

UNIVERSITY OF TARTU
School of Economics and Business Administration
Chair of Management

Mait Metelitsa

**INTENSIVE AND EXTENSIVE PATHS TO WORK-
RELATED GROWTH IN CONTEXT OF JOB DEMANDS-
RESOURCES MODEL AND WORK ENGAGEMENT**

Master's thesis

Supervisor: professor Maaja Vadi

Tartu 2018

Soovitan suunata kaitsmisele
professor Maaja Vadi

Kaitsmisele lubatud “ “..... 2018. a

Olen koostanud töö iseseisvalt. Kõik töö koostamisel kasutatud teiste autorite tööd, põhimõttelised seisukohad, kirjandusallikatest ja mujalt pärinevad andmed on viidatud.

.....
Mait Metelitsa

TABLE OF CONTENTS

INTRODUCTION	5
1. WORK-RELATED EMOTIONAL-MOTIVATIONAL STATES, JOB DEMANDS-RESOURCES MODEL AND CORE AFFECT THEORY – THEORETICAL BASIS FOR SCALE CONSTRUCTION ATTEMPT	9
1.1 Motivational-emotional constructs: work engagement and work-related burnout	9
1.2 Overview of the job demands-resources model	13
1.3 Constructionist view of emotional-motivational episodes	18
2. MODEL PROPOSED BY THE THESIS AND ITS POSSIBLE CONTRIBUTION TO JD-R AND WORK ENGAGEMENT BASED RESEARCH ...	24
2.1 Model proposed by the thesis: REF-ENG scale.....	24
2.2 REF-ENG model in context of JD-R model and work engagement	32
2.3 Possible adaptability of switching between different affective and emotional-motivational states in the context of the REF-ENG model.....	42
2.4 Connecting personal-level work-related growth with organisational resources .	47
3. EMPIRICAL TESTING OF THE REF-ENG SCALE	52
3.1 The development of the REF-ENG scale and organisation climate measurement instrument scale.....	52
3.2 Overview of survey sample and data analysis procedures	55
3.3 Testing the REF-ENG scale on the data.....	60

3.4 Testing the organisational climate measurement scale on the data.....	65
3.5 Possible relevance of the REF-ENG model to HR practitioners and possible further research directions	68
CONCLUSION	72
REFERENCES.....	75
APPENDICES	86
Appendix 1. Literature overview table for Figure 6.....	86
Appendix 2: REF-ENG scale (in Estonian)	96
KOKKUVÕTE.....	98

INTRODUCTION

Work-related interactions by the author of the thesis with Estonian human resources (HR) professionals have revealed growing interest in the general topic of work engagement. Quick research with the keyword “*work engagement*” in Google Scholar reveals a similar trend of growing interest at a global level. To be more specific, in the year 2012, about 2640 scholarly sources used the term “*work engagement*”, compared to last year’s result of about 8590 sources. Interest expressed by HR practitioners lead to the decision to take a deeper look at the topic.

The current thesis is the endpoint of those efforts, culminating with a proposed theory that aims to describe different work-related emotional-motivational states (including work engagement) in a unified framework. The overarching goal here being that, by grounding the measurement instrument in the theory, additional explanatory and practical relevance rather than simply outlining the results at a descriptive or confirmatory level will be achieved. Therefore, the research approach taken by the thesis is deductive. In detail, the overall form of the proposed model was derived from a working theory, followed by formalisation of the theoretical model for empirical analysis. The proposed model is loosely based on the core affect theory, which is sometimes also referred to as a circumplex model of emotions (Russell 2003; Posner *et al.*, 2005).

The current thesis has two main research goals. The main focus of the thesis is related to theory building effort and contains the following research tasks:

- Develop a new tentative core affect theory (*Ibid.*) based model to systematise work-related affective and emotional-motivational states. Here, both the theoretical and formalised model for structural equation modelling are created;
- Outline the tentative structural connections between the model under development and previously published models describing job demands and resources (Bakker, Demerouti 2017), work engagement (Schaufeli *et al.*, 2002) and burnout (Maslach, Leiter 2016);

- Show how the problem points acknowledged in established models can either be re-interpreted or solved by the model under development;
- Show tentative new research questions and hypotheses posited based on the framework provided by the model under development.

Of note, the previously outlined subtasks are only tackled from the theoretical viewpoint. A definitive and final mapping of correspondence between theories implies concordant testing of all the models on the same sample. To complicate matters further, some previously established theories lack universally accepted operationalisation and are therefore described across the studies by different questionnaires – such is the case with models describing job demands and resources (Schaufeli, Taris 2014). On the other side, a study that would test the associations between constructs included in different theories would already require the currently developed model to be argued for at theory level and at least initially tested empirically. Theoretical grounding and initial testing are the steps carried out by this study that allow for future studies to quantitatively assess convergent validity between different measurement scales.

The second research goal of the thesis is the measurement scale construction and its initial empirical testing. This research aim of the thesis contains the following research tasks:

- Develop the questionnaire to measure factors included in the model under development;
- Test how well the theory-based model presented as a formalised structural equation model fits on the data;
- The model under development is person-level focused. Previous works describing job resources and demands have also incorporated organisation level resources (Bakker, Demerouti 2007; Bakker, Demerouti 2017). To test for associations between organisation-level variables and person-level variables, evaluate a previously constructed but unpublished organisation climate instrument on its factor structure fit on the collected data;
- After showing the adequate psychometric properties of the organisation climate measurement instrument, test for associations between person-level constructs and organisation-level climate variables.

The thesis is divided into three chapters based on the above outlined research goals. The first chapter of the thesis will give a brief overview of the currently established theories and related measurement instruments of work-related burnout, engagement and the job demands and resources model. The second chapter presents the theoretical grounding of the proposed model. And finally, the third chapter of the thesis will present the results of the empirical analysis.

The empirical analysis is based on data collected from 670 employees of the Estonian Unemployment Insurance Fund (in Estonian: *Eesti Töötukassa*). The questionnaire data used for the thesis were collected during the yearly job satisfaction survey. The survey was performed by Assessment Centre Tripod. The author of the thesis would like to send his sincere thanks and gratitude to the Estonian Unemployment Insurance Fund for allowing use of the data collected and for the constructive and thoughtful effort given during the survey planning phase.

Interestingly, during the theory grounding phase of the work, the possibility for two distinct modes of work-related growth emerged. Firstly, the mode of growth and the resulting increase in perceived self-efficacy that happens under high work-related self-activation (termed *intensive growth*) – an emotional-motivational state analogous to work engagement. Secondly, the mode of growth and the resulting increase in perceived self-efficacy that takes place in the context of low work-related self-activation (termed *extensive growth*). Of note, the *extensive growth* path hasn't been explicitly specified by previous theories describing work engagement and burnout. Empirical analysis confirmed the theory-derived hypothesis about the presence of two modes of work related growth. The result, being the most interesting and contextual of the previous theories and also the most novel empirical finding, prompted the title given to the thesis.

On the grounds of intellectual property protection, the organisational climate measurement instrument questionnaire will not be made publicly available in the thesis. The main model advanced by the thesis is made public and free usage in non-commercial settings is allowed. Commercial usage of the scale under development requires written consent by the author of the thesis.

Keywords: JD-R model, work engagement, work-related burnout, core affect theory,
Estonian sample

1. WORK-RELATED EMOTIONAL-MOTIVATIONAL STATES, JOB DEMANDS-RESOURCES MODEL AND CORE AFFECT THEORY – THEORETICAL BASIS FOR SCALE CONSTRUCTION ATTEMPT

1.1 Motivational-emotional constructs: work engagement and work-related burnout

The current chapter outlines the most widely used working definitions for the concepts of work engagement and work-related burnout. Subsequently, a brief overview of the critique that has been directed towards the lack of conceptual clarity surrounding the meaning and nature of work engagement is presented. The critique directed towards work engagement has been generalised to the concept of burnout because many parallel models exist to describe the state of burnout, and the burnout state can be seen as the reversed state of high work engagement (Bakker *et al.*, 2011; Bakker, Demerouti 2008).

There appear to be two broad ways to describe the state of work engagement. Firstly, the measurement instrument-based descriptive approach taken by the Utrecht group, whose structurally and cross-culturally validated measurement instrument of work engagement, including 17 items and three subscales describing vigour, dedication and absorption, is called Utrecht Work Engagement Scale (UWES) (Schaufeli *et al.*, 2002). There are numerous studies that have interpreted work engagement as a singular concept (see table in Appendix 1 for references) due to the strong covariance present between subscales of UWES (Schaufeli *et al.*, 2002). Furthermore, some later qualitative definitions given on the state of work engagement mainly emphasise the involvement and energising components (Bakker *et al.*, 2011). On the other hand, some further developments of the UWES scale have suggested the presence of additional factors, such as professional efficacy as a fourth factor to describe work engagement (Schaufeli *et al.*, 2006). Still, work based on UWES and its derivative scales has shown that work engagement is a concept that is differentiable from other commonly used constructs that describe

employee-organisation relations, such as organisational commitment or extra-role behaviour described in the context of organisational citizenship behaviours (for a review, see Bakker *et al.*, 2011).

The second general way to define work engagement seems to be by interpreting it as a reversed burnout state (Bakker, Demerouti 2008) – an interpretation that is also followed in the current thesis. The state of burnout is seen as a negative psychological state emerging from chronic work-related stress, with exhaustion, feelings of cynicism and lack of accomplishment being its subjective defining features (Maslach, Leiter 2016). Multiple models and measures for burnout have been proposed, with the most widely used instrument being the Maslach Burnout Inventory (MBI) (Maslach, Jackson 1981). The MBI distinguishes between three factors of burnout state: depersonalisation (cynicism), emotional exhaustion and personal accomplishment. The other frequently used burnout models and respective scales being the Oldenburg Burnout Inventory, (OLBI) (Demerouti, Nachreiner 1998 cross-referenced from Halbesleben, Demerouti 2005) which distinguishes between exhaustion and disengagement, and the Bergen Burnout Inventory (BBI) (Salmela-Aro *et al.*, 2011), which differentiates between exhaustion, cynicism and feelings of inadequacy at work.

Table 1 presents three main aspects of burnout as outlined by the most widely adopted definition of the construct (Maslach, Leiter 2016), with corresponding factors derived from the most widely used scales. Tentative hypotheses on the matching of the UWES scale's dimensions with the facets described in the definition of burnout (*Ibid.*) and factors from the scales used to measure burnout have also been presented. Of note, the author is not aware of empirical works that have concurrently measured work engagement and burnout by using all the different scales outline in the Table 1. Therefore, the correspondence between the factors of different scales have been drawn qualitatively based on the content of the items and the definitions given for the included factors.

Table 1. Facets of burnout with tentative correspondence of those facets with factors included in the most widely used scales¹ of burnout and work engagement.

Defining feature of burnout	Corresponding factor on UWES ²	Corresponding factor on MBI	Corresponding factor on BBI	Corresponding factor on OLBI
Exhaustion	Vigour	Emotional exhaustion	Exhaustion	Exhaustion
Cynicism	Absorption	Depersonalisation	Cynicism	Disengagement
Felt lack of accomplishment	Dedication	Personal accomplishment (feeling of control)	Inadequacy at work	Partially cover by factor of disengagement?

Source: (Maslach, Leiter 2016; Schaufeli *et al.*, 2002; Salmela-Aro *et al.*, 2011; Demerouti, Nachreiner 1998 cross-referenced from Halbesleben, Demerouti 2005; Maslach, Jackson 1981); table created by author of the thesis.

¹ Throughout the thesis, the word *scale* is used to denote the overall *measurement instrument*, e.g. Utrecht Work Engagement Scale (UWES). Constituent parts of the measurement instruments are denoted as *factors* or *subscales*, e.g. UWES has three *subscales* or *factors* describing vigour, absorption and dedication. Usage of the word *model* implies a measurement scale in conjunction with its theoretical basis and justification. Of note, it is also possible to have a model without a corresponding *scale*. This is the case with the job demands-resources model that is constituted by the descriptive overarching model, but the subcomponents implied by the theoretical model are operationalised differently across the studies. Therefore, different studies use different questionnaires to measure the job demands-resources model's implied components of demands and resources (see table in Appendix 1 for references).

² Some tentative evidence for matching presented in the table between dimensions of UWES and burnout definition can be found from covariance pattern that emerged in the study conducted by Schaufeli and colleagues (2002). In detail, this study (*Ibid.*) showed high covariance between vigour and absorption on the one hand, and between exhaustion and cynicism on the other hand.

Previously outlined definitions for work engagement and burnout can be described as descriptive, rather than theoretically grounded. For example, Bailey and colleagues (2017) have carried out a narrative evidence synthesis study based on 214 papers published on work engagement. They identified 34 different conceptual models of work-engagement, four previous meta-analyses and 172 unique empirical papers. The conclusion of these authors is somewhat pessimistic:

“In conclusion, despite the number of studies, there is in fact still very little about engagement that can be asserted with any degree of certainty; we do not really know what engagement means, how to measure it, what its outcomes are, or what drives up levels of engagement. Although the Utrecht approach dominates the evidence-base, the literature is in fact fractured, with so many different meanings attached to engagement that it does not make sense at present to talk of engagement as one single construct. There is a tension between narrowing the definition of engagement so far that it becomes of limited interest and broadening it too far so that it loses its distinctiveness that has not yet fully been resolved (Schaufeli 2014).”

Similar to the case of the job demands-resources model, conceptual openness surrounding the meaning and measurement of work engagement can be interpreted as an indication of an on-going theory grounding process (see next section of the thesis for a review of critique directed at job demands-resources model). Therefore, the topic of work engagement and burnout will be revisited in the second chapter of the thesis, after outlining the model proposed by the current work. In the latter part of the work, the correspondence between the factors included in the model advanced by the current thesis and the factors from the most often employed instrument used to measure burnout and work engagement is argued. Showing the qualitative similarity between the model advanced by the thesis and previously published measurement instruments and definitions can be seen as an indication that the current work is a continuation and development of the previously published theoretical and empirical efforts, rather than an entirely new conceptual proposition. Furthermore, as the model under development will try to unify the description of work-related burnout and engagement in the same general framework, in a way that would emphasize the (multi-layered causal) connections between the

constructs included, the above outlined points of critique are tackled – i.e. work engagement and burnout models being descriptive tools rather than well-argued coherent theories with corresponding inherent explanatory power (Bailey *et al.*, 2017). It is hoped that such understanding will also be useful in practical settings.

1.2 Overview of the job demands-resources model

The current chapter of the thesis will give a brief overview of job demands-resources model/theory (JD-R model)³. As the JD-R model has seen continuous conceptual revision since its introduction by Demerouti and colleagues (2001), the JD-R model and its development over time can be seen as an indication of the active research programme aimed at reaching the desired final model. The theoretical unsettledness that surrounds the JD-R model is made most apparent by a line of critique that emphasises the heuristic “*jack of all trades, master of none*” nature of the JD-R model. Most critical open questions concerning this model seem to relate to the conceptual fuzziness that is seen with problems in defining key parts of the JD-R model, such as job-related demands and resources, discriminating between demands and resources, and the role of included motivational concepts such as engagement. (for an in-depth critical overview, see: Schaufeli, Taris 2014). Therefore, the author has withheld from trying to present one definitive JD-R model and instead four major revisions of the model over its development path are outlined (Demerouti *et al.*, 2001; Bakker *et al.* 2004; Bakker, Demerouti 2007; Bakker *et al.*, 2014; Bakker, Demerouti 2017).

The founding paper for the JD-R model and its related research (Demerouti *et al.*, 2001) dealt with the problem of linking different job- and work-related characteristics to varied manifestations of work-related burnout. In detail, authors set out to test the factorial structure of the then recently developed Oldenburg Burnout Inventory, (Demerouti, Nachreiner 1998 cross-reference from Demerouti *et al.*, 2001) with an aim of developing and testing a general model, which could account for the emergence of burnout state, they termed the JD-R model. Their overall results showed that work-related conditions can be organised around two broad factors: job demands that are strong predictors for the

³ In the context of the current thesis, the terms JD-R *model* and JD-R *theory* are used interchangeably.

exhaustion component of burnout, and job resources that showed a strong protective effect against the disengagement component of burnout.

The founding study for the JD-R line of research also contained working definitions of job demands and resources (Demerouti *et al.*, 2001). In defining demands, the effort and cost components were emphasised. In defining resources, the instrumental nature of resources was emphasised by describing the aspects of the work-related environment that help in goal attainment or personal growth as a job resource. Furthermore, work-environment characteristics that reduced the negative effects of job demands were also interpreted as resources. The second JD-R model revision (Bakker *et al.* 2004) added job-related burnout and work engagement as singular mediating constructs to the model. In detail, the second revision of the JD-R model sees emotional-motivational state of strain as a construct that mediates the negative effects of job demands on organisational outcomes. Similarly, work engagement is seen as a mediating construct, which through inherent motivational potential of job resources is manifested in organisation level outcomes.

The third major revision of the JD-R model introduced the idea of interactive effects between job demands and resources in respect to work engagement (Bakker, Demerouti 2007). In detail, job resources were seen to have an elevated role in fostering engagement, especially under the conditions of high job demands. The most important change in research focus introduced by third revision of the JD-R model was the explication of the dynamic resilience-enhancing component present in job resources (Bakker, Demerouti 2007; this revision of JD-R model is depicted in Figure 1).

In detail, in the third major iteration of the JD-R model, job resources were defined on the basis of Hobfoll's conservation of resources (COR) theory (Hobfoll 2001; Hobfoll 2002; Hobfoll 2011). The COR theory defines resources based on two major aspects. Firstly, the resilience-enhancing role of resources, which is based on the observation that resourceful people are less susceptible to resource loss under challenging conditions, while resource-poor people are especially prone to resource loss under objectively the same stressful conditions. Therefore, resources are seen as something valuable, worth conservation effort and striving for. Furthermore, already acquired resources form the basis of gaining additional resources. Secondly, central concepts of the COR theory,

“*resource gain spirals*” and “*resource loss spirals*” emphasise the dynamic viewpoint (Hobfoll 2001; Hobfoll 2011).

Resource gain spirals appear due to the inherent resilience enhancing and motivational value presented by resourcefulness. – i.e. in addition to placing one in better position for future gains, newly obtained resources motivate one to seek further resources by enhancing one’s active agentic and instrumental outlook toward the environment. Resources gained by constructive behaviour increase likelihood for future gains and motivate further resource-seeking, and so forth – hence the “*gain spiral*” part of the term. Resource loss spirals appear due to the self-reinforcing loop that is started by the initial loss of resources, which predisposes one to a subsequent loss of resources due to a decrease in resilience caused by the initial resource loss during the stressful episode. Moreover, resource loss spirals are especially important under the condition of chronic stress, as continuous stress at a level sufficient to create initial resource loss will cause iteratively increasing resource loss due to the declining resilience level of the individual – an overall situation describable as a resource loss spiral.

