model where work engagement is posited to be diametrically opposed to avoidance motivation (Warr et al., 2013). Of note is that avoid performance goal orientation is also considered to be subject to social desirability bias (Tan & Hall, 2005), but upon inspection of the distribution of the variable it did not show any evidence of skewness, indeed the distribution was almost perfectly normal.

#### 7.012 Relationship with outcomes of work engagement

Learning goal orientation is one of the most prominent predictors of proactive learning-related outcomes (Parker & Collins, 2010). As predicted, learning goal orientation had significant links with all four outcomes. The link between learning goal orientation and proactive learning and development was moderate supporting all prior findings reported in the literature (Beier & Kanfer, 2009; Hurtz & Williams, 2009; Orvis & Leffler, 2011). This significant link also underscores the claim that the two variables are distinct, as theorised in Chapter Four and tested in the foundational study in Chapter Five (see section 5.0314). The path from learning goal orientation to knowledge sharing was significant, supporting the theoretical predictions of Wang and Noe (2010) and other researchers (e.g., Swift, Balkin, & Matusik, 2010; Matzler & Mueller, 2011). This implies that workers with a learning goal orientation engage in knowledge sharing to increase and rehearse their own knowledge about work tasks. Furthermore, it is also likely that they share their knowledge because they are not anxious in revealing any knowledge gaps that might become evident as they interact with peers.

The links of learning goal orientation with feedback inquiry and feedback monitoring were significant. In the case of feedback inquiry, this supports the long held view that those who value learning and improvement value feedback which they actively seek from supervisors and peers. These individuals attribute less importance to feedback costs (Anseel et al., 2003) and value the diagnostic utility of feedback. As Anseel et al. (2013) have noted in their meta-analytic study on feedback seeking, investigations on feedback monitoring have been lacking in the literature. VandeWalle (2003) theorised that learning goal orientation is a predictor of both feedback inquiry and feedback monitoring. Although feedback monitoring relates to the passive model of scanning for information from the work environment, it is potentially of value and cannot be ignored. Indeed, the learning goal orientation and feedback monitoring link observed here is in line with the findings of Teunissen et al (2009). In their study on the feedback seeking behaviours of trainee physicians, Teunissen et al. (2009) showed, through post-hoc analyses, that learning goal orientation is a direct predictor of feedback monitoring.

Thus, all these relationships provided the right architecture for testing the value of engagement in predicting the outcomes.

Controlling for learning goal orientation, work engagement had significant links with proactive learning and development and knowledge sharing. However, controlling for the links with feedback inquiry and feedback monitoring were non-significant. This is in contrast with the results in Chapter Five, section 5.0331, where, controlling for learning goal orientation, all the work engagement to outcomes paths were significant. Work engagement incrementally predicted variance in knowledge sharing ( $\Delta R^2 = 0.03$ ). However, work engagement did not predict incremental variance in proactive learning and development as the link was but marginally significant ( $p = 0.05$ ). This is potentially one of the first studies investigating the incremental effect of work engagement over variables that do not overlap with engagement. Indeed, Fleck and Inceoglu (2010) noted that work engagement and other dispositional predictors of motivated work behaviours may, individually, predict outcomes to different degrees. This caution was indeed warranted. Indeed, there are no studies pitting work engagement with other motivational variables in predicting proactive learning-related outcomes. A recent cross-sectional study (Chughtai, 2013) has reported a positive link between work engagement and feedback inquiry, however it did not include a competing predictor of feedback inquiry (feedback inquiry was operationalised with a different instrument termed the “feedback seeking for improvement” scale, see Janssen & Prins, 2007). In a similar vein, Eldor and Harpaz (2015) and Chen et al., (2011) reported moderate to strong cross-sectional links between work engagement and knowledge sharing. But a note is that Chen et al. (2011) did not use any competing proximal predictor of knowledge sharing alongside work engagement. On the other hand, Eldor and Harpaz (2015) did include a competing predictor, but not a proximal one, since they used job attitudes that share conceptual space with work engagement.

Furthermore, support for the role of work engagement as partial mediator between learning goal orientation and outcomes was also found although this was applicable to proactive learning and development and knowledge sharing only as the paths of work engagement to the other two outcomes were non-significant. Thus, the predominant view that work engagement is a full mediator between resources and outcomes can now be questioned (Schaufeli & Taris, 2014). It is clear that other motivational variables may outperform work engagement in predicting outcomes, especially when the outcomes and motivational variables are at the same level of specificity (see Chapter Four section 4.01, see also Woo, Jin, & LeBreton). Unfortunately, recent studies (e.g., Eldor and Harpaz, 2015; Tims, Bakker, & Derks, 2014) continue to model work engagement as full mediator where, within the explanatory model, the antecedents of work engagement are somehow distal predictors of the work engagement outcomes investigated. Thus, these models invariably find support for engagement as full

mediator, inadvertently generating a potentially inaccurate picture of the role of work engagement in explaining outcomes.

As predicted, at the longitudinal level of analysis, Time 1 learning goal orientation predicted Time 2 proactive learning and development. This is in line with the longitudinal findings of Hurtz and Williams (2009), and it supports the prominence of learning goal orientation as a dispositional construct predicting proactive learning and development. However, contrary to predictions, the directional paths of Time 1 learning goal orientation to Time 2 feedback inquiry, Time 2 feedback monitoring, and Time 2 knowledge sharing were all non-significant.

On the other hand, Time 1 work engagement did not predict Time 2 proactive learning and development. However, as predicted, Time 1 proactive learning and development predicted Time 2 work engagement. This supports the proposition that proactive learning and development is a resource for work engagement. This is potentially one of the first studies to report such a longitudinal finding, supporting the proposition of Noe et al. (2014) who argued that learning can “lead to important individual and organizational outcomes by enhancing motivation, engagement, and commitment through enhanced job confidence and the desire to reciprocate for the investment and opportunities provided” (p. 263). Relatedly, a recent study by Breevaart Bakker, and Demerouti (2014) has provided cross-sectional evidence indicating that workplace development opportunities is a predictor of work engagement. However, it must be noted that “workplace development opportunities” is not identical to proactive learning and development although it must be emphasised that work-related learning constructs overlap heavily and cannot be differentiated with ease (see Chapter Four section 4.022). In a similar vein, Eldor and Harpaz (2015, p.1) have reported, in a cross-sectional study, that learning climate, which they define as an organization’s “... beneficial activities in helping create, acquire, and transfer knowledge” is related to work engagement. Overall, the significant Time 1 proactive learning and development to Time 2 work engagement path provides broad support for the role of learning as a resource for work engagement.

As hypothesized, Time 1 work engagement predicted Time 2 feedback inquiry. Considering that Time 1 learning goal orientation did not predict Time 2 feedback inquiry, this indicates that, over time, work engagement is an important driver of feedback inquiry that surpasses the utility of learning goal orientation. This is a notable finding which dovetails nicely with recent research linking work engagement with active information exchange behaviours such as expressing constructive dissent to supervisors and co-workers (Kassing et al., 2012). Thus, there is emerging evidence suggesting that

engaged workers value the exchange of information, whether it relates to feedback inquiry (Ghughtai, 2013; Petrou et al., 2012; Tim et al., 2012) or actively voicing opinions. Indeed, Kahn (2010) argued that, with the benefit of psychological safety (performing one's work role without the fear of negative consequences to self-image, status, and career), engaged workers actively seek out feedback and express their opinions openly without the fear of negative judgement. Thus, the Time 1 work engagement to Time 2 feedback link provides good support for Kahn's (2010) claim. Furthermore, with regard to Research Question 1, Time 1 feedback inquiry did not predict Time 2 work engagement. This result underscores the theoretical relevance and empirical finding of the Time 1 work engagement to Time 2 feedback inquiry significant link. In fact, one of the reasons no longitudinal prediction of the Time 1 feedback inquiry to Time 2 work engagement link was proposed is because it was understood that those who seek feedback may only experience work engagement if they receive accurate and quality feedback (Whitaker & Levy, 2012). Moreover, Time 1 work engagement did not predict Time 2 feedback monitoring, thus the hypothesised differential relations of work engagement with feedback inquiry and feedback monitoring was not supported. Nevertheless, this does indicate that Time 1 work engagement is more related with Time 2 feedback inquiry rather than Time 2 feedback monitoring, underscoring work engagement's active characteristic. In further response to Research Question 1, Time 1 feedback monitoring did not predict Time 2 work engagement.

On the other hand, Time 1 knowledge sharing predicted Time 2 work engagement suggesting that the knowledge sharer experiences engagement as a result of sharing knowledge. This suggest that knowledge sharing, as a social exchange activity, is a rewarding experience that triggers positive affect conducive to work engagement. This is one of the first longitudinal studies reporting on this link and it underscores the effects of co-operation, showing that the initiator of organisational citizenship behaviours such as knowledge sharing experiences work engagement as a result of their action. Indeed, when working together (i.e., sharing knowledge) workers often share norms, beliefs and affective experiences and, following Kahn's (1992) assertion, they feel focussed, attentive, and complete, hence engaged.