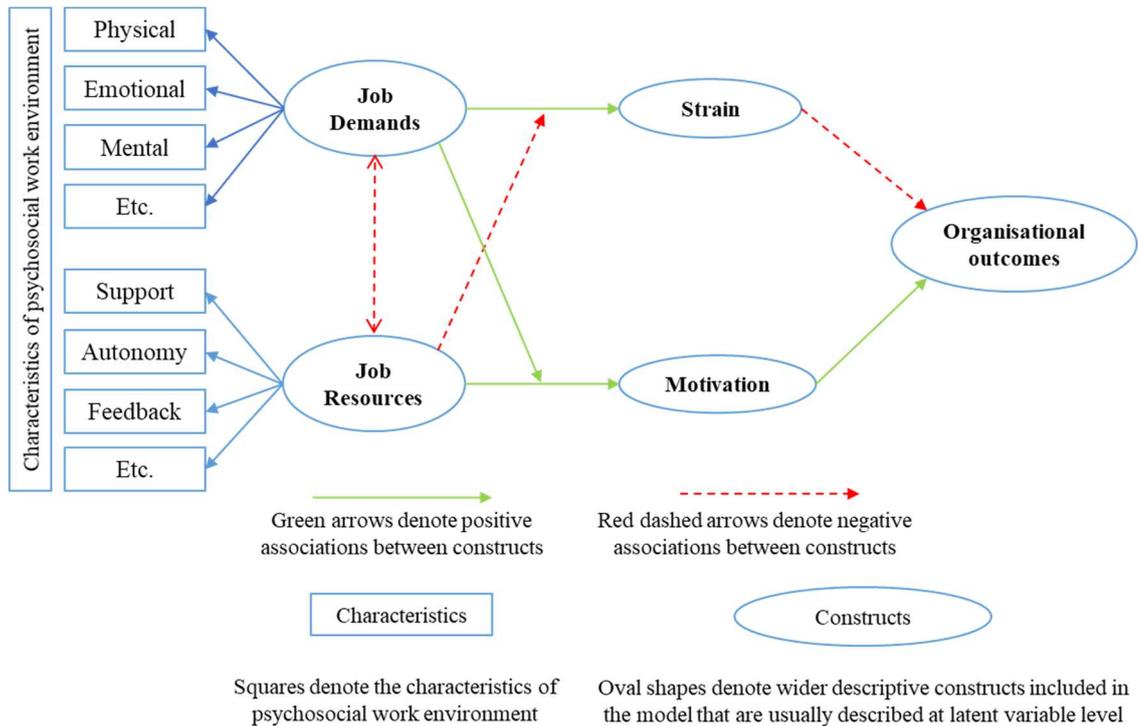


Figure 1. The JD-R model after its third major revision with the inclusion of strain (burnout) and motivation (engagement) that mediate the effects of demands and resources on organisational outcomes. Note the effect of job demands on regression between resources and motivation.

Source: (Bakker, Demerouti 2007: 313).

The latest revision of the JD-R model (see Figure 2 for details) now emphasises the agentic role employees have in designing their own work demands and resources, while also noting the interactive effects this behaviour has in relation to motivational constructs such as work engagement (Bakker *et al.*, 2014; Bakker, Demerouti 2018). The authors of the JD-R model have borrowed the umbrella term “*job crafting*” from Wrzesniewski and Dutton (2001) that encompasses *employees’ self-initiated change-oriented behaviours to align their jobs with their preferences and motives*. Recently, two research groups have developed and validated scales to measure and differentiate between distinct aspects of job crafting.

Tims and colleagues (2012) have developed a job-crafting scale (JCS) based on the logic inherent in the JD-R model, showing that workers craft both job resources and job demands. On the resources side, the scale includes the factors *increasing of social job*

resources and *increasing of structural job resources* – here, the first factor describes improving constructive work-related social contacts with colleagues and supervisors and the second subscale describes aspects related to improving one’s competencies. On the demands side, two factors can also be differentiated: *increasing challenging job demands* and *decreasing hindering job demands*. Nielsen and Abildgaard (2012) proposed and validated their measurement instrument with five subscales encompassed by the Job Crafting Questionnaire (JCRQ) that have since been further validated cross-culturally (Nielsen *et al.*, 2017). Similar to the JCS, data collected with JCRQ scale indicate that employees craft both their job demands (*increasing challenging job demands, decreasing social job demands, decreasing social job demands, increasing quantitative job demands*) and job resources (*increasing social job resources*).

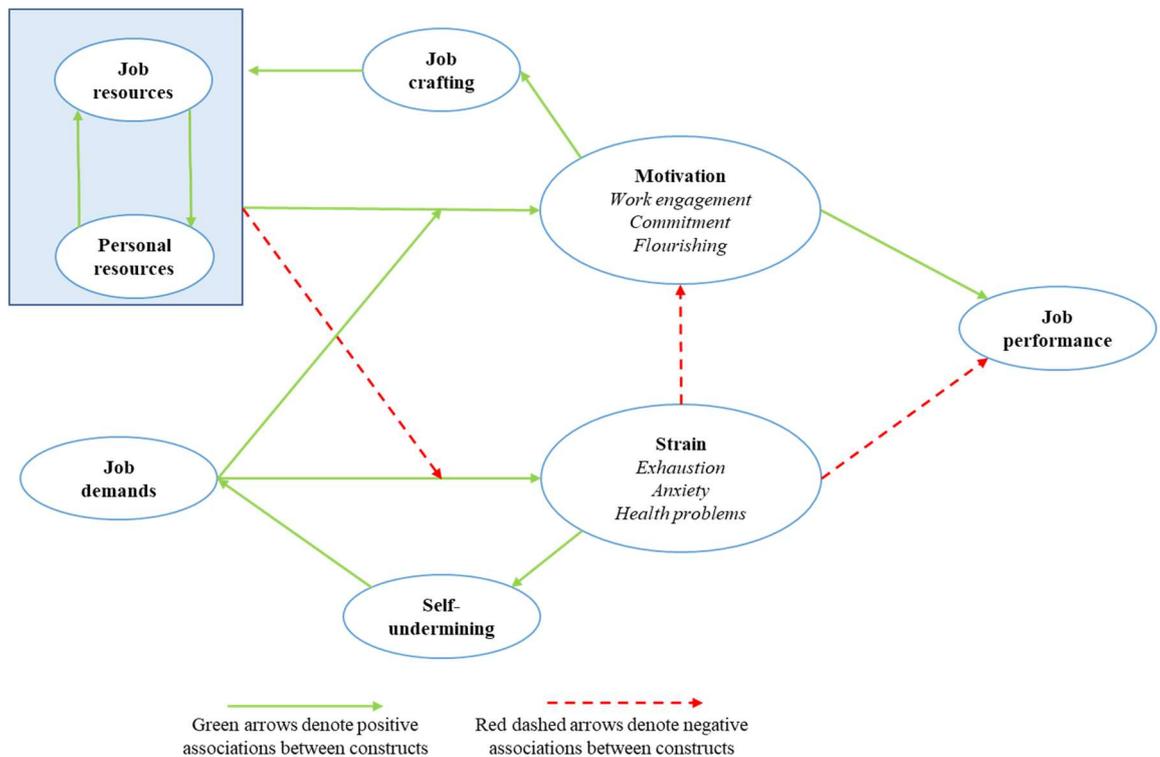


Figure 2. Latest (fourth) revision of the JD-R model.

Source: (Bakker, Demerouti 2017: 275). Note the self-reinforcing relationship between work-engagement, job resources and job crafting and dynamic dependency between personal resources and job resources.

The JD-R model will be revisited in the second chapter of the thesis, after having outlined the model advanced by the current study, with its core-affect theory derived

correspondence to work-related demands and resources. In so doing, the author will try to advance the understanding of processes that explain whether a specific psychosocial work environment aspect will behave as a demand or a resource, how different work-related demands have either an engagement decreasing hindering or an engagement-enhancing challenging nature, and how to explain the reciprocal relationships between job crafting, job resources and work-engagement.

1.3 Constructionist view of emotional-motivational episodes

Work-related burnout and work engagement are, especially in context of the JD-R model, often described as emotional-motivational constructs (e.g. Schaufeli, Taris 2014; Bakker, Demerouti 2017). The following chapter will try to exemplify the multi-layered ordering inherent in emotional episodes by drawing theoretical support (and inspiration) from a set of theories and models known as the constructivist view of emotions (Feldman Barrett, Russell 2015; Feldman Barrett 2015; Russell 2006). Understanding the recursive and multifaceted nature of emotional-motivational constructs is crucial for the model construction effort attempted by the thesis. The model under construction will be outlined in the next paragraph of the thesis.

Sometimes it is easier to exemplify the nature of something by describing it in the context of its opposite. Especially if the idea or theory that is being explained has grown out of the critique directed at another, more dominant view. This is the case with the older evolutionary theory of basic emotions (for review, see: Tracy, Randles 2011) and a set of newer theories categorised under the umbrella term – the constructivist theories of emotions. The evolutionary theory of basic emotions and constructivist theories form two separate streams of research that both aim to systematise and explain the emergence and function of emotions. The core affect theory will be used in the thesis as it is probably the most-researched constructionist model of emotions (for review, see: Russell 2003 or Russell 2015).

In the basic emotions theory, assumptions are made about the existence of a set number of universal basic emotions, each of which carries a clear evolutionary function and discrete brain activity pattern. The main assumption made by the basic emotions theory concerns the activation of a basic emotion in an emotional episode. In detail, different

manifestations of an emotional episode, whether at the level of behaviour, cognition, perception or expression, are primarily seen as a result of activating the base emotion-related brain circuits. For example, the activation of fear-related pathways in the brain will produce the specific subjective feeling of fear (*qualia*). Due to the existence of these specific fear-related qualia we can exhibit a precise word for this emotional state that is universal. Furthermore, the activation of the basic emotion of fear will cause emotion-specific behaviours, such as the display of fear-specific facial expressions. Therefore, the basic emotions theory sees emotions as atomic building blocks that underlie the multifaceted but still unified manifestation of emotional episode. All in all, the key point that is rejected and critiqued by the latter constructivist view is exactly the unity implied by the atomistic view – i.e. seeing emotions as pre-integrated sets of psychological processes carried by evolutionarily-selected specific brain mechanisms. (Overview based on Tracy, Randles 2011; Russell 2015; LeDoux 2012; Russell 1994; Russell 2006).

Instead of taking the stance by which specific emotions in their multifaceted unity are already hard-wired in us, the competing theory about core affect has a more dynamic and constructivist outlook (Russell 2003, Russell 2006). Core affect theory sees emotions as psychological events that are constructed with basic affective processes relating to feelings of pleasant or unpleasant (valence dimension) and energised or lethargic (arousal/activation dimension) states (Russell 1980; Russell 2003; Posner *et al.*, 2005). As the underlying affective state-space formed by those two processes is assumed to be circular, the core affect theory is also known as a circumplex model of affect (Russell 1979; Russell 1980; Posner *et al.*, 2005). An additional schematic description of core affect theory is presented in Figure 3.

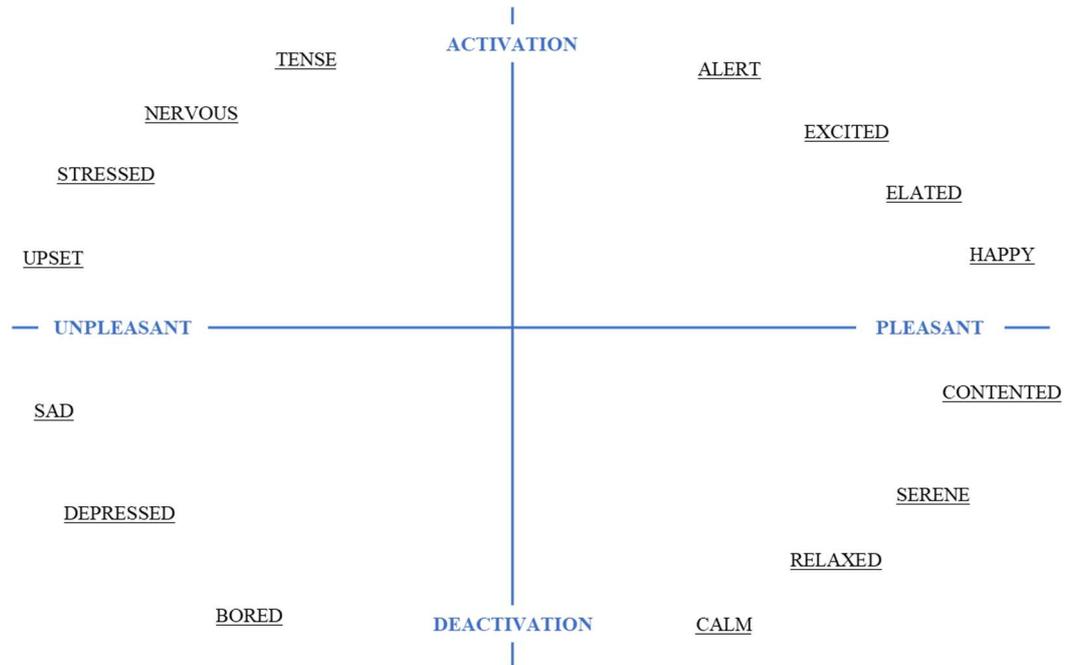


Figure 3. Schematic representation of circumplex model of affect.

Source: (Posner *et al.*, 2005: 716).

Importantly, core affective processes are continuously active, even when no specific emotional episode is taking place (Russell 2003, Posner *et al.*, 2005, Russell 2015). Therefore, core affect forms an organising affective milieu from which more specific integrated emotional-motivational episodes can emerge. In detail, the subcomponents of emotional episodes such as perception of affective quality, attribution, appraisal, instrumental action (planning), emotional regulation, conscious experience of emotion and categorisation are integrated by the “*underlying field*” created by the core affect, which itself is influenced by other constituent components of emotional episodes (Russell 2003; Russell 2015). Core affect, with its reciprocal relationships with second-order elements included in the process constituting the emotional episode, forms the basis for both the wholeness of emotional episode and for emotional self-regulation. In the context of the model advanced by the thesis, core affect theory emphasises three important aspects about emotional episodes (Russell 2003; Russell 2006; Posner *et al.*, 2015, Russell 2015):

- Firstly, emotions are not simple monistic or time-constrained reflex-like entities. Rather, emotions can be viewed as constructed stable set points (sometimes also called prototypic entities) in active cognitive and affective information processing

that contain underlying continuously active processes and situation-specific factors;

- Secondly, emotional states carry both visceral or bodily and cognitive information. Emotional episodes are therefore the constructively integrated representation of cognitive and visceral components of a given experience. Of note, two main emotional-motivational constructs covered by the model advanced by the thesis, work engagement and work-related burnout, contain in themselves both visceral (e.g. exhaustion and vigour) and cognitive appraisal components (e.g. cynicism and absorption) (Schaufeli *et al.*, 2002; Maslach, Leiter 2016);
- Thirdly and most importantly, one can experience positively valenced emotional states at both high activation and low activation.

Surprisingly, the constructed nature of emotional episodes is also hinted at in Heidegger's phenomenological philosophy (for a review, see King 2011: 1-19). In his book "*Being and Time*", Heidegger (1927; translation used for thesis by Stambaugh 1996: 134-139, 339-346) distinguishes between two main components of emotional episodes, termed, in German, *Befindlichkeit* and *Stimmung*. These terms have proven problematic for translators to concisely carry over to other languages, indicating that affective and emotional terminology may not always have clearly defined one-to-one correspondence between languages, as assumed by the basic emotions theory. Philosopher and commentator on Heidegger, Dreyfus, has used the terms affectedness for *Befindlichkeit* and mood for *Stimmung* (Dreyfus 1991: 168 cross-referenced from King 2011). In Heidegger's scheme of emotional states, affectedness constitutes the continuously active underlying ontological relation we have with our being. Moods, on the other hand, are seen as narrower ontic structures that emerge when our being, with its quality of affectedness, interacts with a specific situation or knowledge about the world. The key term here being "*ontic structure*", which, in Heidegger's vocabulary, means the manifestation of a deeper underlying structure (ontological structure) of being in real beings – i.e. the mode of thinking, feeling or seeing something as something. Put differently, the ontological structure-related affectedness is made explicit by the way our mind orders emotional interpretation, labelling and interactions with specific information or situations. Therefore, both the core affect theory and Heidegger see the underlying affective field as an ordering basis that allows for more specific emotional episodes to

emerge in their “*wholesome quality*”, without losing the multifaceted nature inherent in an emotional episode.

One may ask why one should cover Heidegger’s existential philosophy in a thesis that aims to develop a psychometric measurement instrument for usage in an organisational context? Firstly, the works of Heidegger and his philosophical system(s) are relatively prominent in organisational studies that are based on phenomenological inquiry, which are usually largely sceptically minded towards the possibility of understanding the wholeness of everyday humanly experience by using standardised questionnaire-based measurement instruments (Tsoukas 2010; Alvesson 2003). Therefore, showing how the logic of the measurement instrument under development is at least partially grounded in the insights that emerge from a phenomenologically minded line of organisational research may act as a partial rebuttal against that kind of argument. Secondly, it is another example in addition to the core affect theory that argues for the presence of two-level ordering behind the experience of emotional episodes.

Using the core affect theory derived measurement instrument in an organisational context is not novel. Circular ordering of emotional episodes, along the dimensions of valence and activation level, was hinted at by a series of studies that used a multidimensional scaling technique on the ratings given for perceived singular emotional states such as happy, calm, stressed etc. (Russell 1980). Russell’s approach was translated to organisational settings by Warr (1990), who asked employees to evaluate the frequency of feeling specific emotions in relation to their everyday work over the timespan of two to four weeks. Warr’s efforts resulted in the creation of a scale called Multi Affect Indicator (AFI) (Warr 1990; Warr *et al.*, 2013) that has also been cross-culturally validated (Madrid, Patterson 2014).

Analyses have shown that items of the AFI scale form four subscales or quadrants that have conceptual overlap with the core affect model: HAPA – high activation pleasant affect, a state describable as enthusiasm; LAUA – low activation unpleasant affect, a state describable as depression; LAPA – low activation pleasant affect, a state describable as comfort, and HAUA – high activation unpleasant affect, a state describable as anxiety (Warr *et al.*, 2013). Importantly, the AFI scale is another example of how the basic affective processes working behind emotional episodes organise singular emotional states

into groups or quadrants that, in turn, have their overarching emotional-motivational meaning – e.g. alert, excited, elevated and happy feelings towards a work situation can be generalised as an enthusiastic attitude toward one’s work as those feelings share higher activation and pleasantness.

This chapter outlined the dynamic multi-layered nature of emotional episodes based on concordant views expressed in the core affect theory and Heideggerian phenomenological philosophy. Seeing the work engagement and work-related burnout from an emotional constructionist viewpoint will help to deconstruct those psychological states in a way that explicates and hopefully partially explains the interconnected nature of the subcomponents forming those emotional-motivational states. Theoretical grounds for building a model that both distinguishes between individual components inherent in motivational-emotional episodes, and shows the logical unifying interconnectedness between those components, will be the above described core affect theory. Doing so may avoid the pitfall of using the wider emotional-motivational constructs as singular mediating helper-constructs that describe the usage of work-engagement and burnout in the latest iteration of JD-R model (Bakker, Demerouti 2017). At the same time, the model of under development will try to avoid the partitioning of those emotional-motivational constructs into descriptive subcomponents, without trying to provide corresponding unifying theoretical background.

2. MODEL PROPOSED BY THE THESIS AND ITS POSSIBLE CONTRIBUTION TO JD-R AND WORK ENGAGEMENT BASED RESEARCH

2.1 Model proposed by the thesis: REF-ENG scale

The following chapter will present the outline of the model proposed by the thesis. The overview starts by defining the main dimensions of the model under development. By defining the subscales of the model, the logic inherent in the core affect theory is being used to ground the theory building process. The second part of this chapter will present the derivation and construct level logic of the formal model that is later used for structural equation modelling (SEM). A specified and argued for formal SEM model can be seen as a way to systemically represent hypotheses derived from the theory building process for empirical testing.

The model advanced by the thesis has two first-order factors that directly correspond to two main dimensions of core affect. Firstly, the factor of work-related self-activation (ACTIV) that corresponds to the activation/arousal level dimension of core affect. Secondly, the axis that describes the perceived increase or decrease in personal-level job resources that leads to an increase or decrease in work-related self-efficacy (EFF). The EFF factor corresponds to the valence dimension of core affect. Similar to the logic presented in the core affect theory, the interaction between first-order factors ACTIV and EFF creates an affective milieu that allows for the emergence of more specific multifaceted, but still unified, work-related emotional-motivational states. In detail, more situation specific components inherent in emotional-motivational episodes, such as perception of affective quality, attribution, appraisal, instrumental action (planning), conscious experience of emotion and categorisation (Russell 2003) are integrated by the core affect created milieu. Importantly, those same situation specific processes, appraisal and action related components of emotional-motivational episodes, can influence the core affect itself, forming the basis for emotional-self regulation (*Ibid.*).

In the context of the model advanced by the thesis, those narrower (second-order) emotional-motivational subscales, which emerge from the affective field created by core affect, are the continuum from work engagement to its opposite state of burnout (ENG subscale), and the continuum from work-related reflectivity to its opposite state of work-related anxiety (REF subscale). Work-related affective attributions, appraisals, instrumental actions and emotional categorisations of the situation that correspond to the overarching state of high ENG happen most often in context of high ACTIV and EFF levels. In parallel, low ACTIV and EFF levels most probably lead to the state of work-related affective attributions, appraisals, instrumental actions and emotional categorisations of the situation that are common for burnout (low ENG) – e.g. seeing one’s job as tedious, boring, straining, lacking wider meaning and therefore warranting only minimum effort.

To emphasise the differing meaning carried by the REF and ENG subscales, parallel descriptive labels have been introduced to denote the reflectivity and engagement factors. In detail, it is hypothesised that the REF subscale describes *extensive work-related growth*, while the ENG subscale describes *intensive work-related growth*. At face value, this distinction is apparent by comparing the quadrants created by the ACTIV and EFF subscales that correspond to high REF and high ENG specific emotional-motivational states. The emotional-motivational state of high REF happens under the conditions of low ACTIV and elevated EFF, therefore imping the possibility that work-related growth, which leads to a higher level of perceived self-efficacy, is achievable under the conditions of low effort. On the other hand, a high ENG state happening under concordantly elevated ACTIV and EFF levels corresponds to the state of work-engagement, which is characterised by high vigour and dedication (Schaufeli *et al.*, 2002).

On the theoretical and content level, justification for REF describing *extensive growth* and ENG describing *intensive growth* is drawn from Panksepp’s (1998) theory of basic emotional systems. In detail, Panksepp’s theory describes the two opposing emotional systems related to gaining resources and achieving higher fitness; those systems being the SEEKING-system and PLAY-system (*Ibid.*). The activity of the PLAY-system mediates the increase in fitness and resource gain by widening the behavioural repertoire, which takes place under carefree, safe, fulfilled and playful conditions. As the growth mediated

by the PLAY-system takes place under conditions of lower activity and behavioural variety-widening conditions, an increase of resources achieved through the activity of this system can be termed *extensive growth*. Therefore, the REF subscale can be seen to correspond to the activity of the PLAY-system, which is also the basis for adding item that describe a playful attitude towards one's work to the questionnaire.

The activation of the emotional SEEKING-system is related to an eagerly energised and instrumental attitude toward one's environment (Panksepp 1998: 144-163; Panksepp 2011; Wright, Panksepp 2012). Those qualities are also clearly present in Utrecht's group definition of work-related engagement, which emphasises energised and dedicated psychological states as defining qualities associated with engagement (Schaufeli *et al.*, 2002; Schaufeli *et al.*, 2006). Furthermore, the humanly felt emotional quality mediated by the activity of the SEEKING-system is sometimes termed enthusiasm (Panksepp *et al.*, 2014). The quadrant characterised by a high activation level and positive valence in Warr's circumplex model-based measurement instrument is also termed as enthusiasm (Warr *et al.*, 2013). As the SEEKING-system mediates instrumental and active behaviour towards environmental resources hinted at by innate or environmental cues, an increase of resources achieved through the activity of this system can be termed *intensive growth*. Overall, the two modes of fitness enhancement, which become apparent by comparing the SEEKING-system and the PLAY-system, are also one of the reasons to expect two modes of work-related resource gain and self-efficacy enhancement to exist. Furthermore, the distinction between ENG and REF as two distinct modes of growth is emphasised by the studies showing that the activity of the SEEKING-system is negatively related to the activity of the PLAY-system (Panksepp 1998: 280-299; Panksepp 2007).

The overall schematic representation of the model proposed by the thesis is depicted by the following, Figure 4. A detailed description of the subscales included in the model is outlined in Table 2. The table also includes an overview of correspondence between the REF-ENG model subscales, with dimensions and quadrants implied by the core affect theory. Work engagement and its opposite state, burnout, have received wide research coverage (for references, see Table 1 and section 1.1 of the thesis). The other emotional-motivational subscale REF that naturally emerges from emotional state-space, created by the ACTIV and EFF affective dimensions, has not been explicated in previous theories

of work engagement and burnout. Therefore, being able to discriminate the REF dimension in data analysis will be the main theoretical contribution achieved by the current thesis.

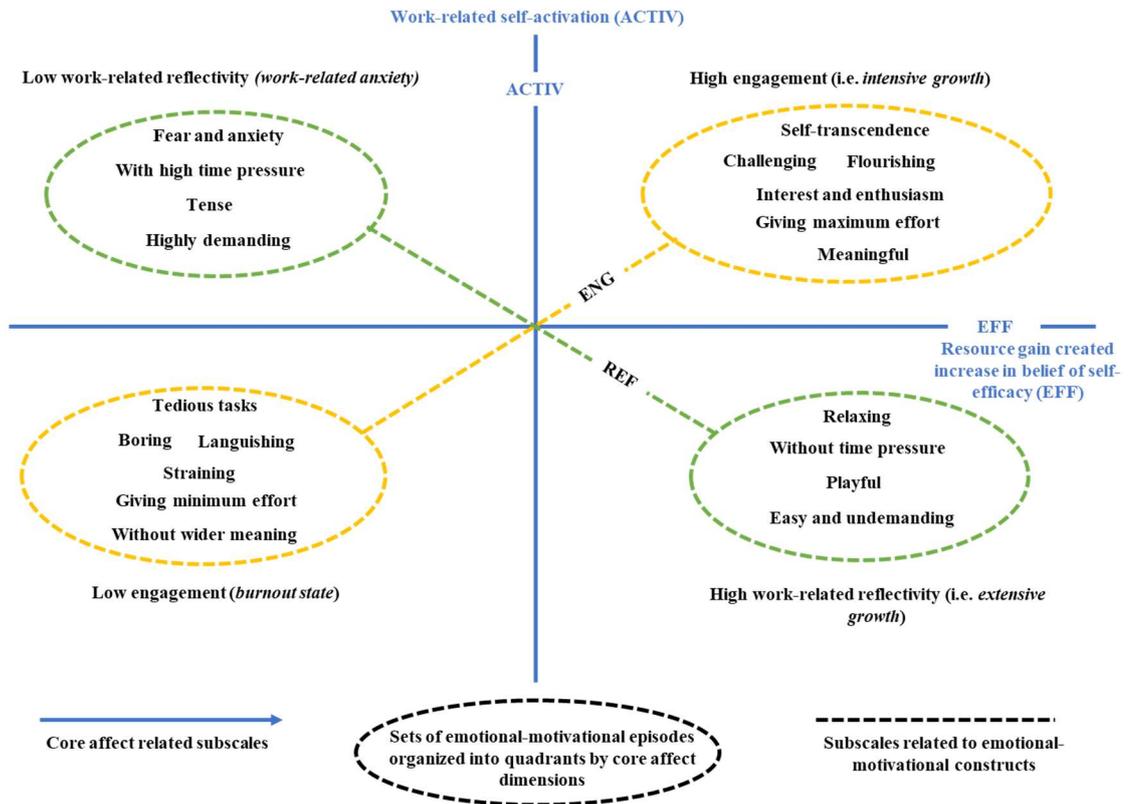


Figure 4. Schematic representation of the model proposed by the current thesis (termed: REF-ENG scale).

Source: figure created by author.

Table 2. Affective and emotional-motivational subscales proposed by the REF-ENG model in comparison to core affect theory based dimensions and quadrants.

Type/level of the subscale	REF-ENG scale (model proposed by the current thesis)	Core affect theory
Core affect subscale	Work-related self- <u>activation</u> (ACTIV)	Arousal/activation (ACT)
Core affect subscale	Personal-level job resource gain or loss created perception of increase or decrease of self-<u>efficacy</u> (EFF)	Valence (VAL)
Core affect based emotional-motivational state	High engagement (high ENG) happening under high ACTIV and high EFF <i>(intensive work-related growth)</i>	Emotional episode happening under core affect created state-space of high ACT and high VAL (e.g. excitement)
Core affect based emotional-motivational state	Low engagement (low ENG) happening under low ACTIV and low EFF <i>(lack of intensive work-related growth)</i>	Emotional episode happening under core affect created state-space of low ACT and low VAL (e.g. sadness)
Core affect based emotional-motivational state	High work-related reflective state (high REF) happening under low ACTIV and high EFF <i>(extensive work-related growth)</i>	Emotional episode happening under core affect created state-space of low ACT and high VAL (e.g. serenity)
Core affect based emotional-motivational state	Low work-related reflective state (low REF) happening under high ACTIV and low EFF <i>(lack of extensive work-related growth)</i>	Emotional episode happening under core affect created state-space of high ACT and low VAL (e.g. nervousness)

Source: (right column after Russell 2003; Posner *et al.*, 2005); table created by author of the thesis.

Throughout the chapter, REF and ENG factors have been treated as motivation-related emotional constructs, without giving clear explanation for doing so outside of the core affect theory. Firstly, this treatment is partially based on the conceptual hypothesis that the ENG and REF factors correspond to the SEEKING- and PLAY-systems from the basic emotions system proposed by Panksepp (1998: 144-163; 280-299). Secondly, in doing so, the adaptive and goal-directed function emphasises that those two work-related psychological states succeed in organising perception, cognition and behaviour during daily working life. The previously mentioned line of reasoning is “*borrowed*” from Hockey (2013), whose theory of work-related strain describes this psychological state as an emotion with motivational behaviour- and cognition-organising components that allow for the adaptive switching between competing goals and action plans. In detail, this means emotional strain balances the competing needs of exploration and task-engagement by making a worker tired if he or she stays active with one narrow task for an extended period, thus orienting him or her exploratively towards competing goals that may have a higher beneficial value compared to the current task at hand.

The next section of the chapter will outline the functional form of the SEM model, used in latter part of the thesis, to test the REF-ENG model on the data. The formal SEM model specification will be presented graphically at the end of the section. The REF-ENG model consists of four latent variables (factors; subscales), corresponding to the first-order affective subscales of ACTIV and EFF and second-order emotional-motivational subscales of ENG and REF. In the model specification first-order affective subscales ACTIV and EFF are exogenous latent variables. Second-order emotional-motivational subscales ENG and EFF are endogenous latent variables, as the variance of these factors is partially explained by affective subscales ACTIV and EFF. Scale construction efforts are usually focused on defining a measurement model that is later tested by confirmatory factor analysis (CFA). During the usual scale construction procedure and CFA analysis, the pattern of covariance between latent variables is usually of secondary interest. The fact that the REF-ENG scale is based on the core affect theory, and related to the circumplex model of emotions, warrants extra attention when constraining and interpreting the covariance between the subscales of the model.

The idealised depiction of the model in Figure 4 implies the orthogonality, or zero covariance, between the core affect related subscales EFF and ACTIV and emotional-motivational factors ENG and REF. Previous works, using singular emotional wording-based questionnaire items to measure work-related affective states, have shown that the activation and valence dimensions show some positive covariance, and are therefore not dimensionally fully orthogonal as depicted on the idealised schematic Figure 4 (Madrid, Patterson 2014, Warr *et al.*, 2013). This positive covariance between core affect based dimensions in a work-related context may be related to the process of self-selection that takes place in organisations. It is probable that individuals who feel a high level of work-related activation, without concordant experience of resource gain and increase in self-efficacy, may be more inclined to change workplaces. Therefore, covariance between ACTIV and EFF factors has not been constrained to zero.

Strong covariance constraint is introduced to the tested measurement model in terms of residual covariance between factors REF and ENG. By constraining those endogenous factors to have zero residual covariance, all the covariance that exists between REF and ENG factors is seen as being fully explainable by the common affective cause (exogenous subscales ACTIV and EFF) that REF and ENG subscales share. For example, idealised depiction of the model in Figure 4 implies that increasing the affective tone on the EFF subscale should concordantly facilitate the emergence of emotional-motivational states work engagement and work-related reflectivity as both subscales REF and ENG are related positively with the affective subscale EFF. Therefore, moving right on the EFF subscale will concordantly elevate the REF and ENG level, thus introducing common exogenous cause-based covariance between factors REF and ENG. By having two endogenous factors with zero residual covariance constraint that are both still positively related to EFF dimension, a clearer case can be argued for two independent modes of personal work-related growth to exist.

The central feature that the proposed REF-ENG model tries to capture is the two-tier logic inherent in the specific emotional-motivational episodes, carried over to the REF-ENG model from the core affect theory. To test the hypothesis that second-order emotional-motivational factors ENG and REF are based on the affective background created by the core affect related dimensions ACTIV and EFF, REF and ENG factors have been

regressed against the core affect-related factors of ACTIV and EFF. The pattern of regression coefficients, by which EFF is significant positive predictor for ENG and REF but ACTIV is a negative predictor for REF and a positive predictor for ENG, implies the presence of hypothesised two-level (affective and emotional-motivational) ordering of measured constructs. The regressions between first-order and second-order constructs, and the REF-ENG model-based hypotheses for regression parameter value directions are represented in Figure 5 by blue dashed lines.

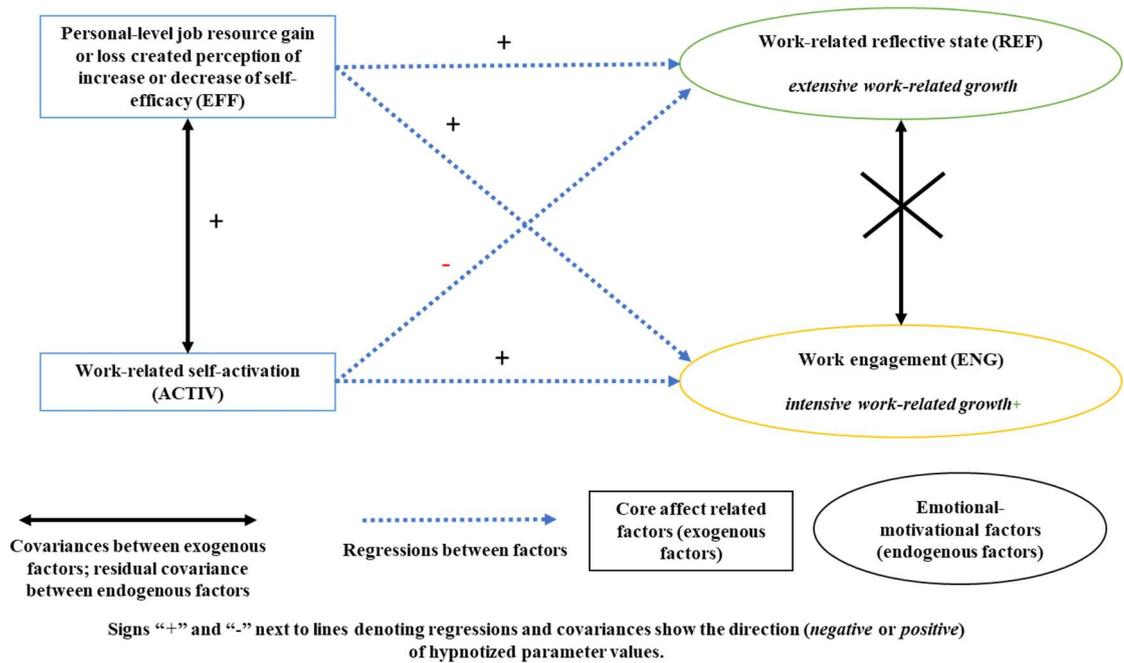


Figure 5. Schematic representation REF-ENG model for SEM based empirical hypothesis testing.

Source: figure created by author.

This chapter forms the core of the theory development effort attempted by the thesis. The REF-ENG model with its two-tier subscale structure was outlined and tentatively grounded on the theoretical framework offered by the core affect theory. Furthermore, the model outlined was translated into its functional form that is later used for empirical testing. Hopefully, the current chapter formed a bridge between the theoretical base presented in the first chapter and the following parts that try to connect the proposed REF-ENG model with work engagement, burnout and JD-R models, and test the model-implied associations between constructs on real data.

2.2 REF-ENG model in context of JD-R model and work engagement

The next section of the thesis will outline theoretical points from the JD-R model, work engagement and burnout related research that are either identified as problematic areas for current theories by themselves or can be re-interpreted in the context of the REF-ENG model. Attempted “*dialogue between theories*” will hopefully illustrate the areas of research in which the REF-ENG model can most positively contribute. Furthermore, the same “*dialogue between theories*” will help to exemplify the structural-level parallels between previously established theories and the currently advanced model.

The definitions given for demands and resources by the original model founding paper (Demerouti *et al.*, 2001; see section 1.2 of the thesis for definitions) have remained heuristic staple items in future empirical papers, even after major revisions of the JD-R model had taken place. As defining and understanding the role of work-related demands and resources is central in respect to both the JD-R model and the model advanced by this current thesis, some effort will be spent in attempting to deconstruct those concepts. By defining demands as those aspects from the work-related environment that demand effort and endure costs, an implicit reference to an ego-depleting resource-based self-regulatory mode is made (Baumeister *et al.*, 1998; Muraven, Baumeister 2000; Baumeister *et al.*, 2007; Gailliot *et al.*, 2007). Under the ego-depleting self-control model, self-regulatory behaviour is seen to depend on a limited “*energy-like*” resource. Therefore, this also encompasses the term “*ego-depleting*”, meaning that one act of self-control will deplete one’s self-control reserve, making subsequent self-control efforts more prone to failure. Similar “*energy-based*” metaphoric conceptualisation has been described in the context of job strain (Hockey 2013: 132-154) – i.e. every subsequent work-task is describable as more straining due to the depletion of the effort-related energy reserve.

Both previously described “*energy-based*” conceptualisations of self-regulatory efforts have been shown to be primarily valid in contexts that are characterised by a high standardisation level and the related low agentic control over one’s environment. In the case of ego-depleting self-control, theory founding experiments were made by using seemingly trivial tasks in a laboratory environment (for a critical review, see Inzlicht *et al.*, 2014). Similarly, the idea of seeing job strain as related to the depletion of some effort-

related energy reserves emerged during the period of the Industrial Revolution – a period of history when workers had very little if any control over their working environment and demands (Hockey 2013: 132-154). Unfortunately, this concept of job strain remained in literature as a guiding principle up until recently (*Ibid.*), which is also partially exemplified by the way demands were defined in the original JD-R model (Demerouti *et al.*, 2001). Most importantly, the “*depleted energy metaphor*” carried reasoning hid the underlying multi-layered (constructed) nature behind job-demands-related emotional-motivational strain state. Furthermore, in both cases, the “*depleted energy metaphor*” influenced thinking; it hid the potential adaptive function that this emotional-motivational state might have in organising the goal selection-related behaviour (see section 2.3 of the thesis for theory-based hypothetical example).

Likely prompted by the works that showed job demands were not a unified negative strain associated construct (for a review, see LePine *et al.*, 2005; Crawford *et al.*, 2010), the latest iteration of the JD-R model (Bakker, Demerouti 2017; Bakker, Demerouti 2018) somewhat tentatively and indirectly includes two separate constructs for demands – engagement enhancing challenging, and engagement decreasing hindering⁴. In the model advanced by the current thesis, the job demands construct is covered by the core affect theory-derived ACTIV subscale. Extra care has been taken to word items that describe the ACTIV factor in a way that specifically describes only the work-related self-activation aspect. In detail, conscious effort has been put in to avoid either the negative or positive valence component being (predominantly) present in respective questionnaire items. Due to the logic of the core affect-derived EFF and ACTIV factors, as their interaction creates state-space for more specific emotional states, challenging and straining job demands can be incorporated into the REF-ENG model without explicitly needing to specify those emotional states as separate factors. Work-related self-activation (high ACTIV) that takes place concordantly with subjectively perceived resource and self-efficacy gains (high

⁴ Of note, the distinction between hindering and challenging job resources is presented textually as an additional description to the schematically presented JD-R model logic. On the schematic descriptions of the JD-R model, the engagement-enhancing effects of challenging demands are incorporated into the model through the positive relationship job-crafting behaviour has with work engagement. Similarly, the engagement-decreasing effects of hindering job demands are presented through the negative relationship between job demands and work engagement (for details, see Figure 2).