### 7.013 The alternative model

As mentioned above, Time 1 work engagement predicted Time 2 learning goal orientation. This is a notable result, as it partially supports the cross-sectional alternative model and raises intriguing questions on the nature of work engagement construct as measured by the UWES. As noted in Chapter One section 1.06, and also in this Chapter section 7.011, the antecedents of learning goal orientation are

multifactorial. These include need for achievement, intrinsic motivation and the Big Five personality traits. Bearing in mind that intrinsic motivation, as represented through self-determination theory, is a strong antecedent of learning goal orientation (Cerasoli & Ford, 2014; Ciani et al., 2011) and that intrinsic motivation overlaps heavily with work engagement (Gagné et al., 2010) (see Chapter Four section 4.025), the significant Time 1 work engagement to Time 2 learning goal orientation link suggests that work engagement represents a constellation of activated dispositional traits influencing specific goals. Indeed, work engagement, as measured through the UWES, is related with conscientiousness and positive affect (Wefald et al., 2011, 2012) and is located in the upper right hand corner the circumplex model representing pleasure and high activation (Warr et al., 2013). Furthermore, this dispositional nature of work engagement, as measured by the UWES, is also supported by the low magnitude of its zero-order correlation with the mindset of job capability ( $r = 0.17, p < 0.05$ ). This is because, mindsets are reported to be largely unrelated with dispositional variables (Burnette et al., 2013).

As noted in Chapter Four section 4.025, motives are too general to be of much predictive utility and their predictive powers are optimally harnessed when they are focussed towards specific goals (see Johnson et al., 2013; Thrash & Elliot, 2003). Thus, the raw affective-dispositional construct of work engagement predicts learning goal orientation over time. In other words, once a worker is in an engaged mode, he or she channels that motivation in setting and achieving specific goals such as learning goals for enhancing one's capability for competence. Although, time precedence on its own does not suffice to make strong claims about the directionality of causality, because of the possibility of omitted variables, this finding needs more interpretation. It is discussed shortly in section 7.032 and 7.0323. However, of note is that other compound motivational constructs have been shown to predict goal-related constructs. For example, Erez and Judge (2001) found that core self-evaluation strongly predicts goal setting motivation. So taken together this cements the theoretical argument supporting the longitudinal work engagement to learning goal orientation link.

#### 7.014 Stability of effects and post-hoc analyses

At the cross-sectional level of analysis the mindset of job capability is stable. That is, the structure of model was replicated across Time1 and Time 2. However, with regard to outcomes, at the longitudinal level of analyses of each individual path, only one path was supported with Time 1 work engagement predicting Time 2 feedback inquiry. The implications of these findings are discussed further in section 7.032 shortly. Moreover, post-hoc analyses into the cross-sectional indirect effects of

the incremental mindset of job capability on the proactive learning related outcomes were all significant. However, the effects of incremental mindset of job capability are transmitted successively through learning goal orientation and work engagement only in the case of proactive learning and development and knowledge sharing. For feedback inquiry and feedback monitoring the effects are transmitted through learning goal orientation only. These indirect effects were not postulated due to anticipated weak or null effects. In addition, through post-hoc testing in the cross-sectional model, the incremental mindset of job capability had a significant direct link with knowledge sharing ( $\beta = 0.21, p < 0.001$ ). First of all, it supports the notion of Burnette et al. (2011) that mindsets can have direct effects too, but more importantly this suggests that the incremental mindset of job capability is at least on a par with work engagement as a predictor. It also reinforces the notion that work engagement is not a full mediator between resources and outcomes; indeed here the resource (incremental mindset of job capability) is a direct predictor of the outcome (knowledge sharing). Overall, these significant relationships add value to the centrality of the emerging construct of mindset of job capability which now deserves more empirical work.

#### 7.02 Discussion: Mindset of emotion model

This model integrated the mindset of emotion, adaptive emotion regulation (i.e., the shared variance of learning goal orientation for emotion and cognitive reappraisal), and avoid performance goal orientation for emotion to investigate context-free subjective well-being. More precisely, the model proposed incremental mindset of emotion as a dispositional antecedent of work engagement that influences the latter through the parallel mediating role of adaptive emotion regulation and avoid performance goal orientation for emotion. The model also sought to investigate the potential incremental value of work engagement over adaptive emotion regulation in predicting happiness and life satisfaction. Likewise, the model sought to investigate the incremental value of work engagement over avoid performance goal orientation for emotion in predicting psychosomatic complaints. In addition, the role of work engagement as a partial mediator between adaptive emotion regulation and happiness and life satisfaction was tested. In the same vein, the role of work engagement as a partial mediator between avoid performance goal orientation for emotion and psychosomatic complaints was evaluated. The discussion below is organised in three parts. The first part is focussed on the incremental mindset of emotion and work engagement causal nexus. The second part is focussed on the (a) relations of work engagement and adaptive emotion regulation with happiness and life satisfaction; and (b) relations of work engagement and avoid performance goal orientation with psychosomatic complaints. The third part discusses the cross-sectional and longitudinal stability of the effects and the cross-sectional post-hoc results.

7.021 The incremental mindset of emotion and work engagement nexus

The incremental mindset of emotion is indirectly linked with work engagement (the direct incremental mindset of emotion to engagement link was nil within the structural model). This indirect link from the incremental mindset of emotion to work engagement operates concurrently through the parallel mediating role of adaptive emotion regulation and avoid performance goal (it will be recalled that support this was not found in Chapter Five section 5.0333 as avoid performance goal orientation for emotion had a non-significant path to work engagement).

The incremental mindset of emotion was positively related with adaptive emotion regulation and negatively related with avoid performance goal orientation with emotion. As discussed in Chapter Five, these patterns of association are in line with previous mindset of emotion research and adds to this emerging mindset of emotion literature (Tamir et al., 2007). Adaptive emotion regulation is in turn positively related with work engagement, supporting the notion that adaptive emotional strategies contribute to the affective component of work engagement (Bledow et al., 2011; Yagil, 2012). So far, there are few studies reporting this chain of causality however, the last segment of this causal chain is in line with the reported links between challenge demands and work engagement (Crawford et al., 2010). Challenge demands (discussed in Chapter Two section 2.033) are demands that are appraised as stressors promoting mastery, personal growth or future gains. Controlling for adaptive emotion regulation, avoid performance goal orientation for emotion was negatively related with work engagement. As Rusk et al. (2011, p. 444) have noted, “avoiding evidence of regulatory incompetence may make people reluctant to experience positive emotions because of concerns about regulating (maintaining or replicating) those emotions [and] they may avoid efforts to change negative emotions because trying and failing to change them provides evidence of their regulatory incompetence”. Thus, the negative relationship of avoid performance goal orientation with work engagement suggests that having low levels of avoid performance goal orientation provides extra stores of resources that consolidate the affective component of work engagement.

Therefore, at a cross-sectional level, support for the concurrent operation of adaptive emotion regulation and avoid performance goal orientation for emotion (representing approach and avoid motivation respectively) as mediators between the incremental mindset of emotion and work engagement was found. That is, while adaptive emotion regulation actively transmits the effects of incremental mindset of emotion to work engagement, avoid performance goal orientation for emotion is concurrently operating as well but it is kept at low levels hence its negative relationship with work engagement, supporting the general claim of Janoff-Bulman and Brickman (1982). This is one of few

studies showing the concurrent mediational operation of approach and avoid motivation between a domain mindset and its proximal outcome. Indeed, in their meta-analytic work on mindsets Burnette et al. (2012) could not evaluate the concurrent operation of approach and avoid motivation between mindset and achievement due to the lack of studies incorporating both approach and avoid motivation constructs in mindset research.

However, the longitudinal analysis of the incremental mindset of emotion to work engagement causal nexus proved problematic because Time 1 adaptive emotion regulation, as a higher order variable, was too highly correlated with its Time 2 counterpart. As explained in Chapter 6 this is not an unusual limitation of the autoregressive cross-lagged method as variables that are stable over time can show high correlations. Thus the incremental mindset of emotion to work engagement causal nexus was tested by using the lower order factors, cognitive reappraisal and learning goal orientation for emotion, separately. In line with the work of Tamir et al. (2007), Time 1 incremental mindset of emotion predicted Time 2 cognitive reappraisal, but the reverse effect was not significant. Thus no support for reciprocal links between the incremental mindset of emotion and cognitive reappraisal was found. Moreover, Time 1 cognitive reappraisal did not predict Time 2 work engagement. Thus, no longitudinal support for the mediational role of cognitive reappraisal was found.

Likewise, no longitudinal support was found with regard to the mediational role of learning goal orientation for emotion in the incremental mindset of emotion to work engagement causal nexus. Time 1 incremental mindset of emotion did not predict Time 2 learning goal orientation for emotion and there was no significant reverse effect. Time 1 learning goal orientation for emotion did not predict Time 2 work engagement. Thus, the incremental mindset of emotion to work engagement causal nexus was unsupported at the longitudinal level of analyses although of note is that the significant Time 1 incremental mindset of emotion to Time 2 cognitive reappraisal supports the nascent evidence in the emotion regulation field (Tamir et al., 2007). Time 1 incremental mindset of emotion did not predict Time 2 avoid performance goal orientation for emotion, and the reverse effect was not significant either. In the same vein, the mediating role of avoid performance goal orientation in the incremental mindset of emotion and work engagement nexus was unsupported. None of the links were significant.