EFF) can be characterised as a challenging job demand. Of note, the high ACTIV and high EFF quadrant of the REF-ENG model corresponded to a high ENG level, which implies that engaged employees see their work-related demands as challenging rather than straining. The REF-ENG model's implied overlap between work engagement and challenging job demands is supported by previous studies that have shown a positive relationship between those two constructs (for review, see: Crawford *et al.*, 2010). Work-related self-activation (high ACTIV), which takes place under the conditions of stagnant or diminishing personal-level resources and related perceived self-efficacy (low EFF), is subjectively experienced as taking place under time-constrained or otherwise negatively demanding conditions that are chronic and not controllable by the worker. This state of high ACTIV and low EFF is described as work-related anxiety, which constitutes the REF-ENG model-specific analogue for hindering job demands.

The original definition of job resources emphasised the instrumental and growth aspects of the construct (Demerouti *et al.*, 2001; for definitions, see section 1.2 of the thesis). The instrumental and motivational component inherent in job resources gets further explained in the latest iteration of the JD-R model, whereby resourcefulness is seen as a factor that predisposes employees to seek further resources through motivating them to initiate constructive job-crafting behaviours (Bakker, Demerouti 2017; Bakker, Demerouti 2018). Therefore, it is hinted that job resources increases self-efficacy, which leads to instrumental action aimed at improving one's situation.

The shift in focus from organisational-level resources to personal-level resources that are directly linked with self-efficacy (Xanthopoulou *et al.*, 2009; Bakker, Demerouti 2017) is most evident when the third and fourth revisions of the JD-R model are compared (depicted respectively on Figures 1 and 2). In detail, the third revision of the JD-R model aimed to explain the organisational level outcomes by focusing on job resources and demands described from the viewpoint of organisation-level psychosocial work-environment characteristics (Bakker, Demerouti 2007; see also Figure 1). On the other hand, the latest revision of the JD-R model focuses on explaining an individual-level outcome of job performance through a set of interrelated subject-level emotional-motivational constructs of job crafting, work engagement, strain and self-undermining behaviour (Bakker, Demerouti 2017; Bakker, Demerouti 2018; see also Figure 2). Of

note, the latest iteration of the JD-R model now explicitly distinguishes between person- and organisational-level resources, while still seeing job demands as an organisation level construct (Bakker, Demerouti 2017; Bakker, Demerouti 2018; see also Figure 2). On the other hand, the distinction between personal resources and job resources is presented with a caveat (*Ibid.*). Personal resources and job resources, while distinguishable, are seen as being mutually dependent (Xanthopoulou *et al.*, 2009) and personal resources are seen to have similar role as job resources (Bakker, Demerouti 2017). For example, Xanthopoulou and colleagues (2009) have shown in longitudinal study job resources to depend on personal resources and personal resources to depend on job resources. The thinking advanced in the current thesis sees the close functional and dynamic overlap between personal and job resources as an indication that “*the tools*” for professional efficacy provided by the job resources have the expected positive effect only if the increase in personal resources is achieved. Of note, in the context of the thesis, personal resources are probed through the perceived change in self-efficacy as in the context of JD-R research, the self-efficacy beliefs are seen as prototypical personal resource (Bakker, Demerouti 2017; Bakker, Demerouti 2018; Xanthopoulou *et al.*, 2009).

The connection between job resources and perceived self-efficacy may also explain why job resources do not have one-to-one correspondence with job characteristics (Hackman, Oldham 1975; Oldham, Hackman 2010; Schaufeli, Taris 2014). For example, job-related autonomy is a resource as long as it helps in achieving work-related growth and goal attainment. On the other hand, too much work-related autonomy can lead to a neglect-like situation, where the employee sees the responsibilities and freedom of choice as threatening, therefore turning the prototypical job resource of work-related autonomy into a job demand. By not explicitly taking into account the association between resources and perceived self-efficacy, distributing objective work environment characteristics between categories of job resources and demands is proven to be problematic (for a critical review, see Schaufeli, Taris 2014). A further layer of complexity is added to the mix by the fact that individuals differ in their preference of a given job characteristic, which is most likely related to their stable individual dispositions, such as personality profile, temperament or general intelligence level (for review, see: Sackett *et al.*, 2017). For example, the same external job resource, such as high work-related autonomy, may have either a self-efficacy enhancing or decreasing effect depending on the personality profile of the

employee. Therefore, it is not surprising that the job-person/organisation-person fit is one of the strongest predictors for the number of positive job-related outcomes (for in-depth meta-analytic review, see: Kristof-Brown *et al.*, 2005).

Due to the presence of resource loss and gain spirals, stressful and self-efficacy enhancing aspects of resources are probably subjectively appreciated most strongly at times when the person-level resources and related resilience level are either decreasing or increasing (Hobfoll 2002; Hobfoll 2011). Therefore, aspects on the core affect valence dimension-related EFF subscale have been worded in a way that specifically describes the loss or gain in perceived self-efficacy. A further note on the wording of items in the EFF axis concerns the specificity of items used. The use of items that describe losses or gains in self-efficacy in relation to specific work characteristics or domain of work-life has been explicitly avoided. Rather, items on the EFF subscale have been worded based on Ashby's law of requisite variety (Ashby 1957:195-218; Ashby, Goldstein 2011). Ashby's law of requisite variety is derived from the systems theory, which describes fitness in terms of a balance between variety in controlling systems and systems being controlled (*Ibid.*). In the context of the current work, this means that increasing person-level resources indicates an increase in self-confidence concerning the ability to constructively face work-related challenges with increasing complexity. Similarly, losing resources is manifested in a subjectively perceived decrease in resilience – i.e. an increase in doubt regarding the possibility of being successful in undertaking complex work-related tasks. In other words, a change in person-level work resources leads to a perceived change in work-related self-confidence (i.e. self-efficacy). As for interesting parallels, variety balance-based operationalisation of resilience has been widely used in biology and in organisational cybernetics (Ashby 1957: 195-218; Schwaninger 1997; Schwaninger 2009: 11-22; Ashby, Goldstein 2011). The importance of using variety-based conceptualisation of resilience will become apparent in the later parts of the thesis, where the same concept is used to link the personal-level REF-ENG model to the resources and processes at an organisational level.

If the REF-ENG model operationalizes job demands that emphasise work-related self-activation (i.e. effort; subscale ACTIV) and job resources that emphasise the effect resource gain or loss has on perceived self-efficacy (subscale EFF) is correct, then

previously described interaction in which job resources have an especially high effect on work engagement, if concordantly elevated levels of job demands are present (Bakker *et al.*, 2007), is already inherently explained by the logic present in the REF-ENG model. In detail, the elevated ACTIV level that happens concordantly with an elevated EFF level is already the defining feature of the quadrant that corresponds to work engagement. Similarly, the effect of job resources in buffering the negative effects of demands on burnout risk emerges “*naturally*” from the REF-ENG model. The high ACTIV level that leads to a high EFF level, again, places individuals into the quadrant that corresponds to high work engagement. In the previously described situation we are not witnessing the buffering effect of resources on demands as proposed by the JD-R model, rather we are witnessing the work related self-activation that leads to a situation characterised by an increase in individual-level resources and self-efficacy, changing the nature of job demands faced from hindering to engagement-enhancing challenging demands. The same line of reasoning, as previously outlined, is also present in the COR theory, by which the resource gain that takes place immediately after the period of resource loss is seen as especially salient in terms of its positive value (Hobfoll 2011) – most likely due to the switch from the resource loss spiral to the resource gain spiral indicated by after-stress resource gains. Drawing on an example from real life, when effort does not lead to a positive outcome, the task commanding the effort will become increasingly straining. In those conditions, whether an employee whose small work-related victory gets noticed by a supervisor or a police rescue dog whose otherwise grim workday ends with a “*successful*” mock rescue act, the support received will not operate as a buffer against strain *per se*. Rather, the hint of the possibility of success will help one see their efforts under engagement enhancing-challenging job demand conditions (i.e. concordant high work-related self-activation with an instilled hope of being able to face the challenge).

As previously outlined, the REF-ENG model describes work engagement as an emotional state that emerges from an elevated level of ACTIV and EFF. The core affect theory that forms the basis for the REF-ENG model posits that emotional self-regulation is largely achieved through the regulation of the affective milieu underlying an emotional episode (Russell 2003). In detail, more situation specific components of emotional episodes can regulate the overall emotional tone of the situation by influencing the activity of the core affective processes. Therefore, it is reasonable to expect that employees are inclined to

self-regulate their working environment in a way that would facilitate the emergence of the engagement-related affective state (optimally high work-related self-activation with concordant experience of self-efficacy increase). Employees may therefore use challenging and quantitative job demand crafting as a way to regulate their affective state in respect to the ACTIV subscale and the crafting of different job resources as a way to influence their affective state in respect to the EFF subscale and achieve the desired work engagement state. This line of thought would also account for the repeatedly observed reciprocal relationships between work engagement, job resources, crafting of resources and challenging demands that are currently not adequately explained by the JD-R model (see Figure 2 for a graphical description of latest revision of the JD-R model).

To test this hypothesis, a mini literature overview has been conducted using a qualitative nomological mapping-based approach. Nomological network-based mapping was developed by Cronbach and Meehl (1955) to test the construct validity of proposed measurement instruments. In detail, the construction of the nomological network presumes the measurement of multiple constructs, followed by drawing out the associations between the constructs measured. Construct validity is assumed to be proven if the scale-related construct fits logically with other measured constructs included into the nomological network – i.e. having logical existent relations with the expected direction of other nodes of the network. The currently constructed network includes factors that describe the crafting of job resources and job demands, work engagement, job resources and job demands. Edges (links) between the nodes of the network have been drawn based on studies that have measured associations between at least two previously outlined constructs. Criteria-matching studies are outlined and briefly summarised in a table presented in Appendix 1. Literature-derived associations have been mapped onto a schematic nomological network that is presented in Figure 6.

Figure 6 shows that self-reinforcing literature-based associations between constructs can be ordered in a network, in a way that corresponds to the self-regulatory process described in the REF-ENG model and core affect theory (Russell 2003). Firstly, the level of challenging job demands, crafting of challenging job demands, and work engagement form one separate self-reinforcing cycle. Secondly, constructs of job resources, crafting of job resources and work engagement form a second separate self-reinforcing cycle.

Importantly, and in terms of the REF-ENG model logic, the unifying construct between two emergent cycles is work engagement. In other words, assuming the first challenge-related self-reinforcing cycle between constructs corresponds to self-regulation in respect to ACTIV subscale and the second resource-related cycle corresponds to self-regulation in respect to EFF subscale, a positive association between those two cycles and work engagement is expected. In terms of the structure of the REF-ENG model, the state of work-related anxiety is also coherently explainable on the basis of the constructed nomological network. In detail, hindering job demands are predominately characterised by their chronic and uncontrollable nature, implying the perceived loss of self-efficacy, which shifts the emotional state along the EFF axis to the left. Crafting hindering job demands, in turn, leads to work-related self-activation that happens under conditions perceived as uncontrollable (low EFF). Low EFF in conjunction with high ACTIV is the characteristic quadrant for work-related anxiety in the REF-ENG model.

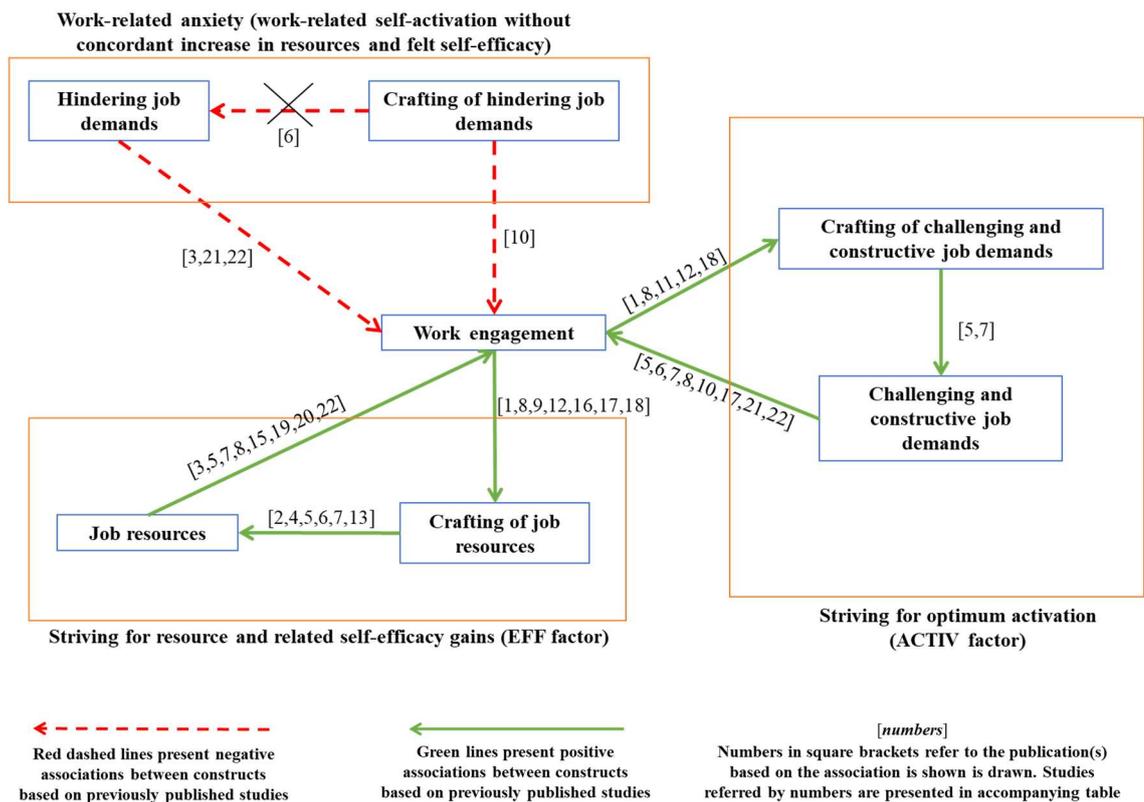


Figure 6. Nomological map of constructs related to work engagement, job resources, job demands and crafting of work resources and demands. Note: the numbers on the arrows correspond to the references presented in table in Appendix 1.

Source: (References are presented in a table in Appendix 1); figure created by author.

It is important to note that, similar to work engagement, burnout is often treated as a one-dimensional measure – i.e. the average across subscales is used to study the associations between burnout and other relevant constructs included in the study (for references see table in Appendix 1). The aggregability of work engagement and burnout may indicate that those psychological states are describable as “*wholesome*”. In other words, burnout and engagement can be seen as coherent psychological states that arise from systematically related sets of factors. The REF-ENG model sees this unity as related to the affective background created by ACTIV and EFF factors. If it is correct to see burnout and work engagement as emerging from systematically related sets of factors, then cynicism cannot be experienced in isolation. For example, having cynical attitudes towards one’s organisation or work implies the presence of at least some level of exhaustion (corresponds to low ACTIV) and lack of accomplishment (corresponding to low EFF). Table 3 presents the tentative matching of the REF-ENG scale implied subscales with the defining features of work engagement, burnout and components of the JD-R model.

Table 3. Proposed correspondence between REF-ENG model, JD-R model, burnout and work engagement

REF-ENG scale (model proposed by the current thesis)	JD-R model	Burnout definition	UWES work engagement scale
Work-related self-<u>activation</u> (<u>ACTIV</u>)	Job demands	Exhaustion	Vigour
Personal-level job resource gain or loss created perception of increase or decrease of self-<u>efficacy</u> (<u>EFF</u>)	Job resources & gain of job resources	Felt lack of accomplishment	Dedication
High engagement (high <u>ENG</u>) happening under high ACTIV and high EFF	Aggregated work engagement	Low cynicism	High absorption
Low engagement (low <u>ENG</u>) happening under low ACTIV and low EFF	Aggregated burnout (strain)	High cynicism	Low absorption
High work-related reflective state (high <u>REF</u>) happening under low ACTIV and high EFF	Not explicitly specified	Not explicitly specified	Not explicitly specified
Low work-related reflective state (low <u>REF</u>) happening under high ACTIV and low EFF	Not explicitly specified	Not explicitly specified	Not explicitly specified

Source: (right column after Schaufeli *et al.*, 2002; middle column after Maslach, Leiter 2016; JD-R column after Bakker, Demerouti 2017); table created by author of the thesis.

The current section of the thesis outlined the areas where REF-ENG model based associations between constructs can be used to either reinterpret or widen the logic presented in JD-R model and work engagement related research. The same work with theory formed the basis for proposing tentative matching between factors of REF-ENG model and JD-R model and core concepts used in work engagement/burnout related research. Of note, presented associations are strictly theory based, therefore hypothetical and tentative in their nature. Definitive structural matching between previously published models and REF-ENG model would require separate empirical study, in which scales

based on older theories are concordantly used with REF-ENG model based measure instrument.

2.3 Possible adaptability of switching between different affective and emotional-motivational states in the context of the REF-ENG model

Much of the research focused on work engagement seems to be grounded in the research programme proposed by positive psychology (Bailey *et al.*, 2017). The movement of positive psychology can be seen as a reaction to the mainstream theories from psychiatry and psychology that emphasise the understanding, prevention and treatment of negative psychological states (Seligman, Csikszentmihalyi 2000). In detail, the main idea behind the proposed research agenda is that, by only focusing on the negative aspects of everyday functioning, the factors that facilitate human flourishing will be under-studied. Therefore, the same logic, in its reversed form, can be applied to understand the blind spot inherent in positive psychology-carried work engagement and human-flourish-themed research. Namely, by only focusing on the positive sides of human functioning, another kind of theoretical parallel world is created – a set of models and concepts that cannot include the full and often functional nature of negatively valenced psychological states.

The REF-ENG model's key strength may lie in its ability to describe both negative and positive work-related psychological states in a unified and cohesively operationalised framework. Furthermore, if correct, a unified framework that includes multiple positive and negative states may, at a hypothetical level, help in understanding the dynamics of that model and the role this dynamic between psychological states may have in reaching adaptive work-related functioning. This section exemplifies this line of thought by two hypothetical theory-driven examples. The possible adaptive nature of work-related anxiety and burnout states and the dynamic between them is illustrated based on a mental contrasting-based goal-setting theory (Oettingen 2012; Oettingen *et al.*, 2012). Possible adaptability of switching between positively valenced emotional-motivational work-related states is illustrated based on Fredrickson's broaden-and-build theory of positive emotions (2004).

The mental contrasting (MC) theory is an experimentally and practically validated psychological theory that tries to explain the process of goal setting, commitment and motivation (for review, see: Oettingen 2012). The MC theory posits the presence of two general goal-related modes of thinking: dwelling and indulging. The dwelling state is constituted by present-situation-focused attention and thinking. Indulging, on the other hand, is constituted by future ideal-state-focused attention and thinking. Research performed in both a standardised laboratory setting and “*in the field*” has shown that interventions that direct subjects to combine indulging thinking with dwelling thinking modes in a way that, firstly, thinking about the idealised future state (indulging) is induced, followed by contrasting the idealised future state with the current situation, have a strong positive effect on promoting constructive goal choosing and striving. On the other hand, focusing solely on dwelling or indulging modes of thinking, or starting the mental contrasting from the present situation, either diminishes the positive effect or has a negative effect in facilitating constructive goal-striving behaviour (*Ibid.*).

Two insights from MC-related research have parallels with the processes contained in the model advanced by the current thesis and can therefore be used to illustrate the adaptive function of negative psychological states contained in the model. Firstly, mood states such as sadness that are characterised by low perceived energy (low ACTIV) and negative valence (low EFF) are natural “*psychologically in-built*” initiators of the mental contrasting process (Kappes *et al.*, 2011). Secondly, the motivational potential of the mental contrasting process depends on the feasibility assessment, given the possibility of bridging the difference between the idealised state and current reality. If the outlook on the probability of bridging this gap is positive, an affective state characterised by being energised is created. Therefore, the expectancy of reaching the desired future state (high EFF) with a concordant feeling of being energised (high ACTIV) constitutes the emergence of motivated goal-striving. Moreover, the reverse of the previously described process stands. In the case that an idealised goal is highly unlikely to reach, an overall de-energised affective state is created. Therefore, seeing the idealised future state as unattainable (low EFF), with a concordant feeling of psychological exhaustion (low ACTIV), forms the basis for adaptive goal rejection, as the pursuit of goals with little perceived possibility of success is irrational (Oettingen *et al.*, 2009).

In the context of the REF-ENG model, movement from the work-related anxiety state to burnout state is an adaptive change, if the resulting burnout state is present only acutely, therefore acting as a sad mood state-based initiator of the mental contrasting process. In detail, effort given under the context of diminishing returns will be experienced as increasingly straining (LePine *et al.*, 2005; Crawford *et al.*, 2010), which corresponds to the work-related anxiety quadrant of the REF-ENG model. Effort, especially if it is given under uncontrolled conditions, will induce a fatigued avoidant demotivated psychological state (Hockey, Earle 2006), which will move employees from the work-related anxiety state to the burnout state – a movement especially clear in the context of psychological states described with regard to the disengagement, cynicism and depersonalisation scales of the most widely used burnout scales (see Table 1 and 3 for details). The sad mood state inherent in the affective state of low ACTIV and low EFF therefore acts as a probable inducer of the MC process (Kappes *et al.*, 2011).

From this point forward, two further scenarios exist. Firstly, a positive scenario in which a future idealised situation, deemed achievable starting from a current state, will induce an energised motivated state and the associated constructive goal striving that at least gives hope for future success – i.e. moving to the quadrant of the REF-ENG model characterised by high EFF and high ACTIV. Therefore, the movement into the quadrant that corresponds to work engagement is initiated. Second, a negative scenario sees the sad mood state-induced mental contrasting lead to a realisation that an idealised state is unlikely to be achieved, which therefore leads to deepening of the burnout state characteristic, affective state of low ACTIV, and a feeling of no possibility of success (low EFF). The deepening of the burnout-state-related affective state will turn the possibly adaptive acute negative emotional state into a chronically negative mental state, thereby setting the stage for the resource loss spiral. The hypothetical scenario based on the REF-ENG model and MC model is depicted on Figure 7.

If proven empirically, the previously described MC theory-based process description will also help in planning more effective organisation-level interventions to prevent the burnout state from becoming chronic. For example, rather than passively supporting the employee under stress, focus should be directed to envisioning the idealised future state that is achievable based on the level of personal resources at hand. In detail, future

idealised state specific work goals should be set at a level of difficulty that is neither too easy nor too hard; here, the golden middle ground being the “*hormetic dose*” of challenges that lead to constructive self-mobilisation (higher ACTIV) and a resource gain initiated increase in subjectively felt self-efficacy (EFF).

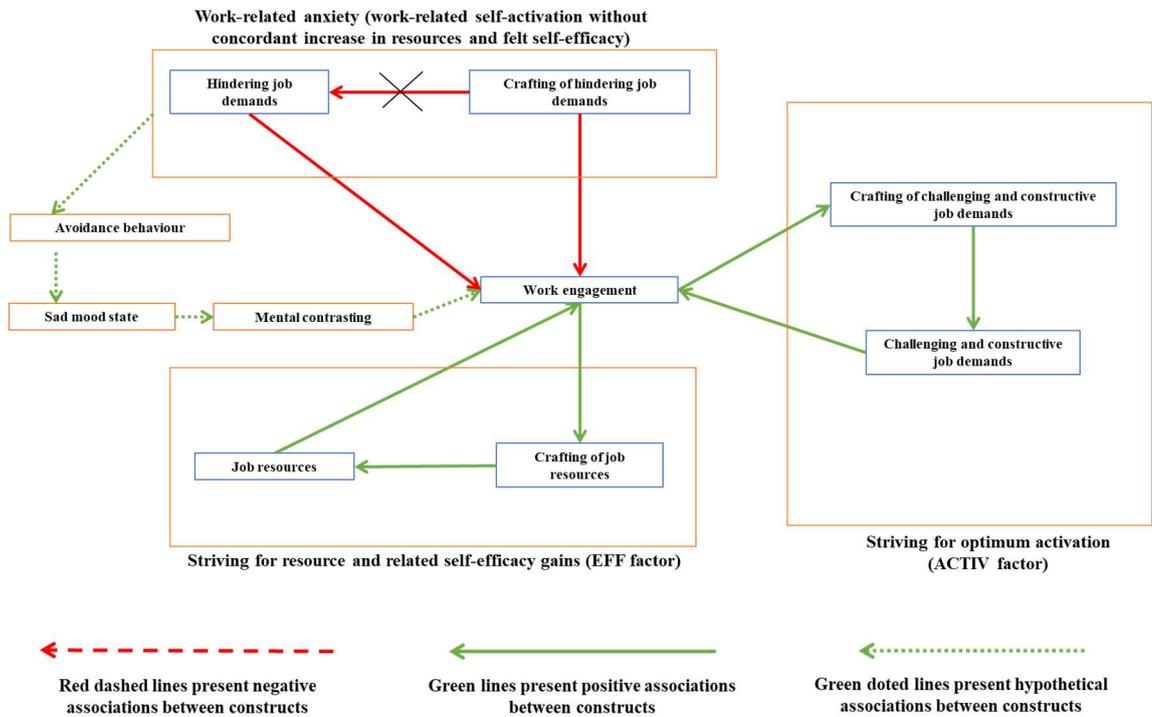


Figure 7. Possible adaptive role of negative mental states in our model based on the assumptions derived from mental contrasting theory.

Source: (Kappes *et al.*, 2011; Hockey, Earle 2006; Oettingen 2012); figure created by author.

The adaptability of switching between *extensive* (high REF) and *intensive* growth (high ENG) modes is tentatively put forward based on Fredrickson’s broaden-and-build theory of positive emotions (2004). This theory argues that positive emotions have two-fold beneficial effects in fostering resilience and resourcefulness. Firstly, in parallel to Panksepp’s PLAY-system (1998: 280-299), positive emotions lead to a *broadening* of one’s thought-action repertoire through the enhancement of creative and playful behaviours and thinking. Secondly, a positive affectivity related broadened thought-action repertoire forms the basis for *building* enduring resources, through predisposing the individual to engage in the constructive and adaptive behaviours needed for successful functioning (Fredrickson 2004; for review, see: Lyubomirsky *et al.*, 2005). In a sense,

positive affectivity is not only a consequence of previous success, but also an important prerequisite for achieving future success (Lyubomirsky *et al.*, 2005). Importantly, positive affectivity enhanced constructive behaviours also include actions that are executed in demanding and possibly threatening conditions – e.g. showing constructive patient compliance during treatment (Lyubomirsky *et al.*, 2005). Therefore, the resource *building* achieved through active constructive behaviours may correspond to the *intensive* mode of work-related growth (high ENG) as it includes behaviours that require effortful action.

The main message from the previously outlined theory in the context of the REF-ENG model is the conclusion that a positive affectivity-related increase in resourcefulness and resilience implies the parallel presence of *extensive* (*broaden*; high REF) and *intensive-instrumental* (*build*; high ENG) components. Figuratively speaking, during the state characterised as *extensive growth* (high REF), the question of what should be done and what is possible is answered by creatively widening one's perspective. On the other hand, *intensive growth* (high ENG) may facilitate the constructive exploitation of possibilities discovered under the state of high REF, therefore the question of how to do things well gets answered here. The same line of reasoning is present in *folk managerial neuroscience* that categorises people between groups of *right-brained* and *left-brained* (Ghadiri *et al.*, 2013: 21; 57). Here, the *right-brained* people being the employees who excel at holistic, big picture thinking and *left-brained* being the workers who are good at detail-oriented tasks.

This section of the thesis tried to exemplify the possible additional theoretical insight that the coherently integrated model of work-related affective and emotional-motivational states may offer. Two theory-based examples were drawn to exemplify how the dynamic interaction between different negative or positive psychological work-related states may offer additional avenues to understand processes that lead to work-related growth. Of note, previously presented scenarios must be seen strictly as speculative theory-driven propositions for future research. Still, the possibility of drawing such hypothetical scenarios based on the theory argues for the likely usefulness of the REF-ENG model. Theory-based models can have either a direct positive effect by providing direct explanatory power or their usefulness can be indirect, through the surfacing of new research questions that haven't been posed before.

2.4 Connecting personal-level work-related growth with organisational resources

The last subpart of the theory-building chapter of the thesis deals with the problem of unifying personal-level and organisation-level view. A recent overview of the JD-R model explicitly states the need to further the theory in order to account for the multilevel nature inherent in job resources and demands (Bakker, Demerouti 2018). This tension between organisation-level and personal-level focus is clearly evident when the third and the latest iteration of the JD-R model are compared (Bakker, Demerouti 2007; Bakker, Demerouti, 2017; see also Figures 1 and 2). The third revision of the JD-R model clearly has the organisational-level focus, while the latest iteration of the JD-R model focuses on explaining individual-level outcome job performance based mainly on person-level constructs (Bakker, Demerouti 2007; Bakker, Demerouti 2017; see section 2.2 of the thesis for details). The REF-ENG model is clearly focused on the individual-level. Therefore, the problem of connecting individual and organisational level is tackled, positing the connections the individual level *extensive* and *intensive growth* modes may have in fostering systemic organisational viability. Reasoning presented in this subsection is mainly based on theories originating from the fields of organisational cybernetics and system theories. Of note, theories presented in this chapter also form the basis for the constructed organisational climate measurement instrument⁵, which is used in the empirical part to explore the connections between organisational level variables and the REF and ENG constructs included in the REF-ENG model.

Ashby's law of requisite variety (ARV) is derived from the general systems theory, which describes fitness in terms of the balance between controlling systems and the systems being controlled (Ashby 1957: 195-218). ARV has been a widely used heuristic principle that has been incorporated into the founding models of organisational cybernetics and system theories (for a review, see Jackson 2003). Furthermore, ARV has been emphasised in the theory development process of strategic management theoretician and researcher Max Boisot. His theoretical contributions have evolved around seeing organisation as an

⁵ In the context of the thesis and following Denison (1996), organisation climate is seen as a quantifiable (i.e. measurable by questionnaire and comparable between organisations) surface-level manifestation (e.g. behavioural manifestations) of underlying organisational culture the organisation under study exhibits. Although, the distinction between culture and climate in the context of research is somewhat arbitrary and unclear (*Ibid.*).

informational system, thereby understanding organisational phenomena such as knowledge creation and sense-making as conceptual and mathematical machinery loaned from information, complexity and cybernetic theories (for a review, see: Boisot *et al.*, 2007).

The second major stream of organisational research guided by ARV originates from Stafford Beer's theory of the Viable System Model (VSM) (1972, 1985). Beer's VSM has been a feature of active research since its introduction in 1972/1985, in addition to being the basis for many further theoretical developments and derivative models (Ackoff 1994; Schwaninger 2009; Dietz 2006; Espejo, Reyes, 2011; Perez-Rios 2012). In many ways, Beer's thinking can be seen as ahead of its time – for example, by exemplifying the power and flexibility inherent in designing an organisation, in a way that corresponds to the logic of handling the complexity and distributed optimisation of artificial multi-layered (deep) neural networks (Pickering 2004; Espejo, Reyes 2011: 3-18; 115-134). This was around three decades before neural networks became a mainstream research interest.

In connection to the current work, Beer's VSM model emphasises two main aspects of theorising about organisations that are only now being highlighted as key research areas needing further focus: the multi-layered recursive nature of the organisation (Beer 1985; Espejo, Reyes, 2011: 49-111), and the dynamic handling of complexity in such systems over multiple time and abstraction horizons (Beer 1985; Jackson 2003; Schwaninger 2009; Espejo, Reyes, 2011: 49-111). As noted before, only the latest commentaries and developments of the JD-R model have emphasised the need to understand job resources and job demands in the context of organisational hierarchy and multilevel structures (Bakker, Demerouti 2018). The last question has been an active research topic in VSM-based studies, whereby the problem is how the variety (complexity related to problems) that is left un-dampened (unsolved) at one level is carried over to the next organisational level and, more importantly, how to design organisational and functional roles in a way that would allow the variety to be effectively handled in a systemic multi-levelled manner (Beer 1985; Schwaninger 2009; Perez-Rios 2012; Espejo, Reyes 2011). To paraphrase the previous question into the context of the current thesis, the question considers how to construct an organisation as a system out of autonomic agents in a way that, if a locally

unsolvable problem is encountered, a constructive system-wide response could be initiated. Consequently, this would mean avoiding situations where agents are faced with structurally created and often chronic problems for which they lack the tools and resources to provide an adequate answer – a process that leads to the creation of self-efficacy decreasing hindering job demands. Alternatively, it entails how to partition a wider problem in a manner that would leave each agent and unit a meaningful and challenging but still solvable piece of the whole puzzle – a process that leads to the creation of self-efficacy facilitating challenging job demands.

The currently advanced conceptual model of linking personal-level *intensive* and *extensive growth* with organisational-level outcomes and resources is loosely based on the Ashby Space model suggested and used by Boisot and McKelvey (Boisot, McKelvey 2010; Boisot *et al.*, 2007: 48-76). The Ashby Space model is the organisation-level conceptualisation of state-space that emerges from plotting external variety against the instrumental repertoire of the responses possessed by the organisation. Constructed state-space has three regions: the ordered regime – an area where the internal repertoire of instrumental responses exceeds the external (perceived) variety, corresponding to a modernist understanding of organisations; the chaotic regime – an area where the internal repertoire of instrumental responses is overwhelmed by a (perceived) external variety of stimuli, which corresponds to a postmodern interpretation of organisation; and, finally, the complex regime that maximises viability by finding a balance between a variety of stimuli and variety of responses, which corresponds to the complexity-theory derived metaphor of “*being on the edge of chaos*”. As the perception of the external world and its complexity is not predetermined for the perceiving agent or system (Boisot *et al.*, 2007: 20), *extensive growth* of organisation-forming agents relates to the growth in respect to the stimulus variety axis. In other words, it is expected that the organisation in which the *extensive mode of growth* is high will be more open to environmental complexity – for example seeing its client base as constituted by varied segments, each of which is characterised by its own set of unique preferences (Schwaninger, Scheef 2016). Furthermore, *intensive growth* at the individual level is related to the enhancement of the organisation level’s constructive behaviour repertoire. In the context of the previously presented example, growth achieved through the work-related self-activation will lead to gains in the competencies and skills needed to fulfil the perceived differing needs of client

segments. The previously outlined conceptualisation of the relationship between individual-level *extensive* and *intensive growth* with organisation-level outcomes is also depicted on Figure 8.

Therefore, the maximum systemic viability is achieved if the perceived environmental variety is matched by an instrumental behaviour repertoire of corresponding variety. The same general idea is present in Boisot's (Boisot *et al.*, 2007: 15-47) conceptualisation of distinguishing between data, information and knowledge that have parallels with the widely-used SECI model of organisational learning (Nonaka *et al.*, 2008: 18-52; Nonaka, Konno 1998). Data, in this instance, relates to the perceiver's ability to differentiate between states present in the external world, information to the part of the data that becomes codified, and knowledge to the part of the information that starts to influence behaviour. In the context of our work, knowledge is the part of the information that becomes connected with instrumental behaviours. Such behaviour leads to an organisation-level ability to be viable in complex environments, by noticing the right aspects from the environment (having sufficient perceptive variety to notice critical aspects and alternatives) and being able to respond to those aspects efficiently (having the competences and skills to translate the understanding to the action level).

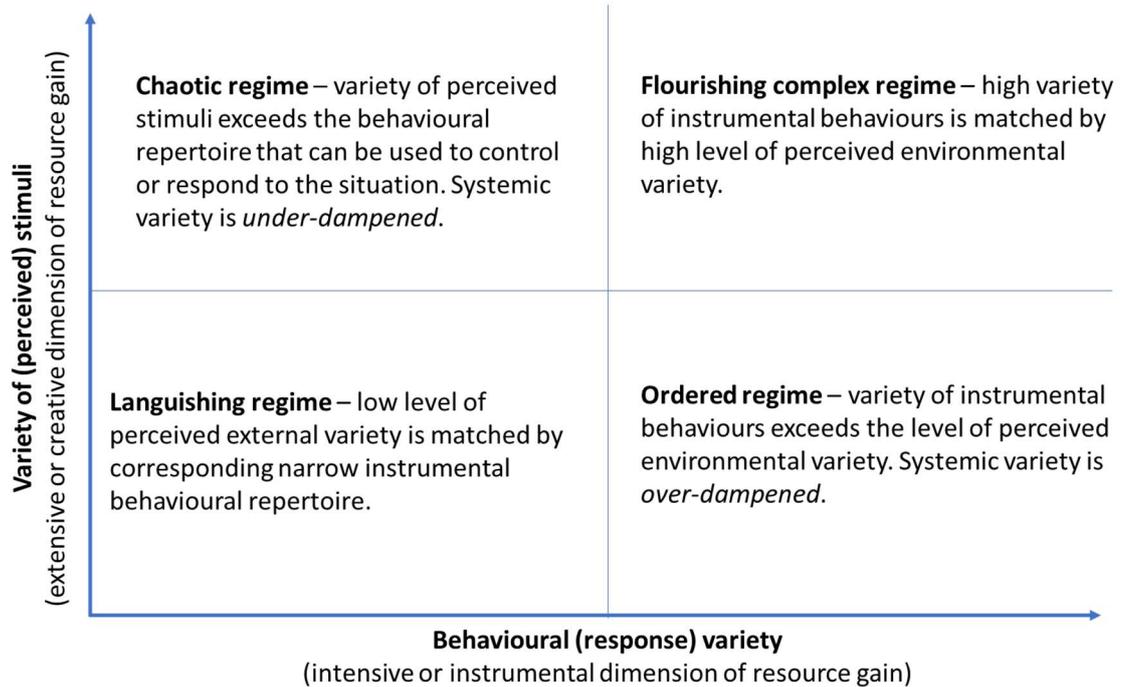


Figure 8. Conceptualisation of the relations between individual-level *extensive* and *intensive growth* with organisation-level outcomes.

Source: figure created by author.

The empirical analysis will test the association between perceived organisation-level variables and personal-level growth factors (REF and ENG) by searching for organisation-level variables across the factors of organisational climate that are predictors for either the REF or ENG factor related growth. The currently used data analysis strategy does not mean that personal-level REF- and ENG-related growth are strictly initiated by the organisational level factors. Instead, the reciprocal relationship between the personal and organisational levels is expected to be present. In detail, it is probable that the organisation and its way of “*doing things*” will influence the mode of growth selected. The predominant mode of personal-level work-related growth will potentially influence the properties of the organisational climate – e.g. culture, information exchange and leadership style. The empirical analysis will be presented in the next section of the thesis.

3. EMPIRICAL TESTING OF THE REF-ENG SCALE

3.1 The development of the REF-ENG scale and organisation climate measurement instrument scale

The following chapter will present the outline of the scale construction process that was carried out to create questionnaires to measure factors present in the REF-ENG model and organisational climate measurement instrument. The REF-ENG scale in its current form was first used in the survey based on the empirical part of the thesis has been completed. The organisational climate scale has been partially used for the last one and a half years, during which time the feasibility of using a scale with system-theories derived logic was tested. Initial feasibility checking yielded positive feedback from four different Estonian organisations.