#### 7.0211 Work engagement as a marker of high approach and low avoidance motivation.

In contrast with section 7.0111 above, here with the mindset of emotion model focussing on the affective component of work engagement, support for work engagement as a marker of high approach and low avoidance motivation was found. This is potentially one of the first studies to show the dual

high approach and low avoidance motivational nature of work engagement. This supports the claim that work engagement is situated within the upper right hand corner of the circumplex model (Warr et al., 2013), connoting high activation and high pleasure. More importantly, it underscores that work engagement is diametrically related with avoidance motivation. The fact that this pattern of high approach and low avoidance was found within the affective, and not within the cognitive and motivational component, suggests that work engagement is potentially more affective in nature. However, although this suggest that work engagement is negatively related with avoidance motivation, the relationship is not very strong ( $-.25, p < 0.001$ ). In any case, it seems that the general claim engaged workers are emotionally stable (e.g., Kane-Frieder et al., 2013) should be taken with caution. A high score on the UWES does not denote low score on negative affect.

#### 7.022 Relationship with outcomes of work engagement

As predicted, adaptive emotion regulation has a positive direct path with happiness. Furthermore, adaptive emotion regulation has an indirect effect on life satisfaction through the mediating role of happiness. This was found upon re-specifying the initial model in Figure 7, in which the model of subjective well-being was based on a partial correlated traits model with three separate components (Busseri & Sadava, 2011) with happiness, life satisfaction and psychosomatic complaints (happiness and life satisfaction were allowed to covary). In this model (Figure 7) adaptive emotion regulation showed a non-significant path with life satisfaction (Busseri & Sadava, 2011). Thus, in Figure 8 a causal partial model of subjective-wellbeing was specified with happiness as a causal factor for life satisfaction (Busseri & Sadava, 2011). Overall, the significant effects of adaptive emotion regulation on happiness and life satisfaction support the emerging notion that adaptive emotion regulation influences subjective well-being (Berkin, Wirtz, Svaldi, & Hofmann, 2014). This confirms that adaptive emotion regulation has direct proximal effects on positive emotions. Indeed, there is now evidence supporting the effectiveness of adaptive emotion regulation (i.e., emotion regulation based on cognitive change) in increasing short-term positive emotions in the short run as opposed to long term (Quoidbach, Mikolajczak, & Gross, 2015). This also explains the fact that adaptive emotion regulation influences life satisfaction though the mediating role of happiness only. As Kahneman and Riis (2005) have argued, the experiencing self (the self that processes moment to moment positive or negative affect) has a strong directional effect on the evaluative self (the self that has the difficult task of accurately retrieving and integrating the thousands of moments spread over time experienced by the experiencing self).

Avoid performance goal orientation for emotion had a significant path with psychosomatic complaints. This is potentially one of the few studies linking these two variables in this causal structure (Middendorp, et al., 2008; Rimes & Chalder, 2010). The investigation of the effects of avoidance goals on psychosomatic complaints is relatively new despite the long held wisdom that avoidance motivation is detrimental to health. However, evidence that the stress response, conceptualised as repeated episodes of acute physical crises, can be reliably activated by maladaptive thought-driven appraisals is now robust (Sapolsky, 2015). These crises can, over time, increase the odds of physical illness (Sapolsky, 2015). Avoidance goal orientation for emotion is part of the cluster of maladaptive thought-driven appraisals. It has a mediating role between stressors and ill health. As Rothbaum, Morling & Rusk, (2009) note, “ stressors trigger depression [and ill health] largely because they lead people with self-worth goals to focus narrowly on goals to avoid proof of worthlessness ... people with goals to avoid proof of worthlessness adopt defensive self-handicapping behaviors (e.g., effort withdrawal, rumination) when dealing with stressors, because those behaviors serve their goals.” (p. 302). However, at the longitudinal level of analysis none of the links were supported, except for one path in the adaptive emotion regulation to life satisfaction nexus. That is, Time 1 happiness predicted Time 2 life satisfaction (the reverse path was not significant), thus supporting this part of the cross-sectional model. The longitudinal findings are at odds with the literature in which long-term effects of extraversion and neuroticism on well-being have been documented (e.g., Gale et al., 2013; Kinderman, Schwannauer, Pontin, & Tai, 2013). Thus, it is plausible that the present finding is sample dependent, a function of the time lag used, and other reasons mentioned above including the fact that the outcomes have multifactorial antecedents.

Controlling for the cross-sectional effects of adaptive emotion on happiness and life satisfaction work engagement has significant effects on happiness and life satisfaction. Likewise, controlling for the cross-sectional effects of avoid performance goal orientation on psychosomatic complaints, work engagement has a significant effect on psychosomatic complaints (this was not so in Chapter Five section 5.0333 as engagement had a non-significant path with psychosomatic complaints). In each case work engagement explained incremental variance in explaining these three outcomes supporting the notion that, as a work-related well-being construct, work engagement has beneficial effects on the affective, evaluative and physical aspects of subjective-wellbeing. As expected, work engagement is a partial mediator between antecedents and outcomes. That is, work engagement partially mediates the link between adaptive emotion regulation and happiness and life satisfaction. Likewise, work engagement partially mediates the effect of avoid performance goal orientation on psychosomatic complaints. Overall, this underscores the point that while engagement has value over and above the

direct effect of the antecedents in explaining outcomes, it is not the sole route through which the antecedents affect the outcomes. Work engagement, as a work-related wellbeing construct, does not have a central mediating role in predicting happiness, life satisfaction and, psychosomatic complaints, it is only one part of the multifactorial causes of context-free wellbeing.

At the longitudinal level of analysis, work engagement and happiness did not influence each other reciprocally although both directional links were significant. That is, although the reciprocal model was significantly different from the normal causation model (engagement to happiness) it was not significantly different from the reverse causation model (happiness to work engagement). Therefore, overall, no reciprocal relationships between work engagement and outcomes were found in the thesis. As such, it casts some reservations on the general notion that work engagement and outcomes are generally reciprocal (Simbula & Guglielmi, 2013). It seems that each outcome should be viewed as a unique case in its relationship with work engagement. This is discussed further in section 7.032. As expected, Time 1 work engagement predicts Time 2 life satisfaction. However, in regard to Research Question 3, Time 1 life satisfaction did not predict Time 2 work engagement. This pattern of relation between work engagement and life satisfaction answers an interesting question posed in the thesis. As Hakanen and Schaufeli (2012) have argued, work engagement, as a marker of work-related well-being, predicts life satisfaction (i.e., the evaluative facet of context-free subjective wellbeing) because:

Experiences at work are particularly important for the individual's overall level of well-being and mental health in the long-term [but] in contrast, for work-related well-being other issues in life (e.g., life events, marital relationships) that influence general well-being (e.g., Pavot and Diener, 2008; Ryan and Deci, 2001) may not be so important as those that are work-related. (p. 421)

They are indeed accurate in their remark on the directional life satisfaction to work engagement link as the current study suggests. Of note is that their study was based on three waves of data with long time lags (3 and 4 years). More generally, this is in accordance with the views of Kahneman and Riss (2005) who state that the experiencing self affects the evaluative self, but that the reverse pattern of causality is rarely observed.

Finally, in response to Research Question 4, Time 1 work engagement did not predict Time 2 psychosomatic complaints. This is a thorny issue that questions the cross-sectional evidence on the work engagement to psychosomatic link discussed above. As mentioned in Chapter Five section 5.043, Maslach (2011) sceptically noted that (2011) health "... is determined by much more than the workplace [and that]... the rationale for arguing that engagement ought to play an important role in

physical health outcomes is questionable” (p. 51). The current evidence seems to support Maslach (2011) in her claim. However research is ongoing in this realm and positive relationships between work engagement and health are reported, although most studies are cross-sectional (Seppala et al., 2012). In any case, this suggests that we have an important ‘omitted variable problem’ in I-O psychology as important work and non-work variables are excluded in simple causal links (Larkin, Brasel, & Pines, 2013; Nord, 1977). This is discussed further in more general terms in section 7.033.

#### 7.023 Stability of effects and post-hoc analyses

The cross-sectional model is stable across Time 1 and Time 2. Moreover, at the longitudinal level of analysis, work engagement predicts happiness and life satisfaction. Thus work engagement predicts these two outcomes consistently. Furthermore, the mindset of emotion has a significant indirect effect on happiness. This result casts additional light on the direct effects of incremental of mindset of emotion. Indeed, Tamir et al. (2007) did find direct effects of the incremental mindset for emotion on positive emotions although the effects are primarily mediated by cognitive reappraisal and emotion regulation self-efficacy. De Castella et al. (2013) have also reported such direct links in addition to the main mediating link of cognitive reappraisal between the incremental mindset for emotion and well-being. More recently, Schroder, Dawood, Yalch, Donnellan, and Moser (2015) have reported direct links of mindset of emotion with well-being measures. Thus the direct effect of the incremental mindset of emotion on happiness offers an added means of support to the hypothesis that work engagement is a partial mediator between resources and outcomes.

#### 7.03 Evaluation

##### 7.031 Limitations and strengths of the research

It was not possible to eliminate the risk of common method variance (CMV) bias through study design. That is, data sought from other sources (co-workers and supervisors) were not obtained. However, the Harman’s one-factor test did not indicate the presence of a single factor in both models. Moreover, a careful look at the pattern of zero-order correlations and directional effects for both mindset models indicates that respondents were diligent in responding. Erratic patterns of associations suggesting other types of biases (e.g., satisficing and acquiescence) were not found. For example, in the mindset of job capability no high inter-correlations between pairs of proactive learning-related outcomes were observed. Moreover, the incremental mindset of job capability has differential zero-order correlations with the four outcomes. Likewise, in the mindset of emotion model, the inter-correlations between pairs of well-being outcomes are in line with what can be expected. Indeed, the

longitudinal analyses showed that happiness predicts life satisfaction over time, in line with the theoretical prediction of the causal model of well-being. Finally, the autoregressive cross-lagged model (ARCL) implemented for the longitudinal analyses controls for a range of biases (e.g., occasion factors such time of day, transient mood factors) and social desirability (Zapf, Dormann, & Frese, 1996). Altogether, this gives the reported findings added credence even though the effects of CMV cannot be totally ruled-out.

Another limitation is that a non-probability sampling approach was used. Thus, the results may not generalise to the parent population. Moreover, the sample was sourced from an online panel. Online panels are subject to self-selection bias by their very nature. However, looking at the moderate response rate of Time 2 (53%) it appears respondents were not primarily driven by rewards but interest must have played a role. In other words if this participation was a mere monetary transaction in return of participation then one would have seen an unrealistically high participation at Time 2. Indeed recent research on online panels suggests that respondents are motivated by interest in research participation (Matthijsse, de Leeuw, & Hox, 2015). Furthermore, online employee panels offer a distinct advantage over organizational samples (random or non-random) in that there is potentially less response bias on self-referential reports as employee respondents are free from any direct or indirect organizational influences.

The majority of the effects sizes obtained through the cross-sectional studies met the recommended minimum effect size for practical significance effect of  $r = 0.20$  (see Fergusson, 2009). However, with the exception of all the strong auto-regressive effects, most of the longitudinal effect sizes for the cross-lagged paths did not meet this minimum standard (the exception being the Time 1 work engagement to Time 2 feedback inquiry path). It must be noted that effect sizes through cross-lagged analyses are normally weak due to the inclusion of autoregressive and within-time error indicators plus the fact that with an approximate time lag effects tend to erode the effects over time (Dormann & Griffin, 2015). Thus, each finding reported in this thesis needs to be interpreted with caution as to its effect size. Overall, the majority of the effect sizes are only at the recommended minimum value of practical importance (Fergusson, 2009) and the cross-sectional results may be biased due to undetected common variance bias (CMV). The reasons behind small effect sizes are discussed further in section 7.032.

Finally, other strong points of these studies are that, through the mindset of job capability model, the research has looked at discrete proxies of performance. So far, the investigation of performance has been mainly restricted to task and contextual performance. Moreover, through the

mindset of emotion model, this research has extended the study of nonwork-related work engagement outcomes in the form of context-free subjective-wellbeing. That is, subjective-wellbeing is studied in its own right, for its own sake (George & Dane, 2014) — the significance of this point is further explained in section 7.033.

### 7.032 Implications for theory and practice

#### 7.0321 Incremental importance of work engagement and its role as mediator between resources and outcomes.

It is generally stated that work engagement potentially explains incremental variance over similar job-attitude variables (e.g., job satisfaction and job involvement) in explaining performance (Christian et al., 2011; Dalal et al., 2012). However, this general statement cannot be made in scenarios where engagement is placed head-to-head alongside other dispositional predictors that have a matching level of specificity with the outcomes (Ajzen & Fishbein, 2005; Woo et al., 2015). This is because in such a context there is mixed support for the incremental value of work engagement. In addition, work engagement's incremental value should not be framed by treating outcomes in bundles. That is, the case of each outcome should be viewed independently for more accuracy. Indeed, work engagement explained incremental variance in knowledge sharing only although it did predict feedback seeking over time. Taken as a whole, it seems that learning goal orientation is on balance the central predictor of the four proactive-learning related variables. As such, learning goal orientation and the incremental mindset of job capability should be the intervening points for targeting these proactive behaviours. Indeed mindsets and learning goal orientation can be induced and several interventions have been successfully implemented in other fields such as education and weight control (see Dweck, 2012). Work engagement can nevertheless contribute in this approach, since it promotes knowledge sharing at the cross-sectional level of analyses and it is related with feedback seeking over time.

With regard to the outcomes of subjective well-being, work engagement seems to play an important role. Broadly, it promotes all aspects of subjective-wellbeing over and above other dispositional predictors although the evidence is only cross-sectional. However, given the fact that work is *the* source of economic security and that it has an effect on other aspects of our lives such as health and social support, the incremental value of work-related wellbeing on contextual well-being cannot be neglected. Thus, employers should be aware that a healthy workplace — characterised by a healthy dose of “arousal, alertness, engagement, play and stimulation” (Sapolsky, 2015, p. 1346) — has

short and long term beneficial effects for workers. Indeed, human happiness has been always considered as a business asset as it influences work motivation (JAMA editorial, 1912). Thus, workers should be provided with a workplace that prepares the ground for long term work engagement (Christian et al., 2011). This can be ensured by providing task variety, job rotation, meaningful work and other relevant incentives.

Work engagement is not a full mediator between resources and outcomes — this has been clearly shown in this research and it has implication for theory. The portrayal of work engagement as a full mediator between resources and outcomes is an inaccurate representation of the complexity that underscores the workplace. Indeed, there is already some evidence that supports these claims. One source of evidence is in workplace mindfulness research (Dane & Brummel, 2013). Workplace mindfulness is defined as the degree to which individuals are mindful in their work setting, it is ‘a state of consciousness in which attention is focused on present-moment phenomena occurring both externally and internally’ (Dane, 2011, p. 1000). In a recent study, Dane and Brummel (2013) compared work engagement and workplace mindfulness and argued that since both workplace mindfulness and work engagement relate to “... allocating mental resources to tasks and events unfolding in the present moment (Schaufeli et al., 2002), they may occupy a similar conceptual space ...” (p. 107). However, they posited that workplace mindfulness is predominantly a cognitive construct due to its dominant focus on sustained attention selection and vigilance. As such, they proposed that workplace mindfulness may even outperform work engagement when attention selection and its sustained deployment is needed for functioning in dynamic work contexts where one needs to focus on a wide-ranging span of tasks and events. They argue that, seen from this angle, work engagement is related to performance through motivation in that engaged workers feel invigorated, dedicated, and absorbed by work tasks and this leads to the exertion of effort for performance. On the other hand, from a workplace mindfulness perspective, performance is mostly a function of attention or cognition in that mindfulness “... enables individuals to attend to a wide range of potentially critical stimuli in their work environment and guards against performance-related errors and mishaps” (Dane & Brummel, 2013, p. 111). They posited that if work engagement is linked to performance through effort, workplace mindfulness influences performance in dynamic workplace settings through the breadth of its attention span that operates across unfolding tasks and events. Dane and Brummel (2013) tested this hypothesis in the service industry. Using multiple samples, supervisor-rated performance, and controlling for work experience, they found that workplace mindfulness outperformed work engagement in predicting performance, while work engagement outperformed workplace mindfulness in predicting turnover intentions. This study is notable in that it raises crucial questions as to the value of work engagement as

a general predictor of work performance across all occupational domains. The authors expressed surprise that none of the UWES work engagement factors were related to supervisor-rated performance.

In explaining these results, the authors argue that although workplace mindfulness is nested within work engagement (i.e., mindfulness corresponds to the attention dimension of engagement), work engagement is essentially a more motivational variable than a cognitive-attentional one (this is in contrast with other mainstream work engagement researchers (e.g., Dalal et al., 2008; Saks, 2008; Kahn, 2010), who have argued that the hallmark of work engagement is relates to attention deployment). Thus, the authors seem to suggest that, as a cognitive-attentional variable, workplace mindfulness synchronises well with performance in the restaurant service work field since performance, in this setting, is a function of attentiveness. Reflecting on their findings they note that:

This suggests that in at least some work environments, there is value not only in being engaged by one's work, but also in focusing attention mindfully. More specifically, in the context of restaurant service work, mindfulness appears to be an important (though perhaps unheralded) determinant of job performance – a finding that challenges the notion that in service work settings (and elsewhere), performance is primarily a matter of enthusiasm, passion, and other manifestations of work engagement (see Boverie and Kroth, 2001; Robinson, 2009). (p. 120)

However, what Dane and Brummel (2013) seem to miss is that workplace mindfulness was operationalised in such a way that the items matched closely with the criterion performance for the workplace setting they were investigating. In other words, the symmetry between the predictor and outcome was optimised. Taken as a whole, the mixed evidence on work engagement's incremental value suggests that (1) the heuristic model showing work engagement as a full mediator between resources and outcomes is inaccurate and needs revisions and, (2) the predominance and utility of work engagement as a general construct for predicting performance or specific aspects related to performance (e.g., the proactive learning related behaviours) is debateable. Thus, heuristic models of work engagement should be viewed as general frameworks only.

7.0322 On the reciprocal links between work engagement and outcomes.

As mentioned in Chapter One section 1.03, the work engagement-outcomes link has often been viewed as reciprocal in nature. This reciprocity is grounded in the conservation of resources theory (Hobfoll, 2002), which stipulates that individuals have a propensity to protect their current resources and acquire new ones. As resources are acquired, they are used to obtain further resources. For example, once an engaged worker acquires new work-related skills, he or she invests these to obtain further resources such as wage increases, leading to increases in work engagement over time. Work engagement, in turn, can in turn influence the acquisition of resources in the form of new skills acquisition. Thus work engagement and outcomes are considered reciprocal. Indeed Simbula and Guglielmi (2013), upon finding reciprocal links between work engagement and three outcomes (mental-health problems, job satisfaction, and organisational citizenship behaviour), noted that "... none of them [outcomes] can be considered as only a cause or only a consequence" (p. 117).