In constructing the REF-ENG scale, the typical Likert scale-based approach was rejected in favour of a semantic differential-based approach in order to emphasise the continuums from burnout to engagement (ENG subscale) and from work-related anxiety to work-related reflectivity (REF subscale). Therefore, the final REF-ENG scale contains items that ask the respondent to give his/her answer by choosing between two opposite adjectives – e.g. the continuum that is defined by the adjective endpoints of bad and good. The questionnaire used a 7-point numerical scale ranging from “-3” to “+3” to collect respondents’ position between the adjective opposites, with the middle “0” being the neutral position. Having the number zero explicitly defined in the measurement scale is reason to interpret data collected by the REF-ENG scale as coming from an interval, rather than an ordinal, scale. Of note, giving feedback on the rating scale was compulsory for all respondents; therefore, the collected data on REF-ENG scales do not contain missing values. For the data analysis, the raw scores were converted from a “-3” to “+3” range to a “1” to “7” range.

The item construction process for scales started by wording the initial Likert scale items for the endpoints of the core-affect-related factors EFF and ACTIV and the four quadrants

implied by the core affect theory derived affective state-space (work-related anxiety, work engagement, work-related reflective state and work burnout). The usage of a semantic differential scale assumes that the adjectives used constituent polar opposites. Therefore, the pre-testing data collection was carried out with the initial item pool to find the items with the strongest negative correlation. Initial testing was carried out in English and used respondents recruited from a commercial survey response marketplace-like environment. Based on the data collected in pre-testing (data not shown), the final items for the REF-ENG scale were matched with the most suitable opposite adjective pairs and included in the respective subscale of the measurement instrument.

Following this, the qualitative interviews were carried out by two domain experts to select the most suitable opposite adjective pairs from the larger pool of items initially created. The item selection process emphasized the ease of comprehension and rateability. The domain area experts included two PhD students who have psychology-related educational backgrounds and have worked with questionnaires in professional or research settings. The qualitative informal consultations were based on the initial item pool in English. After making the final selection for items to be included in the final scale, the translation from English to Estonian was made. Later in the survey project, minor improvements suggested by the Estonian language expert and project team of the Estonian Unemployment Insurance Fund were incorporated to the scale. The final measurement instrument (in Estonian) is presented as an appendix to the thesis.

The organisational climate measurement instrument was constructed based on works that are predominantly derived from systems and organisation theories summarised in section 2.4 of the thesis. During the construction of an organisational climate measurement instrument, a somewhat unusual route was selected for the creation of the initial item pool. In detail, relevant articles and books were read while continuously searching for ideas in the material under scrutiny. The ideas and topic points that emerged from literature were weighted against important aspects of the functioning of organisations that have been repeatedly seen as either a critical success factors or a problem areas in surveys previously conducted in professional settings, but did not have a good corresponding measure in the currently existing narrower job satisfaction survey methodology. These joint efforts in wording candidate aspects and working through the relevant academic and

practitioner-oriented literature yielded, in total, 700 candidate aspects. These candidate aspects were then sorted into 23 prototypical thematic scales, and a further selection of items in terms of comprehension and expressive clarity was carried out by the scale. The first full-draft version of the organisational climate assessment instrument included around 240 aspects divided into 23 scales.

The full organisational culture instrument was tested with regard to content-level relevance in two group interviews with managers from the Estonian Unemployment Fund. It received generally positive feedback that particularly emphasised content-level relevance of the topics and views covered in the questionnaire. Managerial group format interviews resulted in the selection of 19 scales for inclusion in the final measurement instrument. In cooperation with the project team from the Estonian Unemployment Fund, clarifications and further selections in the item pool were made to achieve a better fit between the terminology used in the items of the questionnaire and the everyday language of the organisation. The current study will include 7 out of the 19 subscales included in the questionnaire used for data collection. These are as follows:

- Understanding short-term work-related goals in the context of long-term goals (in Estonian: *Tööalased eesmärgid ja strateegiline vaade*; abbreviation: STRAGOAL).
- Organisational learning (in Estonian: *Organisatsiooniline õppimine*; abbreviation: ORGLEA).
- Organisational culture that facilitates constructive co-operation (in Estonian: *Konstruktivset koostööd soosiv organisatsioonikultuur*; abbreviation: CONCUL).
- Organisational unity (in Estonian: *Organisatsiooniline ühtsus*; abbreviation: ORGU).
- Client-oriented organisational culture (in Estonian: *Kliendikeskne organisatsioonikultuur*; abbreviation: CLICUL).
- Flexible exchange of information (in Estonian: *Info liikumine*; abbreviation: INFOR).
- Trust-based leadership (in Estonian: *Usaldust loov juhtimiskultuur*; abbreviation: TRUCUL).

The seven selected subscales are those that have the clearest organisation-wide focus and are also most directly based on the VSM-model-specified five levels of functional organisational recursion (Beer 1985). Interestingly, the current literature-based effort to develop an organisational climate assessment instrument has outlined the same subscale-level topical focus points as the recently published diagnostic scale developed by organisational systems theorists Schwaninger and Scheef (2016). In contrast to the current theory-based approach, Schwaninger and Scheef used managerial samples to explore the aspects of organisational functioning that are seen as central factors in assuring organisational viability (*Ibid.*). Therefore, in addition to the psychometric validation of the seven proposed factors in the present work by the CFA procedure, some previous direct content-level corroboration to the currently proposed factors also exists.

Of note, the items described in the seven previously outlined scales are worded somewhat differently to the wording used in standard job satisfaction surveys. Based on the diagnostic and functional focus outlined in the VSM model (Beer 1985; Schwaninger 2009; Espejo, Reyes 2011; Perez-Rios 2012), descriptions about functional behaviours or role-fulfilling were presented to the survey participants who had to indicate whether the current situation in their working life accords with the description presented. Ratings for all organisational climate assessment scale items were given on a 7-point ratings scale with the option to not provide an answer available as an additional choice. Therefore, the scale-measuring aspects of organisational climate contain missing values that were replaced by a person-wise FIML (*full information maximum likelihood*) imputation procedure.

3.2 Overview of survey sample and data analysis procedures

The survey data used in current work were collected as part of the Estonian Unemployment Insurance Fund's yearly job satisfaction survey. As the organisation's goal was to widen the span of topics covered by the yearly survey, scales describing the organisation climate and work engagement, as conceptualised by current thesis, were included in the survey. A total of 782 invitations to participate in the survey were sent out to all the members of the organisation. The survey was conducted through an electronic questionnaire environment over a timespan of two weeks, whereby each invited employee

received a unique link to the questionnaire, which avoided the possibility of one employee giving his/her feedback twice. In total, 670 respondents gave their feedback, which resulted in a participation rate of 86%, indicating high interest for the survey project throughout the organisation. The organisational structure of the Estonian Unemployment Fund has two main groups: the central units and the regional units. The regional units are dominant in the organisational structure in terms of the number of staff employed, and the same pattern was observed in the survey sample, which contained 76% of staff from the regional offices. Due to the confidentiality agreement with the Estonian Unemployment Fund, no further detailed descriptive sample- and item-level data will be presented.

Data was analysed using statistical programming language R! version 3.4.0 interfaced via R Studio integrated development environment (IDE). R package *lavaan* version 0.5-23.1097 was used to carry out the confirmatory factor analysis (CFA) and structure equation modelling (SEM) based analysis (Rosseel *et al.*, 2017). A Henze-Zirkler test contained in the R package MVN (Korkmaz *et al.*, 2018) was used to test the presence of multivariate normality in the data. Multivariate normality is the conditional criteria to perform ML (maximum likelihood) based parameter estimation in SEM and CFA models (Beaujean 2014: 37-55). In the case of a situation where the presence of multivariate normality was rejected at the conventional level of significance ($p < 0.05$), a robust ML (MLR) estimation procedure with Huber-White robust standard errors was used, as specified by *lavaan*'s package reference documentation (Rosseel 2012). If a robust ML estimator was used, robust versions of fit indexes were interpreted to assess the SEM or CFA model fit on the data. Furthermore, usage of an MLR is followed by reporting *chi-square* test statistics corrected by a Yuan-Bentler scaling correction factor. Table 4 presents the fit indexes used in addition to the standard *chi-square*-derived p-value to assess the specified model's fit on the data. Alternative fit indexes to the *chi-square*-based fit assessment presented in Table 3 constituted the main criteria to assess fit between data and model, as the *chi-square*-based fit is sensitive to the sample size and is therefore not recommended for studies, as the current one, that use larger sample sizes (Beaujean 2014: 153-166). As different fit indexes are based on different assumptions, using varied fit indexes to assess model fit provides a more robust assessment of the model's fit on data (*Ibid.*).

CFA and SEM modelling results are presented graphically with corresponding fit indexes presented at the bottom of the figure. A fully standardized model solution is presented⁶ with only statistically significant ($p < 0.05$) factor loadings and covariance between latent variables (factors) presented. Standardised regression coefficients are presented with their respective significance value. Latent variables indicating the error terms of manifest variables are not explicitly presented. In the case of allowing covariance between two manifest variable-related error terms, the corresponding model parameter is presented with a detailed explanation given in the textual analysis, expanding the reasoning behind allowing covariance between error terms. Covariance between error terms is only allowed between the error terms of the manifest variables loading under the same latent variable.

Table 5 presents the overview of the main empirical analysis steps used in the study. For each analysis step the included factors and the aim of the task are outlined. Three main empirical subtasks were tackled by constructing different models for each task. Firstly, the theory-derived REF-ENG model based scale was tested for its fit to the data. Secondly, the psychometric properties of the organisational climate measurement scale were tested, as the explorative analysis to test associations between REF and ENG factors and organisation-level facets requires adequate psychometric functioning of the organisational climate measurement instrument. Thirdly, the associations between REF

⁶ If both the indicator variables and latent variables are standardized (i.e. the fully standardized solution of SEM model is used; *lavaan*'s notation *Std.all*) then the covariance between latent variables can be interpreted as correlations (Beaujean, 2014: 41). As noted before, the fully standardized solution is used in the current thesis. Indicator variables are manifest variables (e.g. questionnaire items) that are directly influenced by latent variables (factors) – i.e. the thinking behind a latent variable being the existence of a latent cause that manifests multiple questionnaire items, which causes these questionnaire items belonging to the same factor to have shared variance.

The fully standardized solution has another convenient property. Namely, the factor loadings can be interpreted as standardized regression coefficients (Beaujean, 2014: 41). As all the models in the current thesis allow the indicator variable to load under single latent variable only, the uniqueness and communality of each factor can be calculated directly from standardized factor loadings. For example, a standardized factor loading of 0.8 between the latent variable and manifest variable (both standardized) means that 64% (0.8 squared) of the variability observed in the manifest variable is explained by the latent variable (this measure being termed communality). Therefore, 36% (1-0.64) of the variability observed in the manifest variable has been left unexplained by the latent variable (this measure being termed uniqueness). (After Beaujean, 2014: 45-46).

and ENG factors with facets of organisational climate were tested. Of note, the model constructed for the last task included zero constraint set on the residual covariance between the factors REF and ENG.

Table 4. Fit indexes with literature-based suggested conventional cut-off values.

Fit measure/index (with conventional abbreviation)	Direction and bounds of the measure (overview by Beaujean, 2014)	Suggested cut-off value based on the relevant literature
Comparative Fit Index (CFI)	CFI values closer to 1.0 indicate better fit	Excellent fit is indicated if CFI value is 0.95 or higher (Hu, Bentler 1999); 0.97 or higher (Sivo <i>et al.</i> , 2006)
Root Mean Square Error of Approximation (RMSEA)	Values closer to 0.0 indicate better fit	Good fit is indicated by value less than 0.06 (Hu, Bentler 1999); mediocre fit is indicated by value around 0.08 (MacCallum <i>et al.</i> , 1996) very good fit is indexed by value 0.05 or less (Sivo <i>et al.</i> , 2006)
Relative Noncentrality Index (RNI)	RNI values closer to 1.0 indicate better fit	Very good model fit is indicated by value 0.95 or higher (Hu, Bentler 1999)
Tucker-Lewis Index (TLI)/ Bentler-Bonnet Non-Normed Fit Index (NNFI)	TLI/NNFI values closer to 1.0 indicate better fit	Very good model fit is indicated by value 0.95 or higher (Hu, Bentler 1999).

Source: (MacCallum *et al.*, 1996; Hu, Bentler 1999; Sivo *et al.*, 2006); table created by author of the thesis.

Table 5. Overview of empirical analysis used in the current study.

Task for empirical analysis	Method used	Factors included
Testing the proposed REF-ENG model for the fit on data	SEM	Exogenous latent variables ACTIV and EFF; endogenous latent variables REF and ENG
Testing the psychometric properties of the scale describing the facets of organisational climate	CFA	Exogenous latent variables: STRAGOAL; ORGLEA; CONCUL; ORGU; CLICUL; INFOR; TRUCUL
Explorative testing of the associations between organisation-level variables and person-level variables ENG and REF	SEM	Exogenous latent variables: STRAGOAL; ORGLEA; CONCUL; ORGU; CLICUL; INFOR; TRUCUL. REF and ENG added to the model as endogenous latent variables – i.e. seen as variables to be explained by facets of organisational climate.

Source: table created by author of the thesis.

With respect to the total contribution attempted by the current thesis, the role of the empirical part will be of lesser importance than that of the theory building section (chapter 2 of the thesis). The results emerging from the empirical part of the thesis will be briefly interpreted, as the questions set for data analysis directly depend on the theoretical synthesis presented in the second chapter of the thesis. Thereby, results that conform to the proposed model specification are already argued for by the synthesis presented in second chapter of this thesis. A more in-depth look is given to the results that either diverge from the pattern expected from the basis of the model advanced by the thesis or are more exploratory in nature (e.g. associations between factors of organisational climate and REF and ENG subscales).

3.3 Testing the REF-ENG scale on the data

Scale items included in the REF-ENG scale did not follow the multivariate normal distribution (Henze-Zirkler test statistic 2.91; $p < 0.01$ in respect to the alternative hypothesis of violation of multivariate normality). Therefore, an MLR estimator with robust Huber-White standard errors was used. The initial fitting of the theory-derived model was carried out as specified in the introductory chapter in Figure 5. Checking of modification indexes indicated the misfit of the model in respect to the item with code REF.1. In detail, the item with code REF.1 loaded under multiple factors (ENG, EFF) in addition to the initially expected REF scale. The misfit of REF.1 may be related to multiple behavioural aspects present in the positive polar end of the item, whereby both creativity and active trying are emphasised. REF.1 was one of the questionnaire items rephrased during the pre-survey consultations held with the Estonian language expert. The decision was taken to remove the item from the analysis, while noting that future trials should try to re-introduce the item in its original form. Initially, REF.1 emphasised only the aspect of creativity, while modifications added the emphasis on active action that may have caused the false loading in respect to the ENG factor, which is characterised by a higher activity level.

A further check of the initial model and suggested modification indexes hinted at the presence of covariance between error terms of item pairs ACTIV.1 and ACTIV.3 and EFF.1 and EFF.2⁷. Covariance between error terms means that the part of the variance left unexplained by the latent variable covaries between two questionnaire items. For example, based on the current study, the variance component left unexplained by the ACTIV factor in questionnaire items ACTIV.1 and ACTIV.3 covaries. Table 6 presents the three alternative models fitted to the data that differ in terms of handling the covariance between the error terms of previously named item pairs. In the first model

⁷ In the context of SEM-based modelling, the terms residual and error are often used interchangeably. E.g.: “*Error: The discrepancy between an observation’s actual value on a variable and the value predicted by the other variables in the model. The discrepancies’ variability represents the amount of variance in an endogenous variable not explained by the other variables in the model. Sometimes called a residual or disturbance*” (Beaujean, 2014: 191). In context of inferential statistics and regression analysis, residual and error terms differ in carried meaning. In detail, residual denotes the discrepancies between model-predicted values and observed values, while error denotes the difference between observed values and the true (almost always unobserved) population value of interest.

(M1), covariance between the error terms of item pairs is allowed; in the second model (M2) covariance is not allowed, and, in the third model, (M3) items ACTIV.1 and EFF.2 are removed. The fit indexes presented in Table 3 show that all three models have at least an adequate fit with the data. Furthermore, and most importantly, in respect to the main hypothesis tested by the thesis, all three models have the same directionality in terms of regressions between the core-affect-related factors EFF and ACTIV and narrower emotional-state-related factors ENG and REF.

The decision was made to accept model M1 for further analysis and interpretation. Firstly, keeping items ACTIV.1; ACTIV.3; EFF.1 and EFF.2 in the model allowed latent variables EFF and ACTIV to remain over-identified. Furthermore, M1 displayed a good to excellent fit with the data (see Table 6 for a list of criteria used to interpret fit indexes; see Figure 9 for M1 fit indexes and estimated model parameters). Secondly, the emergent covariance between the error terms of the items seems to have a reasonably arguable explanation.

In detail, items ACTIV.1 and ACTIV.3 describe work-demanded detail-oriented attention and emotional self-control, respectively. The suggested covariance between error terms related to items ACTIV.1 and ACTIV.3 seemed to depend on the subgroup of respondents who had direct interactions with clients (additional correlative analysis, data not shown). This tentative hypothesis was corroborated by comments written by employees who had direct client interactions as the main task of their daily work, whereby the quality of attention to clients at an informational level presumed the presence of a suitable interpersonal emotional context. All in all, it is possible that if an interaction with a client is emotionally demanding the self-activation capacity will be directed towards the emotional domain of the client interaction, therefore leaving less capacity to focus on detail-oriented aspects of client interaction (e.g. collecting the objective information about the client).

Covariance between error terms of items EFF.1 and EFF.2 seems to be related to the close wording of these two items. The first item (EFF.1) emphasises an increase in self-confidence and the second item focuses on increase in the perception of security in one's ability to cope (EFF.2). Content-level overlap between questionnaire items EFF.1 and EFF.2 may lead to an analogous situation commonly seen with reversed items, whereby

reversed- and positive-item-related error terms covary due to a close overlap between items at a content level. Therefore, in respect to items EFF.1 and EFF.2 further improvement of the scale’s psychometric properties may be achieved by introducing additional content-level differences between these two items.