However, reciprocal links between work engagement and resources are not consistently found. Indeed, it seems that the general claim that work engagement and outcomes exist in reciprocal links is questionable. More precisely, this is potentially a case of inaccurate theorising in psychology that is partly due to the inherent nature of psychological phenomena themselves (Green, 2015; Klein, 2014; Smedlund, 2009; McLachland, 1961). There is no space to explain the status of theory in psychology in more detail here (it is addressed to some extent in section 7.033), but with reference to the present findings, it can be said that each work engagement-outcome link needs to be examined as a unique case with its own specific rationale. For example, over time, some outcomes can rarely predict work engagement while they can be predicted by work engagement. Life satisfaction is a good example of this, as found in this research. Furthermore, in each work engagement-outcome case, the causal theory must be augmented with relevant auxiliary assumptions (Trafimow & Uhalt, 2015). For example, although work engagement predicted feedback inquiry over time, it was argued that feedback inquiry can potentially predict engagement only if the feedback received is accurate and enabling. Put another way, there are often mediators in the reciprocal work engagement-outcomes links. These mediators can be located in one direction only. Thus, the reciprocal link is complex and cannot be always predicted with general theories such as conservation of resources theory.

To reiterate, the postulations of reciprocal work engagement-outcomes links using the conservation of resources theory are not accurate in all cases. There are exceptions. As Asimov (1971) puts it:

Science, however, is not English grammar. You can't just categorize something as an exception. If the exception doesn't fit into the general system, then the general system must be wrong. Or, take the more positive approach. An exception can often be made to fit into a general system, provided the general system is broadened. Such broadening generally represents a great advance and for this reason, exceptions ought to be paid great attention. (p. 115)

Thus, on a positive note, the absence of reciprocal links is not a problematic, but rather, it informs theory and practice. If research shows that a particular “outcome” should be viewed as a predictor of work engagement (rather than an outcome), then the “outcome’s” utility as a predictor should be maximised for the benefit of work engagement.

For example, in this research, work engagement did not predict knowledge sharing over time, but the reverse effect was found. Thus, knowledge sharing should be further promoted so it can boost work engagement. Indeed, this is in accord with all the meta-principles of sociotechnical theory. Sociotechnical theory is based on the principle that a typical collective such as a work team is composed of social and technological elements (see Fox, 1995, for an overview). The technology is the system that is directly involved in the transformation of objects or inputs and from one form to another. As such, work tasks are an inherent part of the technological system. On the other hand, the social system relates to the interactions of co-workers among themselves and with the technology. Thus, the optimization of the collective can only occur if both systems and their interactive parts are considered together. Therefore, sociotechnical system theory is based on principles of multiskilling of work teams, the interdependence of work tasks, frequent job rotations, co-operative performance, and self-managed work groups (Fox, 1995). Knowledge sharing permeates all these principles. These principles jointly create work motivation and job satisfaction (Bjork, 1975; Fox, 1995). Thus knowledge sharing should form part of work tasks, and it influences work engagement. The same can be said about proactive learning and development which predicted work engagement over time and this dovetails nicely within the principles of sociotechnical theory in that learning of new skills have motivational value and promote job satisfaction.

### 7.0323 On the nature of work engagement and the UWES scale

This study throws light on the nomological network of work engagement and the nature of the UWES scale. Some researchers have aptly noted that work engagement, as operationalised the UWES, poses an intricate problem in that it appears that work engagement is defined by its operationalisation

(Parker & Griffin, 2011). This is problematic because this implies that the conceptual definition of work engagement is missing. What is the UWES measuring in principle and what are its correlates?

First of all, as noted in reviews (Schaufeli, 2012), the UWES is very stable in the long-term at the between-person level of analyses. This study confirms this finding. In addition, work engagement, as measured by the UWES, predicted learning goal orientation over time, work engagement was consistently weakly related with both of the mindsets (mindsets are known to be weakly related personality constructs). One cautious interpretation of this pattern of association is that the UWES is equivalent to a compound personality trait (Fein & Klein, 2011) which represents a certain personality profile with an affective tone. This is further supported by the fact that work engagement predicted learning goal over time (section 7.013) while the reverse was not confirmed. Indeed, Fein and Klein (2011) have demonstrated that a compound personality trait composed of facets of conscientiousness and extraversion predicts goals and self-regulation. The rationale is simple, as they note:

It is widely accepted that personal factors influence the motivational processes that focus attention and produce behavioral and cognitive effort (Mitchell & Daniels, 2003). In addition, there is a consensus that distal predictors of performance such as personality affect performance largely through proximal processes such as the use of goals (Barrick, Mount, & Strauss, 1993; Kanfer, 1990, 1994; Lee, Locke, & Latham, 1989). This connection is important as it suggests that knowledge of trait differences can improve the prediction of proximal motivational processes such as goal setting and goal pursuit. (p. 132)

Thus, it is unsurprising that just like any compound personality traits, work engagement too is stable over time and that it also represents high approach and low avoid motivation (as mentioned in section 7.0211). In a nutshell, it seems that work engagement, operationalised by the UWES, is a compound personality trait representing, positive affect and conscientiousness as indicated by its longitudinal prediction of learning goal orientation.

Finally, although this research aimed to measure the dispositional basis of work engagement, we are here faced with the conclusion that the UWES, as a measure, does not and cannot measure work conditions. At best, it is only an indirect measure of work conditions. Used on its own, without the measurement of any work conditions, the UWES is potentially equivalent to a compound personality profile with an affective tone. As Christian et al. (2011, p. 124) noted, "...employees can only be

engaged as the work itself allows”. Thus the implications of inferring work engagement with the UWES must be re-assessed.

### 7.033 Further critical analysis

As noted in section 7.031, the majority of the effect sizes reported in this thesis meet the recommended minimum effect size (Fergusson, 2009). However, they are weak effects. Moreover, no longitudinal support was found for the mediational propositions in both models, and quite a few of the longitudinal paths were non-significant.

It is often noted that effects sizes in the social sciences (Rosnow & Rosenthal, 2003; Barrett, 2015b) and I-O psychology (Bosco, Aguinis, Singh, Field, & Pierce, 2014) are mostly weak in magnitude, implying that low magnitude effects have little scientific value in terms of explanation and prediction as these are unreliable trace effects that turn out to be also unreplicable (Barrett, 2015b). In I-O psychology, the organisational commitment-turnover causal relationship is a good exemplar of this phenomenon — decades of research have yielded consistently low correlations even though organisational commitment is one of the most central constructs in the field (Allen & Meyer, 1990). Thus, the present study is no different with respect to other reported effect sizes. But what are the explanations for these low effects? What implications do these explanations hold for the present work engagement research? These are uneasy questions that can only be addressed briefly here, but it is nevertheless crucial to discuss these before suggestions for future research can be sketched out and a final conclusion can be reached.

The weak organisational commitment-turnover causal relationship mentioned above is a good place to start. Discussing this example briefly, Larkin, Brasel, and Pines (2013, p. 83, emphasis added) noted that “... management researchers [had long] recognized that models of turnover needed to go beyond work attitudes and job dissatisfaction and consider the role of *external, nonwork variables* in employees’ decisions to leave (Maertz & Campion, 1998; Mobley et al., 1979)”. This brief but perceptive remark on the often ignored ‘omitted variable phenomenon’ (Nord, 1977) is just one of the reasons why theory and research questions are poorly formulated in I-O psychology, leading to low effects sizes. But, as mentioned, it is a good place to start the discussion as it leads to the core issues.

In a seminal paper on job satisfaction, (for the sake of exposition, job satisfaction is here treated as equivalent to work engagement, see also Chapter Two section 2.03), Nord (1997; 1978) cogently

argued that job satisfaction research is incomplete and misleading in its approaches because of omitted variables and flawed assumptions. Commenting on the then voluminous research, Nord (1977, p. 1026) noted that “despite the magnitude of effort, some of the most interesting characteristics of the existing [job satisfaction] research are revealed not by the results of what has been studied but by an examination of the topics that have gone unanalysed”. A small, selective part of Nord’s exposition, relevant to the present discussion, follows after which the discussion on causes of low effects size is resumed.

Charting a series of flawed assumptions underlying job satisfaction research, Nord (1977) mainly argued that:

(1) The ability of organisations to provide satisfying work is constrained by the very nature of the economic system within which they operate. Organisations, Nord (1977, p. 1026) noted, “are designed and managed to make a profit for their owners. As a result, economic logic often dominates all other considerations” and when job satisfaction and profit are in conflict, the former is often relegated to a secondary role (indeed, as mentioned in Chapter One section 2.02, work engagement has been rated by managers as the fourth most important challenge to be managed *after* cost control),

(2) Job satisfaction is predominantly rooted in the individualistic perspective of human nature as opposed to a collectivistic perspective. This has meant that individual achievement is often in conflict with the notion of people interdependence that is itself a necessary condition for achieving organisational goals,

(3) In the main, organisational members seek different individual goals relative to shared goals and as such conflict in the form of manipulation, dishonesty, and violence is built into the work design. This is not conducive to job satisfaction,

(4) The distribution of power in our organisations is skewed such that we have authoritarian and undemocratic work organisations within democratic societies. Therefore, organisations have drastic influences and control on aspects of the work and non-work life. Such a system cannot drive job satisfaction.