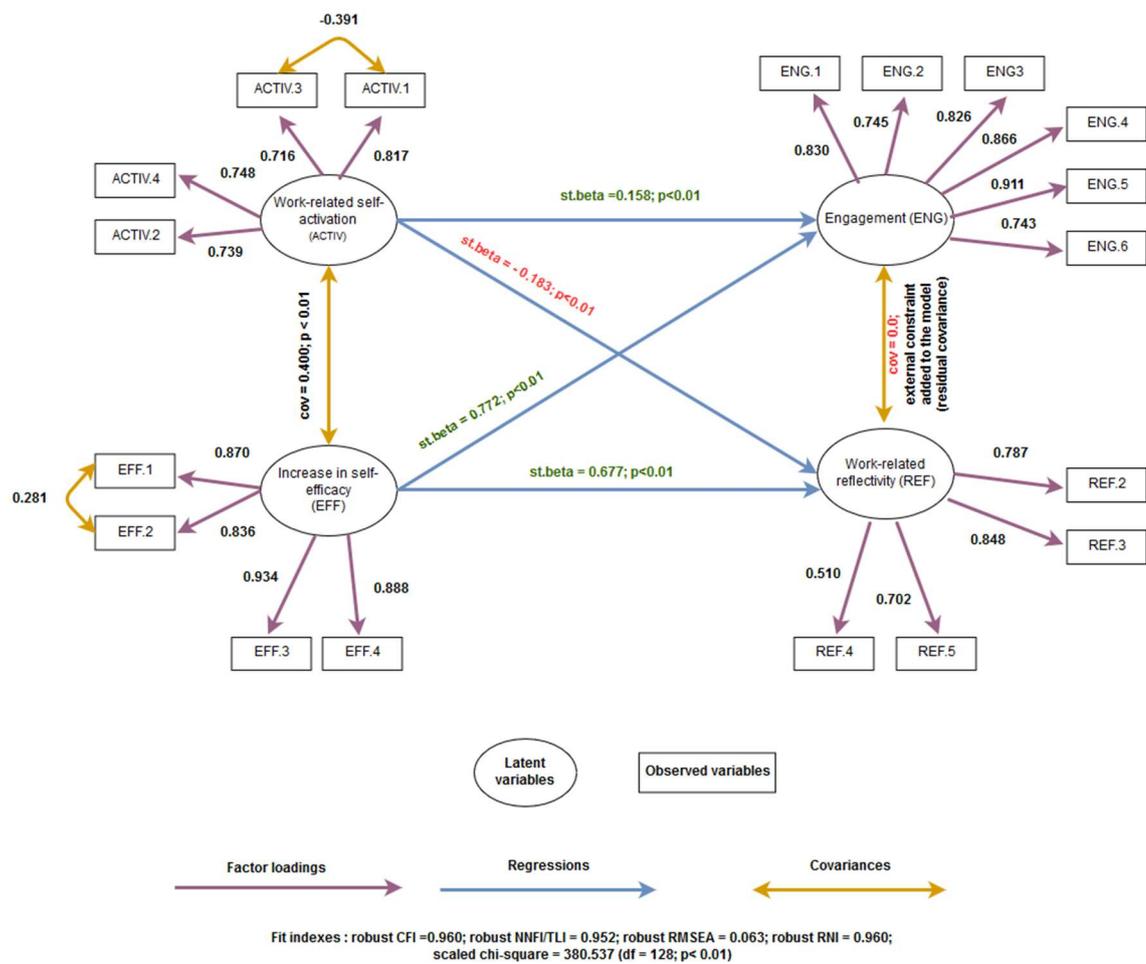


Figure 9. SEM-based testing of proposed model of work-related affective and emotional states (REF-ENG scale).

Source: figure created by author.

Table 6. Three alternative models of the REF-ENG scale in respect to specifying covariances between items EFF.1 and EFF.2 and between items ACTIV.1 and ACTIV.3

Fit measure or estimated model parameter	Model interpreted (with in-factor covariances) [M1]	Model without in-factor covariances [M2]	Model with items EFF.2 and ACTIV.1 removed [M3]
Robust CFI	0.960	0.952	0.970
Robust RMSEA	0.063	0.069	0.057
Robust RNI	0.960	0.952	0.970
Robust TLI/NNFI	0.952	0.943	0.964
Regression between ENG and ACTIV	0.158 (p < 0.01)	0.179 (p < 0.01)	0.113 (p < 0.01)
Regression between ENG and GAIN	0.772 (p < 0.01)	0.752 (p < 0.01)	0.804 (p < 0.01)
Regression between REF and ACTIV	-0.183 (p < 0.01)	-0.181 (p < 0.01)	-0.146 (p < 0.01)
Regression between REF and GAIN	0.677 (p < 0.01)	0.685 (p < 0.01)	0.642 (p < 0.01)
Proportion of variance in ENG factor explained by ACTIV and EFF	71.9%	70.8%	73.5%
Proportion of variance in REF factor explained by ACTIV and EFF	39.2%	39.3%	35.4%

Source: table created by author of the thesis.

Generally high communality is indicated by a high factor loadings characteristic to almost all the questionnaire items included in the REF-ENG scale (see Figure 9). Aside from factor REF.4 (communality at 26%), all the other items have a communality measure of 49% or higher – for most items nearly two-thirds of item-level variance is explainable by the respective factor. Therefore, most of the item-level variance observed in the data can be described by specified latent factors and regressions between latent factors.

Most importantly, the model and its estimated parameters as depicted in Figure 9 concord with the main hypothesis described by the formalized model in the theory-building chapter of the thesis. In detail, regressions included in the SEM model indicate that EFF is a positive predictor for both the *intensive mode of growth* (ENG) and *extensive mode of growth* (REF). Work-related self-activation (ACTIV) is a positive predictor for only the *intensive mode of growth* (ENG), while *extensive growth* (REF) is negatively related to the work-related self-activation (ACTIV). Of note, these results are obtained under the model specification, whereby the residual covariance between the ENG and REF factors was constrained to be equal to zero. Obtaining a good model fit under zero residual constraint indicates that the variance REF and EFF factors share can be fully explained by ACTIV and EFF factors. In other words, variance left unexplained in factors EFF and ENG by the affective background (factors ACTIV and EFF) does not covary. Variance of ENG and EFF that is unaccounted for by the affective background (factors ACTIV and EFF) is probably related to the situation-specific factors that emotional-motivational episodes carry. Overall, these results strongly support the presence of two independent modes of work-related growth. Firstly, both the REF and ENG factors are positively related to the EFF factor, with the context created by work-related self-activation (ACTIV) being the differentiator between *intensive* and *extensive modes of work-related growth*. Secondly, the part of the variance in ENG and REF that is not accounted for by the affective background created by ACTIV and EFF is fully independent.

The model tested included the hypothesis that more situation-specific emotional-motivational states depend largely on the underlying affective field created by ACTIV and EFF factors. Results in which 71.9% of variance in ENG and 39.2% of variance in REF emotional-motivational subscales are describable by the affective field created by the core affect related factors ACTIV and EFF strongly argue for the proposed hypothesis.

Furthermore, as the model constrained the residual covariance between the two endogenous factors REF and ENG to be zero, some tentative propositions can be made about the proportion of the role situation-specific factors have in creating those two emotional-motivational states. In detail, it seems that work-engagement is strongly influenced by core affect created milieu, while the work-related reflective state is more dependent on situation-specific factors.

3.4 Testing the organisational climate measurement scale on the data

Scale items included in the organisational climate assessment scale did not follow the normal multivariate distribution (Henze-Zirkler test statistic 1.34; $p < 0.01$ in respect to the alternative hypothesis of violation of multivariate normality). Therefore, an MLR estimator with robust Huber-White standard errors was used.

Fitting the 7-factor model on the data yielded a good fit with modification indexes, indicating the presence of covariance of error terms between in-factor item pairs ORGLEA.2 and ORGLEA.3 and STRAGOAL.3 and STRAGOAL.4. A closer inspection of the highlighted items at a content level revealed the probable cause and explanation for the observed covariance between error terms of manifest variables. Subscale STRAGOAL describes the iterative strategy-making process, whereby each item is interpretable as a step in a larger process. At the content level, the item pair of STRAGOAL.3 and STRAGOAL.4 constitutes the most apparent procedural relationship in STRAGOAL factor items, whereby the observable organisational behaviour described in STRAGOAL.4 presumes the observable organisational behaviour described in item STRAGOAL.3. The same logic applies for the error covariance observed between items ORGLEA.2 and ORGLEA.3, whereby observable behaviour in aspect ORGLEA.2 is a strong precondition for the organisational behaviour described by item ORGLEA.3. Overall, the decision was made to keep the previously outlined in-factor item-level error term covariances, as they seem to be logically explainable at a content level.

The CFA model attached to the data is presented in Figure 10. Relevant fit indexes show a good match between the data and the model. Furthermore, high factor loading across the items included in the analysis indicates the presence of a high average communality

level. Therefore, the majority of the item-level variance is accounted for by the latent variables specified in the model.

On the negative side, CFA results indicate high covariance between factors that increase the difficulty of assessing the association between organisational climate factors and ENG and REF factors. In detail, highly correlated exogenous variables introduce the problem of multicollinearity if used in regression analysis. As the author is not familiar with any previously published studies that would act as guidance to solve the described multicollinearity problem in the context of the SEM technique, the following analytical strategy was used. Firstly, a separate SEM model that included all seven factors of the organisational climate measurement instrument in addition to ENG and REF factors was constructed. The specified SEM model included regressions with ENG and REF factors as endogenous variables to be described by exogenous factors that depict facets of organisational climate. Of note, the ENG and REF factors were constrained to have zero residual covariance. Subsequently, independent variables (factors of the organisational climate assessment scale) were removed one by one based on the biggest non-significant p-value. This step was repeated iteratively by refitting the SEM model until only statistically significant exogenous factors describing REF and ENG were left.

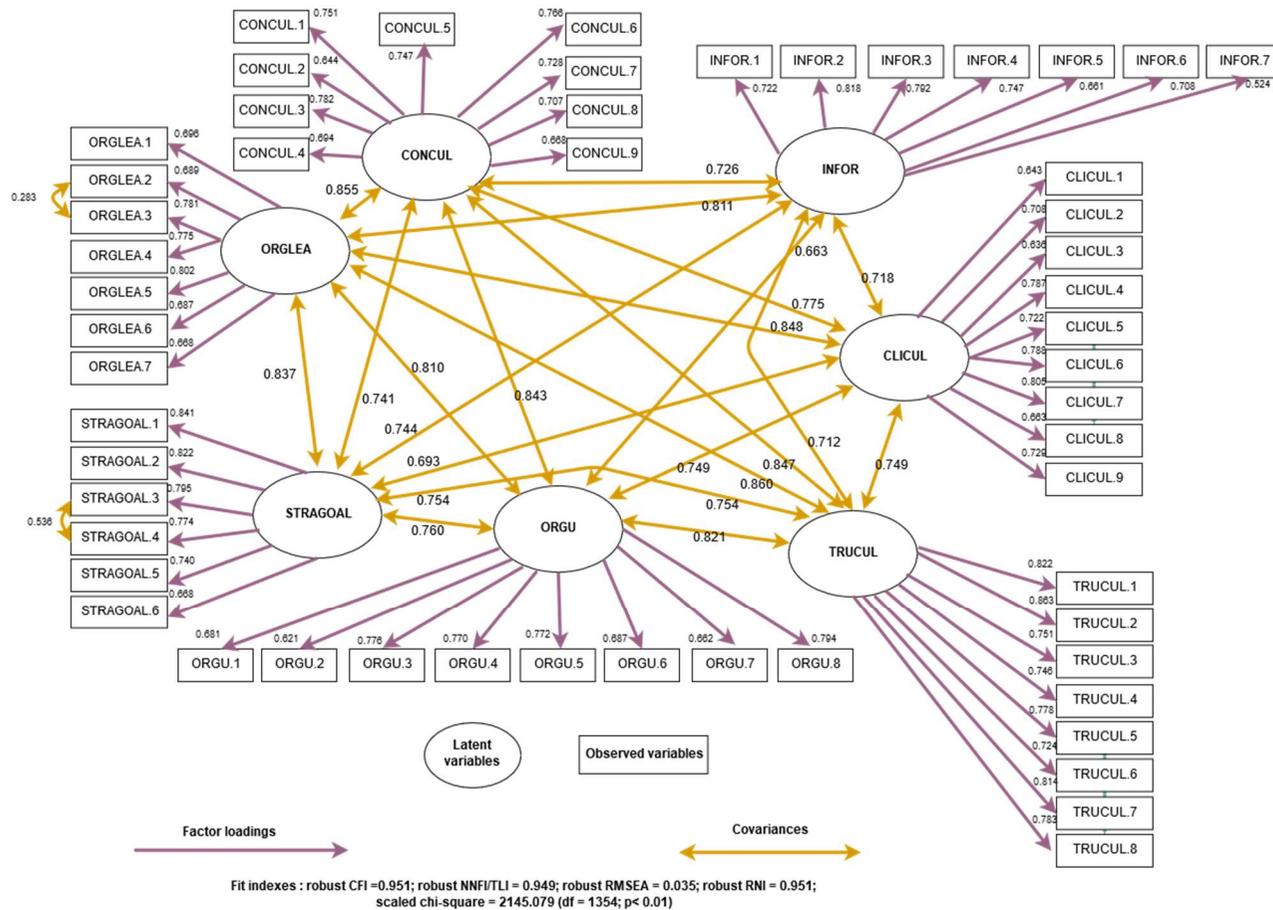


Figure 10. Confirmatory factor analysis of preliminary organisational climate measurement instrument.

Source: figure created by author.

The resulting SEM model had good to moderate fit index values (robust CFI = 0.942; robust NNFI/TLI = 0.940; robust RMSEA = 0.042; robust RNI = 0.942; scaled *chi-square* = 3114.610 (df = 1925; $p < 0.01$)). As an end result of the iterative model fitting as described above, two unique significant predictors for both ENG and REF emerged. The ENG factor was predicted by organisational climate factors STRAGOAL (standardized regression coefficient: 0.300; $p < 0.01$) and ORGU (standardized regression coefficient: 0.273; $p < 0.01$). As a reminder, the STRAGOAL factor described the understanding of short-term work-related goals in the context of long-term goals and ORGU described organisational unity in terms of power distance and emancipatory culture. These two factors of organisational climate explained 29% of the variance in ENG. The REF factor was predicted by organisational climate factors CLICUL (standardized regression coefficient: 0.265; $p < 0.01$) and INFOR (standardized regression coefficient: 0.164; $p < 0.05$). To repeat, the CLICUL subscale described client-focused organisational culture and the INFOR factor described intra-organisational informational flows that are modifiable by the employee, thus allowing for timely and efficient information flows, while simultaneously avoiding the information overload. The main message from the explorative analysis between work-related emotional-motivational states and the facets of organisational climate is the result, by which the *intensive* mode of work-related growth (ENG) and *extensive* mode of work-related growth (REF) are predicted by different organisation-level factors. Therefore, *intensive* and *extensive* modes of work-related growth, in addition to being highly separable at a measurement model level (see Figure 9), are further differentiated by having unique organisational level resources associated with them.

3.5 Possible relevance of the REF-ENG model to HR practitioners and possible further research directions

The main message emerging from the theoretical and empirical work carried out by the current thesis is the support for the notion that work-related emotional-motivational states carry two-level organising logic. Different emotional-motivational states (work engagement; burnout; work-related anxiety and work-related reflective state) emerge from the affective background shaped by the work-related personal resource gain created

perception of an increase in self-efficacy (subscale EFF) and work-related self-activation level (subscale ACTIV). This affective milieu accounts for all the covariance that emotional-motivational subscales ENG (corresponding to work engagement and burnout state) and REF (corresponding to work-related reflectivity and work-related anxiety) exhibit. Therefore, the overarching role ACTIV and EFF subscales have in ordering relations between more situation-specific subscales, ENG and REF, is indicated. Subsequently, the ACTIV and EFF created emotional-motivational state-space also accounts for the emergence of two distinct modes of work-related personal resource and perceived self-efficacy gain.

Preliminary results based on the current sample suggest that the effect of the affective milieu is especially strong for work-engagement, with almost 72% of variance in the ENG subscale described by the background created by the EFF and ACTIV subscales. These empirical results are in strong agreement with the literature overview presented in subsection 2.2 of the thesis, whereby work engagement is fostered by concordant crafting of work resources (corresponds to increase in EFF subscale) and job demands (corresponds to increase in ACTIV subscale). Agreement between the current empirical results and the results of the literature overview adds weight to the assumption that the ACTIV subscale corresponds to job demands and the EFF subscale corresponds to person-level resources.

The understanding that work engagement is strongly dependent on concordant presence of perceived increase in self-efficacy (EFF) and high work-related self-activation may be useful in carrying out workplace interventions, such as job (re)design, that are aimed at increasing the employee work engagement level. It seems probable that interventions concordantly focused on fostering employees' perceived self-efficacy (subscale EFF), while simultaneously increasing the work-related controllable demands, might have an especially strong effect on the level of work-engagement. As for the hypothetical example, work-related training that provides employees with new skills, allowing them to solve more complex work-related problems (increase in EFF), will probably have an especially high effect on work engagement if the training is closely followed by actual demanding job tasks that require those new skills (increase in ACTIV). Created affective context of high ACTIV and high EFF will probably lead to the attribution whereby new

demanding job tasks are seen as challenging, which is one of the defining features of work engagement by the REF-ENG scale.

On the other hand, if the training (increase in EFF) happens in the context of constant work-related demands, work-related reflectivity (subscale REF) rather than work engagement will be promoted. New skills will make existing job demands seem easier (reduced ACTIV), while constructive training will increase EFF. Thereby, the affective milieu corresponding to work-related reflectivity is created. Although, here lays the possibility that the emergent reflective state might be adaptable in its own unique way. Under the conditions of decreasing ACTIV and increasing EFF, the most adaptable way forward might be to increase one's behavioural variety by exploring new areas of work to which one could constructively contribute. Thereby, new work-related challenges are sought out that lead to an increase in ACTIV, which in the context of increased EFF will move the employee into the quadrant of the REF-ENG model that corresponds to work engagement. The last hypothetical scenario is another example of the possible adaptive role that switching between emotional-motivational states might have in the addition theory-based example presented in section 2.3 of the thesis.

The core affect theory posits that core affect is more visceral (bodily) than other constituent processes present in emotional episodes (Russell 2003; Posner *et al.*, 2005; Russell 2015). Therefore, the core affect created affective background, in addition to being partially modifiable by other constituent parts of emotional episodes, carries a bodily component that might be more biologically predisposed. Humans exhibit biologically regulated circadian rhythmicity (Czeisler *et al.*, 1999). Interestingly, stable trait-like interindividual differences exist in circadian activity regulation, by which people can be generally categorised on the activity preference continuum from *morningness* to *eveningness* (Adan *et al.*, 2012) that is sometimes also called chronotype (Roenneberg 2012). *Morningness* meaning the preference to wake-up early and go to sleep early, while *eveningness* means the preference for late wakeup time and late bed time (Adan *et al.*, 2012).

The lower extreme of the core affect activation/arousal dimension also encompasses the state of extreme sleepiness or even sleep (Russell 2003). If the hypothesis in which the core affect activation dimension corresponds to the ACTIV dimension of the REF-ENG

model is correct, then some interesting implications emerge for managing work-time and intraday distribution of diverse work-tasks. Based on the logic of the REF-ENG model, it would seem plausible that situations in which the work-related need for self-activation concords with the chronotype of the employee would facilitate the emergence of work engagement. On the other hand, situations in which the rhythm given by work-schedule is in strong discord with the chronotype of the employee would facilitate the emergence of burnout state. The employee him/herself probably has the most accurate knowledge about his/her chronotype. The findings that show flexible working hours increase work engagement and organisational commitment (Anderson, Kelliher 2009) and lack of flexible working hours increases burnout-related feeling of exhaustion (Kattenbach *et al.*, 2010) are in direct accord with the previously outlined scenario. Of note, the previous scenario is also an example of the possible explanatory power the REF-ENG model might offer in addition to outlining the associations between constructs on a descriptive level, as is done in two above cited studies (Anderson, Kelliher 2009; Kattenbach *et al.*, 2010). To conclude “*the sleepy section of the thesis*”, it would be interesting to carry out a future study that would concordantly measure the employee’s chronotype, work-time arrangement and work-engagement to test the above described hypothetical scenario in a systematic way.

The biggest potential value presented by the current thesis for practitioners is the conceptual map provided by the REF-ENG model. By avoiding simple outlining of different psychological states and focusing on presenting them in a systemic way, a framework is created that allows for more effective intervention planning. The above outlined hypothetical scenarios carry the overarching message; understanding the ACTIV and EFF created emotional-motivational state-space gives a more in-depth understanding about the situation at hand. Thereby, also allowing for more prepared interventions to be designed and chosen.

CONCLUSION

The current thesis aimed at developing a general model that could describe and systematize different work-related emotional-motivational states. The goal set for the thesis presumed the creation and initial empirical testing of a theoretical model and corresponding measurement scale (termed the REF-ENG model and scale). Initial testing of the REF-ENG model-based measurement scale yielded general support for the assumptions and hypotheses inherent to the model.