Due to the above, job satisfaction research suffers from omitted variables, distortions, and biases. As Nord (1977) further elaborates:

(5) In general the dependent variables in I-O psychology research are limited in choice and are biased. For example, due to the distribution of power, management is predominately interested in issues such as reducing turnover and absenteeism. Although job satisfaction is often studied, it is mostly confined to cases where it aligns with productivity and profit. Indeed workers may, as a result of job satisfaction and job involvement, work harder but this hard work is not necessarily rewarded.

(6) Other sources of intrinsic job satisfaction are often not studied. Examples are the quality of goods and services that an organisation produces. Some jobs that produce outputs that are of trivial importance are not conducive to worker job satisfaction.

(7) The extrinsic sources of job satisfaction are often understated. Paradoxically, the evidence that the economic instrumentality of jobs is paramount is well known in many quarters.

As such, Nord (1977) concluded that the study of job satisfaction should be put into the broader socio-economic context, further noting that “we have [unsuccessfully] sought to improve job satisfaction within a powerful set of exogenous constraints” (p. 1032) and independent variables such as equity, justice, organisational democracy, self-actualisation, the instrumentality of work and importance of pay among others are missing. More importantly, Nord (1977) underscores the point that job satisfaction research suffers a strong managerial bias to such an extent that the I-O psychologists have only one client (i.e., the corporations) and he reiterates the point that the importance of extrinsic sources of job satisfaction such as pay and job security are underemphasised. Almost forty years after Nord’s (1977) seminal paper little has changed. While, there has been progress in awareness of these issues, it barely translates into concrete action. The socio-economic system within which I-O psychology and work organisations operate constricts the actions of the I-O psychologist, leaving him or her with little or no room for manoeuvre. There is a small but very high quality discussion on this topic, space and context limits the discussion here (See Brief, 2000; George & Dane, 2014; George, 2014; Lefkowitz, 2003; 2005; Lott, 2013; Zickar, 2003; 2004). To conclude, three quotes and one article title, from the I-O psychology literature devoted to these issues merit mention. These reflect the mainstay of the debate. The first is from Lefkowitz (2005) who, reflecting on values in I-O psychology notes that:

The foremost fact of life in corporate America over the past 25 years has been the wholesale dismissal of millions of employees from their jobs. It seems at least ironic, if not morally obtuse, that during that time I-O psychology has focused on employees' emotional attachment to the organization. Among the most dominant topics in I-O psychology have been how to select more conscientious employees and how to increase their organizational commitment and organizational citizenship behaviors. (p. 16)

Furthermore, Leftkowitz (2005) asks a poignant question when he wonders:

Are we merely technocratic facilitators of corporate policies and practices — providing HR systems and psychological rationalizations for wholesale reductions in force and other aspects of “the new organizational reality” (e.g., *pronouncements that most people no longer want secure, full-time, career-oriented jobs*)? (p. 18, emphasis added)

The third is from George and Dane (2014) who, making some remarks in a comment paper on worker wellbeing, make a plea for the re-consideration of the economic instrumentability of jobs in people's lives, as this is one of main conduits to well-being. As they candidly note: “Unless one's compensation is sufficient to meet one's needs and those of one's dependents, finding meaning in one's work is perhaps a double-edged sword (Bunderson & Thompson, 2009)” (p. 574). In closing they reiterate that: “... adopting a concern for worker well-being begins with putting oneself in workers' shoes and privileging the metrics workers themselves hold dear” (p. 575).

And the last point is from Brief (2000), who reviews how his own thoughts have evolved on these matters over more than five decades. He poses the fundamental question of who the I-O psychologist serves. The fitting title of his paper conveys his message: “Still servants of power”.

Finally, the popular press also has produced critical publications on engagement at work. For example, Maier (2005) authored a thought-provoking book, entitled “Hello laziness: Why hard work doesn't pay” in which she actively encourages workers to disengage at work. While this is clearly an invitation for sabotage, that is “the conscientious withdrawal of efficiency” (Veblen, 1921, p. 4) and is controversial, it is nevertheless symptomatic of the chronically low levels of work engagement reported by practitioners and consultancies worldwide (Gallup, 2015). This disengagement phenomenon is potentially a consequence of the rising inequality in the distribution of wealth (Piketty, 2014; 2015) and

the drop in purchasing power (George & Dane, 2015). Naturally, these have detrimental effects on worker motivation (Wolff, 2012).

For the purpose of the discussion here, omitted variables and managerial bias have fundamental implications for theory, model building, and observed effect sizes. At a basic level, any model with missing variables will invariably provide weak results in terms of explanation and prediction (Oreskes et al., 1994). Thus, on one hand, we may attribute the low effects sizes to unspecified and unmeasured variables in the two mindset models (e.g., co-worker and goal conflicts thwart knowledge sharing, workers with unsatisfactory pay and benefits cannot be engaged and, consequently, their work-related wellbeing may not contribute significantly to context-free wellbeing). On the other hand, this implies that the models need to be overhauled. That is, to the extent permitted by statistical methods, theories and models should be as complete as possible, with all known variables. However, there is a fine balance between model complexity and parsimony. It is wisely said that “theories and models have to simplify nature to be useful in practice. Questionable, however, is the degree of simplification that is admissible without distorting the message” (Schuster, 2015, p. 1). But as Schuster (2015) argues, admissibility is fundamentally a function of context. Thus, he emphasises, that the correct approach to modelling is to match the simplifications to the context within which the model is tested. Where and how can these simple mindsets models be tested?

The mindset models proposed could yield relatively stronger effects sizes in another context — one in which work organisations function within a democratic economic system (Wolff, 2012). The concept of workplace democracy (Landsbury, 2009; Markey, Balnave, & Patmore, 2010) has an old history — it denotes a democratic workplace in which workers have the opportunity to participate in and influence the decision making processes that impact their work-life. That is, managers and workers share the decision-making power in matters of high importance. Organisations under such a system are termed workers’-self-directed-enterprises (WSDEs) (Wolff, 2012). In these organisations, workplace democracy reigns. That is, workers jointly own the business; they implement cross-training and job rotations for the development of each worker; they share the profits accrued and decide where and how to reinvest it; they prevent layoffs by sharing their work hours during tough times so all co-workers remain employed, and do much more than a traditional work organisation can do. For example, the pay ratio between the highest and lowest worker is on average one to eight. One such success story is the Mondragon corporation in Spain with a total of more than seventy thousand workers (Malleon, 2013). Other variants of such organisations (e.g., Publix) are also very successful (see Cahill, 2015). More generally, the concept of workplace democracy is gradually gaining a firm foothold while the world

grapples with the deep contradiction of the existence of undemocratic workplaces within democratic societies (Mackin, 2013; Wolff, 2012).

There is a natural congruence between work engagement and WSDEs. Indeed, in his rich and honest description of personal engagement, Kahn (1990, 1992, 2010) makes it clear that provisions specified by social exchange theory and reciprocity (such as equitable pay and the economic instrumentality of work in the lives of workers), and other conditions such as psychological safety, employee voice, equity, psychological meaningfulness, reinforcements, authenticity, and performance quality are vital for personal engagement. In the absence of these conditions workers invariably disengage (Kahn, 1990; 2010). There is an unspoken contradiction between work engagement and the absence of reciprocity. Adams (2009), of the Dilbert comics, famously illustrated a company manager (the pointy-haired boss) affirming the following to his assistant (Dilbert): “We need more of what the management experts call employee engagement ... I don’t know the details. But it has something to do with you idiots working harder for the same pay”. When Dilbert asks if there is anything different on the side of the pointy-haired boss, the latter states: "I think I'm supposed to be happier". Nord (1977, 1978) and the researchers mentioned above have articulated the same point, namely that reciprocity is sorely missing in the workplace. More recently, Grandey et al. (2015) have boldly argued that emotional labour — the formally expected management of emotional displays — is an unfair labour practice, detrimental to health, as workers are often undervalued by organisations through low distributive justice and unfair organisational policies. These authors make a modest plea that: “Organizations and customers should abandon formalized emotion display expectations and replace such efforts with more humanistic practices that support and value employees, engendering positive climates and an authentically positive workforce”. (p. 770)

Interestingly, workers’ self-directed enterprises (WSDEs) may provide the suitable organisational setting for work engagement conditions to actually exist due to all the reasons mentioned above in the introductory paragraph on WSDE’s. Moreover, the literature in workplace democracy has highlighted the potential of WSDEs in facilitating learning (Casey, 2009; Malleson, 2013), knowledge sharing (Malleson, 2013), and in promoting context-free wellbeing in the form of happiness (Barker & Martin, 2011). Accordingly, testing these mindset models in WSDEs may reveal stronger patterns of relationships between work engagement, predictors and outcomes and the links (more specifically the engagement-outcomes ones) may show more stability over time. Thus, outside the context of WSDEs, the mindset models are possibly underpowered. Hence the low effect sizes.

Finally, irrespective of the organisational setting, the causal nature of work engagement, as an agent in explaining and predicting outcomes, needs sceptical evaluation. Because of the complexity of the economic system (Wolff, 2012) and its open-system nature, it is plausible that work engagement has only an ephemeral causal effect on performance, which cannot last for long (i.e., it has low permanence, see Chapter 6 section 6.01222). Thus, work engagement is possibly beneficial only in the short term. But more importantly, if this causal effect is so weak due to the open-system of the economy then work engagement should be seen as simply an emergent phenomenon (Goldstein, 1999) that exists as and when an organisation is successful. Barrett (2012) puts it eloquently:

I have the sneaking suspicion that [work] engagement is what ‘evolves’ naturally in successful organizations, while they are successful. It is a property which evolves via complex dynamics as a product of that success, and is not the cause of it. In short, organizations actually have no control over engagement ... it happens as a natural consequence of an organization becoming successful and being successful. As soon as market conditions cause a downturn in an organization’s success, so does [work] engagement fall. (p. 3)

Therefore, the absence of strong longitudinal effects in work engagement research is unsurprising after all. So the low effects reported in the mindset models are possibly, in part, due to the conditions summarized by Nord (1997) above.

#### 7.034 Suggestions for future research

##### 7.0341 Statistical and scientific generalization of the mindset models

The mindset models require replication, but before this is discussed some clarifications on definitions are in order so that precise suggestions may be framed. Psychology has a replicability crisis. Indeed, the wider enterprise of science faces the same issue. According to Kenett and Shmueli (2015), the replication problem appears intractable because the scientific community is confused by the terms of replicability, repeatability and reproducibility.

These terms are used interchangeably across and within disciplines. As these authors exemplify: In engineering, within the context of measurement error of equipment, reproducibility is evaluated when different testers, under different conditions, test the same items. However, when repeat testing is effected, i.e., under identical conditions, then repeatability is evaluated. On the other hand, in the life sciences (e.g., genomics), replicability is used to denote the duplication of a study, by the same or other

researchers, through the use of a different technology or another sub-population. Analogously, this same procedure would be termed repeatability in engineering (Kenett & Shmueli, 2015). Kenett and Shmueli (2015) state that although the confusion between the terms can be clarified by specifying what conditions are held constant versus which one are changed during experimentation, replicability, repeatability, and reproducibility can be better viewed as a function of the *intended generalization* of the empirical study at hand. As such, it is generalization which is the focal concept in science (Gell-Mann, 1996).

Generalization is of two kinds: Statistical generalization and scientific generalization. The former relates to the inference of a sample to its own parent population, the latter refers to the application of a model — based on a defined population — to other theoretically relevant populations (Kenett & Shmueli, 2014). To sum up, replicability, repeatability and reproducibility are all markers of generalizability, but generalizability types can be differentiated (Kenett & Shmueli, 2014)<sup>31</sup>. Accordingly, the cross-validation through multigroup analyses carried out in Chapter Six related to statistical generalisation, that is, how well the cross-sectional models repeat with the same sample. This served the purpose of evaluating the stability of the paths. This approach comes close to what is termed exact replication in psychology (Fuchs, Jenny, & Fiedler, 2012; Simons, 2014; Schmidt, 2009), although here the temporal factor is altered, but this is inevitable and has to be tolerated (Earp & Trafimow, 2015). Furthermore, longitudinal testing of paths from Time 1 to Time 2 evaluated the repeatability or stability of effects over time, tested through the autoregressive cross-lagged model by keeping the previous levels of the outcome variables constant. However, the indicative evidence that some of the links potentially operate in one direction only (e.g., work engagement → learning goal orientation; work engagement → life satisfaction) implies further statistical generalisation is needed so the directionality of the paths within the cross-sectional models can be reasonably ascertained. Indeed, statistical generalisation through cross-lagged analysis is one of the recommended means to this end (see Billings & Wrotten, 1978).

Then, scientific generalization can proceed by testing the models with other samples to achieve broad generalisation since the sample tested was itself intended to represent a broad worker population. Indeed, this is worth doing because (1) The mindset to work engagement nexuses are predicated to exist at a dispositional level, likewise the self-regulatory variables to outcomes direct links are postulated at the dispositional level, and (2) the work engagement to outcomes links are also deemed stable as proactive learning activities are ubiquitous in all work environments and context-free well-

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<sup>31</sup> A similar point has been made by Gomez et al. (2010) and Schmidt (2009) (see Earp & Trafimow, 2015). Schmidt (2009) proposed the direct versus conceptual replication terminology, representing statistical v/s scientific generalization respectively. However, the approach of Kenett and Shmueli (2014) is more parsimonious.

being originating from work engagement applies to most jobs. Moreover, moving from broad generalisations, these models can be tested in more specific work settings where the power to detect the effects may be higher. For example, the mindset of job capability model can be tested in work organisations that have intensive knowledge-based activities such as software development companies. In these environments proactive learning behaviours are at the heart of work performance. Indeed, even if broad generalisations are a worthy research goal, specific generalisations are more useful and are sorely missing in I-O psychology (Landers & Behrend, 2015). The next suggestion below moves further in this direction.

#### 7.0342 Testing the mindset models in workers'-self-directed-enterprises (WSDEs)

As discussed in section 7.033, WSDEs may offer an optimal context where the full potential work engagement can be observed. As mentioned in section 7.033, one of the foundational conditions for work engagement to exist and flourish is reciprocity in terms of distributive and procedural justice in the real sense as underpinned by a democratic workplace. WSDEs are the appropriate organisational settings where 'authenticity at work' (Van den Bosch & Taris, 2014) — being one's true self and having the awareness that one is in such a functional mode — can truly exist. Indeed, research in work motivation indicates that participatory approaches have beneficial effects on motivation (Locke & Latham, 2002). In the same vein, research shows that democratic participatory procedures at work increases job satisfaction (Bjork, 1975). All these effects can be potentially maximised if work is organised around the concept of WSDEs. Indeed the fact that knowledge sharing predicted work engagement over time, when the reverse was not the case, is a good indication that co-operation and sharing of a superordinate goal is beneficial to work engagement.

Thus, the two mindset models need to be generalised (i.e., scientific generalization) with samples from WSDEs. In addition, comparative studies can be conducted using workplaces ranging from WSDEs to traditional organisational settings whilst keeping the business sector constant (e.g., grocery stores). Such comparative studies would throw light on the full potential of work engagement. In addition, given the democratic nature of WSDEs, survey responses may have low bias contamination. Thus the maximal effects possible could be observed in each model.

#### 7.0343 The value of work engagement versus other predictors

As discussed in section 7.0321, learning goal orientation, as a motivational variable, can outperform work engagement in predicting proactive learning-related outcomes. Likewise, workplace mindfulness predicts performance where engagement proved to be of no utility (Dane & Brummel,

2013). This is largely due to the correct symmetry of these two predictors (learning goal orientation and workplace mindfulness) with their respective outcomes. All this implies that the role of work engagement as an all-purpose motivational predictor needs careful, sceptical interrogation. It seems clear that work engagement may be relegated to a secondary role as a motivational and non-ability predictor if a competing predictor with high symmetry with the outcomes of interest is used. More work is needed in this area. Taking the cases of service climate and workplace mindfulness as examples, specific motivational variables can be designed through bottom-up approaches for each work setting. These variables will potentially predict outcomes with more accuracy. These investigations may help redefine the role of work engagement as a general motivational and non-ability predictor.

#### 7.04 Conclusion

This research is among the first to test mindsets and associated self-regulatory variables as novel dispositional antecedents of work engagement. Two mindsets — the mindset of job capability and the mindset of emotion — were used in testing two independent complex process models that also included two sets of work engagement outcomes. The outcomes provided a unique opportunity to test the incremental value of work engagement since the self-regulatory variables served as competing predictors of the outcomes. Of note is that work engagement and the self-regulatory variables did not share similar conceptual space hence this allowed for a rigorous test of the incremental value of work engagement. Within this configuration, the nature of the mediating role of work engagement between resources and outcomes was also evaluated — challenging the received notion that work engagement is a full mediator. Furthermore, the research provided the opportunity to scrutinise the often hypothesized reciprocal nature of work engagement-outcomes link.

Therefore, testing the mediating role of goal orientations and self-regulatory variables between incremental mindsets and work engagement, this research investigated a series of inter-related questions pertaining to: (1) The incremental value of work engagement over goal orientations and self-regulatory variables in explaining outcomes, (2) the nature of the mediating role of work engagement between resources and outcomes, (3) the nature and stability of work engagement and outcomes links using a short time lag (3) the nomological network of work engagement through the UWES as well as the approach-avoidance motivation nature of work engagement. A mixed-set of evidence and related implications emerged. The main findings for the two mindset models are summarised first, followed by a joint section that interlocks the findings together.

Before proceeding to the final concluding sections it is crucial to note that although some of the hypotheses (e.g., incremental value of work engagement) were not fully supported, these findings must be viewed from the standpoint of using models as disconfirmatory tools. As Oreskes et al. admonished (1994, p. 644): "...we must admit that a model may confirm our biases and support incorrect intuitions [and] therefore, models are most useful when they are used to challenge existing formulations, rather than to validate or verify them". Moreover, as a general rule, in science, knowing what does not work is crucial as it informs the research community in the formulation of new hypothetico-deductive research plans (Matosin et al., 2014) as well as in exploratory research.

#### 7.041 The mindset of job capability model

At the cross-sectional level of analysis, the incremental mindset of job capability is indirectly related with work engagement through the mediating role of learning goal orientation. However this mediational nexus is not supported at the longitudinal level of analyses; none of the directional links between the variables were significant. However, work engagement predicted learning goal orientation over time, partially supporting a predicted alternative model. Furthermore, at a cross-sectional level work engagement explained incremental variance in only one of the outcomes, knowledge sharing. It did not explain incremental variance in feedback inquiry, feedback monitoring, and proactive learning and development. Longitudinally, learning goal orientation predicted proactive learning and development only. Likewise, longitudinally, work engagement predicted one outcome only, feedback inquiry — supporting the notion that engaged workers are active information seekers who are concerned about work performance. In addition, although work engagement did not predict knowledge sharing and proactive learning and development over time, the reverse was true — both of these outcomes predicted work engagement over time, underscoring the fact that potentially these should be considered as resources rather than outcomes. Thus, the reciprocal link between work engagement and outcomes underpinned by the conservation of resources theory does not apply to all cases.

#### 7.042 The mindset of emotion model

At the cross-sectional level, the incremental mindset of emotion is indirectly related with work engagement through adaptive emotion regulation and avoid performance goal orientation for emotion. This causal nexus worked as a set of parallel mediators supporting the notion that in work engagement both approach and avoidance motivation are present. However, as in the mindset of job capability model, the mediational nexus was not supported over time. At the cross-sectional level, controlling for

adaptive emotion regulation, work engagement explained incremental variance in happiness and life satisfaction. In the same vein, controlling for avoid performance goal orientation for emotion, work engagement showed incremental variance in psychosomatic complaints. Over time, work engagement predicted happiness and life satisfaction. However, work engagement did not predict psychosomatic complaints over time. On the other hand, happiness predicted work engagement over time, but support for a reciprocal link between the two was not found. Life satisfaction did not predict work engagement over time. As mentioned above, these patterns of relationships question the generalised postulations of reciprocal links between work engagement and outcomes based on conservation of resources theory.

#### 7.043 Final integrative remarks

Jointly, through these two process models, mixed evidence for the role of mindsets and associated self-regulatory variables as dispositional antecedents of work engagement was found. In other words, longitudinal evidence for these causal nexuses is missing. However, the longitudinal results are also contingent on the time lag used, hence a shorter time lag could potentially provide a more accurate test. The general notion that work engagement has incremental value in predicting outcomes can be partly challenged under some conditions. Furthermore, the work engagement-outcomes link poses a challenge in that they are not consistent over time. Finally, future work on these mindsets models need to take into account the organisational settings within which work engagement is investigated. This has potential implications for the field since the underpinning conditions of work engagement, set out by the main theoretical models (e.g., Kahn, 1990, 1992, 2010), are not adequately realised within the economic system most work organisations operate.

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## Appendices

### Appendix A : Scales that consist of items from more than one source.

Mindset of emotion scale - entity.

1. You experience various emotions, and you can't really do much to change them.
2. To be honest, you can't change your core emotions.
3. You can be self-aware of your emotions, but you can't significantly change them.
4. Your emotions are something about you that you can't change very much.
5. The truth is, you have very little control over your emotion.

Note: Responses are scored on 6-point Likert scale (1 = strongly agree, 6 = strongly disagree). A high score means disagreement with entity theory, hence high agreement with incremental theory.

.....

Feedback inquiry scale – this scale combined items from two sources: Ashforth, (1986) and Ashforth and Tsui (1991). All the four items are listed below.

How frequently do you:

1. Directly ask your manager information concerning your performance?
2. Directly ask your manager for informal appraisals concerning your performance?
3. Seek information from your peers/co-workers about your performance at work?
4. Directly ask peers/co-workers for feedback concerning your work in progress?

Note: Responses were scored on a 5-point Likert scale (1 = very infrequently, 5 = very frequently).

.....

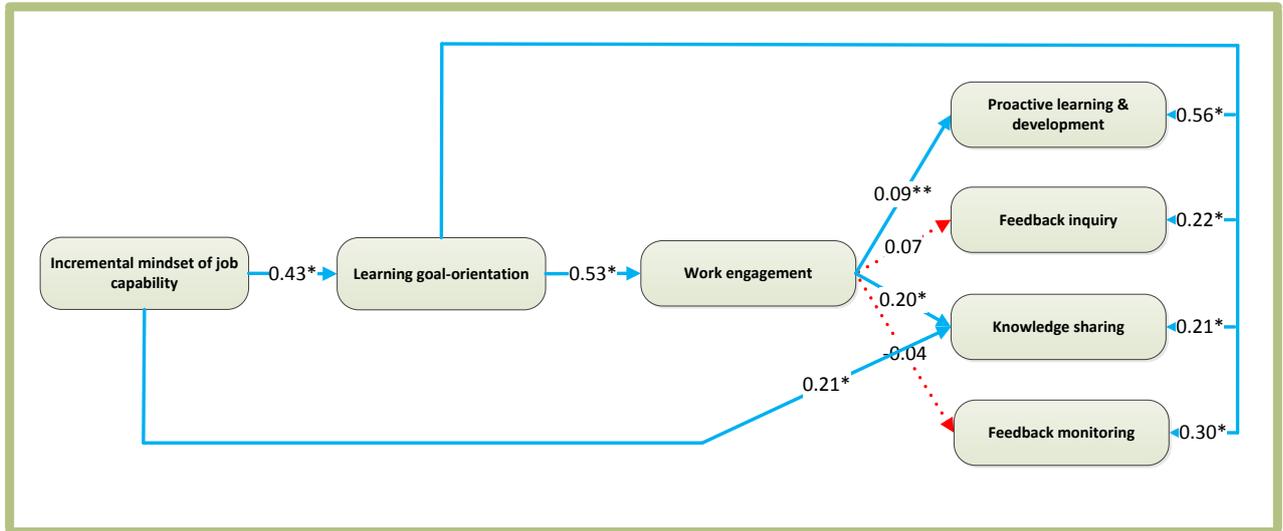
Knowledge sharing scale – this scale combined items from two sources: Chen et al., (2012) and Lin (2006). All the eight items are listed below.

1. I share work reports and documents with my co-workers.
2. I share success and failure stories about my work with my co-workers.
3. I share work-related knowledge obtained from other sources (e.g. websites, journals, books) with my co-workers.
4. I share my experience or know-how from work with my co-workers
5. I share my expertise obtained from my education or training with my co-workers.
6. I talk about my suggestions with regard to work tasks with my co-workers.
7. I provide my knowledge about 'where' useful things are located at the request of my co-workers.
8. I provide my knowledge about 'whom' to discuss things with at the request of my co-workers.

Note: Responses were scored on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Appendix B: Exploratory analyses with direct links of mindsets to outcomes

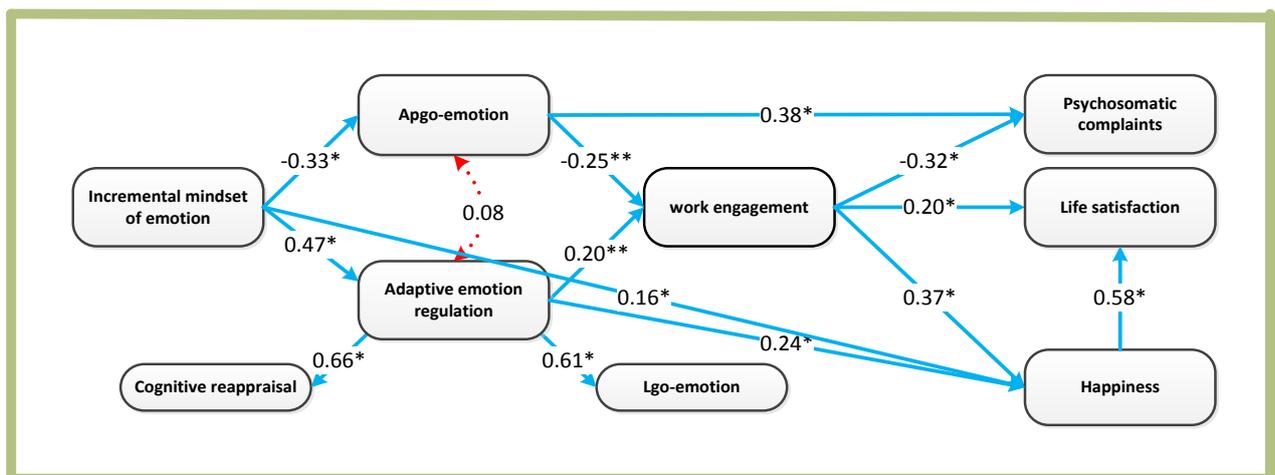
Figure B1. Mindset of job capability model with path from incremental mindset of job capability to knowledge sharing.



Note. \* $p < 0.001$  \*\* $p = 0.05$ .  $N = 694$ . Dashed paths are non-significant. All paths are standardised regression paths.

[ $\chi^2 (392, N = 694) = 1192.55, p < 0.001, \chi^2 / df = 3.04, CFI = 0.93, RMSEA = 0.05$  with  $CI_{90}: (0.05, 0.06), SRMR = 0.08$ .].

Figure B2. Mindset of emotion model with path from incremental mindset of emotion to happiness



[ $\chi^2 (480, N = 694) = 1348.82, p < 0.001, \chi^2 / df = 2.81, CFI = 0.93, RMSEA = 0.05$  with  $CI_{90}: (0.048, 0.054), SRMR = 0.07$ .].

Appendix C: Copyright permission

**From:** wittmann@tnt.psychologie.uni-mannheim.de <wittmann@tnt.psychologie.uni-mannheim.de>

**Sent:** 03 September 2015 8:41 PM

**To:** Jageshwar Sungkur

**Subject:** Re: Brunswik symmetry master slide

Dear Jageshwar,  
please feel free to use the slide for your PhD thesis and send me a copy of you it ,once it is finalized. Thanks a lot for your interest.

Best regards.

Werner W. Wittmann

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