The REF-ENG model proposed by the thesis is based on the core affect theory (Russell 2003; Russell 2015). This theory sees emotional episodes as states that emerge from the affective background created by the activation and valence dimensions. The REF-ENG model advanced by the current thesis tried to translate the two-tier logic of the core affect theory to organisational context. The REF-ENG model includes four factors: work-related self-activation (ACTIV), resource gain related increase in perceived self-efficacy (EFF), work-related reflective state (REF) and work engagement (ENG). In detail, the REF-ENG model posits that work-related resource gain and related self-efficacy increase (EFF) can be seen as corresponding to the valence dimension and work-related self-activation (ACTIV) can be seen as corresponding to the activation dimension. In turn, the core affect related dimensions ACTIV and EFF create an organising background that allows for more specific work-related emotional-motivational states to emerge. Those narrower emotional-motivational states can be described by two subscales. Firstly, the subscale ENG that encompasses the continuum from burnout (low ACTIV; low EFF) to work engagement (high ACTIV; high EFF). Secondly, the subscale REF that encompasses the continuum from work-related anxiety (high ACTIV; low EFF) to work-related reflectivity (high EFF, low ACTIV). All in all, the REF-ENG model accounts for the narrower emotional-motivational states of work-related anxiety, work-related reflective state, work engagement and burnout by describing those states using the unified framework created by ACTIV and EFF factors.

Empirical testing yielded general support for the scale structure proposed by the REF-ENG model. As expected, regressions specified in the model indicated that ENG was positively associated with ACTIV in contrast to REF that was attenuated by ACTIV. In agreement with core affect theory, both REF and ENG were positively associated with EFF. Therefore, the pattern of regression coefficients accords with the core affect theory-derived logic inherent in the REF-ENG model.

Furthermore, the shared variance between subscales REF and ENG could be fully described by the underlying affective background created by ACTIV and EFF. Importantly, the independence of REF and ENG factors was confirmed by showing that the variance, not accounted by organizing affective background (residual variance), was independent (did not co-vary) between those two subscales. Therefore, the hypothesis that emerged during the theory construction phase, about the presence of two independent paths leading to work-related resources and related self-efficacy gain, was confirmed.

As the ENG-related increase in perceived self-efficacy happens under high self-activation, this state was termed *intensive growth*. Similarly, as the REF-related increase in EFF happens under low self-activation, this mode of growth was termed *extensive*. Additional exploratory analyses carried out to search for associations between REF and ENG and facets of organisational climate further confirmed the independence of those two work-related growth paths. The subscales REF and ENG were associated with different sets of organisational-level variables. In detail, REF was predicted by client-oriented organisational culture and flexible intraorganisational information exchange, while ENG was predicted by organisational unity and strategic goals that were divided into meaningful subtasks. The presence of the work-related growth mode described by the REF subscale is probably the most interesting and novel finding to emerge from the research effort carried out by the thesis. Therefore, the decision was made to title the thesis after this finding.

In order to show that the theory-building is not an attempt to reconceptualise the constructs of work engagement and burnout, much effort was given to show how the proposed REF-ENG model is related to established theories. In detail, structural correspondences between the REF-ENG model and JD-R model, work engagement and burnout definitions were outlined. Furthermore, problematic areas and open research

questions acknowledged by the more established theories were presented and interpreted in the framework offered by the REF-ENG model. The most novel theoretical contribution given by the current thesis is the synthesis carried out as part of the theory-building attempt. To the best of the author's knowledge, this is the first work that has tried to unify the core affect theory based psychological insights with previous findings from research based on the JD-R model and work engagement.

The current study has numerous limitations that must be addressed in future studies if further work with the REF-ENG model is to be carried out. The biggest limitation of the current study is its cross-sectional nature, which makes it more difficult to interpret the associations between organisation-level variables and those described at a person level. Furthermore, the data forming the basis for the current study have been collected from one organisation. Therefore, the generalisability and reproducibility of the models developed and tested by current thesis need to be re-evaluated in future studies based on new samples. As of now, the current dataset and the results based on that data carry a unique variability component related to the specialised nature of work carried out in an organisation, such as a national unemployment insurance fund. In detail, the currently used dataset has been collected from an organisation, active in the public sector, whose work is highly regulated by laws in addition to being engaged in a highly-specialised area relating to client-focused support services.

REFERENCES

1. **Ackoff, R.L.** *The Democratic Corporation: A Radical Prescription for Recreating Corporate America and Rediscovering Success.* Oxford University Press, 1994, 272 p.
2. **Adan, A., Archer, S. N., Hidalgo, M. P., Di Milia, L., Natale, V., Randler, C.** Circadian typology: a comprehensive review. – *Chronobiology International*, 2012, Vol. 29, No. 9, pp. 1153-1175.
3. **Alvesson, M.** Beyond neopositivists, romantics, and localists: A reflexive approach to interviews in organizational research. – *Academy of Management review*, 2003, Vol. 28, No 1, pp 13-33.
4. **Anderson, D., Kelliher, C.** Flexible working and engagement: The importance of choice. – *Strategic HR Review*, 2009, Vol. 8, No. 2, pp. 13-18.
5. **Ashby, W. R., Goldstein, J.** Variety, constraint, and the law of requisite variety (Reprint of 1968 W.R. Ashby's article with commentary by J. Goldstein). – *Emergence: Complexity and Organization*, 2011, Vol. 13, No.1/2, pp. 190-207.
6. **Ashby, W. R.** *An introduction to Cybernetics.* London: Chapman & Hall, 1957, 295 p.
7. **Bailey, C., Madden, A., Alfes, K., Fletcher, L.** The meaning, antecedents and outcomes of employee engagement: A narrative synthesis. – *International Journal of Management Reviews*, 2017, Vol. 19, No. 1, pp. 31-53.
8. **Bakker, A B., Demerouti, E.** The job demands-resources model: State of the art. – *Journal of Managerial Psychology*, 2007, Vol. 22, No. 3 pp. 309-328.
9. **Bakker, A B., Demerouti, E.** Job demands–resources theory: Taking stock and looking forward. – *Journal of Occupational Health Psychology*, 2017, Vol. 22, No. 3 273-285.
10. **Bakker, A. B., Albrecht, S. L., Leiter, M. P.** Key questions regarding work engagement. – *European Journal of Work and Organizational Psychology*, 2011, Vol. 20, No. 1, pp. 4-28.

11. **Bakker, A. B., Demerouti, E.** (2018). Multiple levels in job demands-resources theory: Implications for employee well-being and performance. Diener E., Oishi S., Tay, L. (Eds.), *Handbook of Well-Being (e-handbook)*. Salt Lake City, UT: DEF Publishers.
12. **Bakker, A. B., Demerouti, E.** Towards a model of work engagement. – *Career Development International*, 2008, Vol. 13, No. 3, pp. 209-223.
13. **Bakker, A. B., Demerouti, E., Euwema, M.C.** Job resources buffer the impact of job demands on burnout. – *Journal of occupational health psychology*, 2005, Vol. 10, No. 2, pp. 170-180.
14. **Bakker, A. B., Demerouti, E., Sanz-Vergel, A. I.** Burnout and work engagement: The JD–R approach. – *Annual Review of Organizational Psychology and Organizational Behavior*, 2014, Vol. 1, No. 1, pp. 389-411.
15. **Bakker, A. B., Demerouti, E., Verbeke, W.** Using the job demands-resources model to predict burnout and performance. – *Human Resource Management*, 2004, Vol 43, No. 1, pp. 83-104.
16. **Bakker, A. B., Hakanen J. J., Demerouti, E., Xanthopoulou, D.** Job resources boost work engagement, particularly when job demands are high. – *Journal of Educational Psychology*, 2007, Vol. 99, No. 2, pp. 274.
17. **Bakker, A. B., Rodríguez-Muñoz, A., Sanz Vergel, A. I.** Modelling job crafting behaviours: Implications for work engagement. – *Human Relations*, 2016, Vol. 69, No. 1, pp. 169-189.
18. **Bakker, A. B., Sanz-Vergel, A. I.** Weekly work engagement and flourishing: The role of hindrance and challenge job demands. – *Journal of Vocational Behavior*, 2013, Vol 83, No. 3, pp 397-409.
19. **Baumeister, R. F., Bratslavsky, E., Muraven, M., Tice, D. M.** Ego depletion: Is the active self a limited resource? – *Journal of Personality and Social Psychology*, 1998, Vol. 74, No. 5, pp. 1252 - 1265.
20. **Baumeister, R. F., Vohs, K. D., Tice, D. M.** The strength model of self-control. – *Current Directions in Psychological Science*, 2007, Vol. 16, No. 6, pp. 351-355.
21. **Beaujean, A. A.** *Latent variable modeling using R: A step-by-step guide*. Routledge, 2014, 205 p.

22. **Beer, S.** Brain of the Firm: A Development in Management Cybernetics. Herder and Herder, 1972, 320 p.
 23. **Beer, S.** Diagnosing the System for Organizations. Chichester: Wiley, 1985, 152 p.
 24. **Bipp, T., Demerouti, E.** Which employees craft their jobs and how? Basic dimensions of personality and employees' job crafting behaviour. – Journal of Occupational and Organizational Psychology, 2015, Vol. 88, No. 4, pp. 631-655.
 25. **Boisot, M. H., MacMillan, I. C., Han, K. S.** Explorations in Information Space: Knowledge, Agents, and Organization. Oxford University Press, 2007, 256 p.
 26. **Boisot, M., McKelvey, B.** Integrating modernist and postmodernist perspectives on organizations: A complexity science bridge. – Academy of Management Review, 2010, Vol. 35, No. 3, pp. 415-433.
 27. **Chen, C-Y., Yen, C-H., Tsai, F. C.** Job crafting and job engagement: The mediating role of person-job fit. – International Journal of Hospitality Management, 2014, Vol. 37, pp. 21-28.
 28. **Crawford, E. R., LePine, J. A., Rich, B. L.** Linking job demands and resources to employee engagement and burnout: a theoretical extension and meta-analytic test. – Journal of Applied Psychology, 2010, Vol. 95, No. 5 834.
 29. **Cronbach, L. J., Meehl, P. E.** Construct validity in psychological tests. – Psychological Bulletin, 1955, Vol. 52, No. 4, pp. 281-302.
 30. **Czeisler, C. A., Duffy, J. F., Shanahan, T. L., Brown, E. N., Mitchell, J. F., Rimmer, D. W., Dijk, D. J.** Stability, precision, and near-24-hour period of the human circadian pacemaker. – Science, 1999, Vol. 284, No. 5423, pp. 2177-2181.
 31. **Demerouti, E., Bakker A. B., Nachreiner, F., Schaufeli, W. B.** The job demands-resources model of burnout. – Journal of Applied Psychology, 2001, Vol. 86, No. 3, pp. 499-512.
 32. **Demerouti, E., Nachreiner, F.** Zur Spezifität von Burnout für Dienstleistungsberufe: Fakt oder Artefakt. – Zeitschrift für Arbeitswissenschaft, 1998, Vol. 52 pp. 82-89.
- Cross-referenced from: **Halbesleben, J. R., Demerouti, E.** The construct validity of an alternative measure of burnout: Investigating the English translation of the Oldenburg Burnout Inventory. – Work & Stress, 2005, Vol. 19, No. 3, pp. 208-

220.

Cross-referenced from: **Demerouti, E., Bakker A. B., Nachreiner, F., Schaufeli, W. B.** The job demands-resources model of burnout. – *Journal of Applied psychology*, 2001, Vol. 86, No. 3, pp. 499-512.

33. **Denison, D. R.** What is the difference between organizational culture and organizational climate? A native's point of view on a decade of paradigm wars. – *Academy of Management Review*, 1996, Vol. 21, No. 3, pp. 619-654.
34. **Dietz, J. LG.** *What is Enterprise Ontology?*. Berlin-Heidelberg: Springer, 2006, 244 p.
35. **Dreyfus H. L. D.** *Being-in-the-World: A Commentary on Heidegger's Being and Time*, Division, Cambridge, MA: MIT Press, 1991, 370 p.
Cross-referenced from: **King, M.** *Heidegger and Happiness: Dwelling on Fitting and Being*. A&C Black, 2011, 154 p.
36. **Espejo, R., Reyes, A.** *Organizational systems: Managing complexity with the viable system model*. Springer Science & Business Media, 2011, 264 p.
37. **Feldman Barrett, L.** (2015). Ten common misconceptions about psychological construction theories of emotion. Barrett, L. F., & Russell, J. A. (Eds.), *The Psychological Construction of Emotion* (pp. 45-79). Guilford Publications.
38. **Feldman Barrett, L., Russell, J. A.** (2015). An introduction to psychological construction. Barrett, L. F., & Russell, J. A. (Eds.), *The Psychological Construction of Emotion* (pp. 1-17). Guilford Publications.
39. **Fredrickson, B. L.** The broaden-and-build theory of positive emotions. – *Philosophical Transactions of the Royal Society B: Biological Sciences*, 2004, Vol. 359, No. 1449, pp. 1367-1377.
40. **Gailliot, M. T., Baumeister, R.F., DeWall, C.N., Maner, J.K., Plant, E. A., Tice, D. M., Brewer, L. E., Schmeichel, B.J.** Self-control relies on glucose as a limited energy source: willpower is more than a metaphor. – *Journal of Personality and Social Psychology*, 2007 Vol. 92, No. 2, pp. 325-236.
41. **Ghadiri, A., Habermacher, A., Peters, T.** *Neuroleadership: A Journey Through the Brain for Business Leaders*. Springer Science & Business Media, 2013, 156 p.

42. **Gordon, H. J., Demerouti, E., Le Blanc, P. M., Bakker, A. B., Bipp, T., Verhagen, M. A.** Individual job redesign: job crafting interventions in healthcare – *Journal of Vocational Behavior*, 2018, Vol. 104, pp. 98-114.
43. **Hackman, J. R., & Oldham, G. R.** Development of the job diagnostic survey. – *Journal of Applied psychology*, 1975, Vol. 60, No. 2, pp. 159-170.
44. **Hakanen, J. J., Perhoniemi, R., Toppinen-Tanner, S.** Positive gain spirals at work: From job resources to work engagement, personal initiative and work-unit innovativeness. – *Journal of Vocational Behavior*, 2008a, Vol. 73, No. 1, pp. 78-91.
45. **Hakanen, J. J., Schaufeli, W. B., Ahola, K.** The Job Demands-Resources model: A three-year cross-lagged study of burnout, depression, commitment, and work engagement. – *Work & Stress*, 2008b, Vol. 22, No. 3, pp. 224-241.
46. **Harju, L. K., Hakanen, J. J., Schaufeli, W. B.** Can job crafting reduce job boredom and increase work engagement? A three-year cross-lagged panel study. – *Journal of Vocational Behavior*, 2016, Vol. 95, pp. 11-20.
47. **Heidegger, M.** *Being and time: A translation of Sein und Zeit.* SUNY press (translation by J. Stambaugh), 1996, 487 p.
48. **Heuvel, M., Demerouti, E., Peeters, M. C.** The job crafting intervention: Effects on job resources, self-efficacy, and affective well-being. – *Journal of Occupational and Organizational Psychology*, 2015, Vol. 88, No. 3, pp. 511-532.
49. **Hobfoll, S. E.** Conservation of resource caravans and engaged settings. – *Journal of Occupational and Organizational Psychology*, 2011, Vol. 84, No. 1, pp. 116-122.
50. **Hobfoll, S. E.** Social and psychological resources and adaptation. – *Review of General Psychology*, 2002, Vol. 6, No. 4, 307-324.
51. **Hobfoll, S. E.** The influence of culture, community, and the nested-self in the stress process: advancing conservation of resources theory. – *Applied Psychology*, 2001, Vol. 50, No. 3, pp. 337-421.
52. **Hockey, G. R. J., Earle, F.** Control over the scheduling of simulated office work reduces the impact of workload on mental fatigue and task performance. – *Journal of Experimental Psychology: Applied*, 2006, Vol. 12, No. 1, pp. 50-65.

53. **Hockey, R.** *The Psychology of Fatigue: Work, Effort and Control.* Cambridge University Press, 2013, 290 p.
54. **Hu, L. T., Bentler, P. M.** Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. – *Structural Equation Modeling: A Multidisciplinary Journal*, 1999, Vol. 6, No. 1, pp. 1-55.
55. **Inzlicht, M., Schmeichel, B. J., Macrae, C. N.** Why self-control seems (but may not be) limited. – *Trends in Cognitive Sciences*, 2014, Vol. 18, No. 3, pp. 127-133.
56. **Jackson, M. C.** *Systems thinking: Creative holism for managers.* Chichester: Wiley, 2003, 378 p.
57. **Kappes, H. B., Oettingen, G., Mayer, D., Maglio, S.** Sad mood promotes self-initiated mental contrasting of future and reality. – *Emotion*, 2011, Vol. 11, No. 5, pp. 1206-1222.
58. **Kattenbach, R., Demerouti, E., Nachreiner, F.** Flexible working times: Effects on employees' exhaustion, work-nonwork conflict and job performance. – *Career Development International*, 2010, Vol. 15, No. 3, pp. 279-295.
59. **King, M.** *Heidegger and Happiness: Dwelling on Fitting and Being.* A&C Black, 2011, 154 p.
60. **Kooij, D. T., Tims, M., Akkermans, J.** The influence of future time perspective on work engagement and job performance: the role of job crafting. – *European Journal of Work and Organizational Psychology*, 2017, Vol. 26, No. 1, pp. 4-15.
61. **Korkmaz, S., Goksuluk, D., Zararsiz, G.** MVN: an R package for assessing multivariate normality. – *The R Journal*, 2018, Vol. 6, No. 2, pp. 151-162.
62. **Kristof-Brown, A. L., Zimmerman, R. D., Johnson, E. C.** Consequences Of Individuals' fit At Work: A Meta-Analysis Of Person–Job, Person–Organization, Person–Group, And Person–Supervisor Fit. – *Personnel Psychology*, 2005, Vol. 58, No. 2, pp. 281-342.
63. **LeDoux, J.** Rethinking the emotional brain. – *Neuron*, 2012, Vol. 73, No. 4, pp. 653-676.
64. **LePine, J. A., Podsakoff, N. P., LePine, M. A.** A meta-analytic test of the challenge stressor–hindrance stressor framework: An explanation for inconsistent

- relationships among stressors and performance. – *Academy of Management Journal*, 2005, Vol. 48, No. 5, pp. 764-775.
65. **Lu, C. Q., Wang, H. J., Lu, J. J., Du, D. Y., Bakker, A. B.** Does work engagement increase person–job fit? The role of job crafting and job insecurity. – *Journal of Vocational Behavior*, 2014, Vol. 84, No. 2, pp. 142-152.
66. **Lyubomirsky, S., King, L., & Diener, E.** The benefits of frequent positive affect: Does happiness lead to success?. *Psychological Bulletin*, 2005, Vol. 131, No. 6, pp. 803- 855.
67. **MacCallum, R. C., Browne, M. W., Sugawara, H. M.** Power analysis and determination of sample size for covariance structure modelling. – *Psychological Methods*, 1996, Vol. 1, No. 2, pp. 130-149.
68. **Madrid, H. P., Patterson, M. G.** Measuring affect at work based on the valence and arousal circumplex model. – *The Spanish Journal of Psychology*, 2014, Vol. 17.
69. **Maslach, C., Jackson, S. E.** The measurement of experienced burnout. – *Journal of Organizational Behavior*, (1981), Vol. 2, No. 2, 99-113.
70. **Maslach, C., Leiter, M. P.** Understanding the burnout experience: recent research and its implications for psychiatry. – *World Psychiatry*, 2016, Vol. 15, No. 2, pp. 103-111.
71. **Muraven, M., Baumeister, R. F.** Self-regulation and depletion of limited resources: Does self-control resemble a muscle?. – *Psychological Bulletin*, 2000, Vol. 126, No. 2, pp. 247-259.
72. **Nielsen, K., Abildgaard, J. S.** The development and validation of a job crafting measure for use with blue-collar workers. – *Work & Stress*, 2012, Vol.26, No. 4, pp. 365-384.
73. **Nielsen, K., Antino, M., Sanz-Vergel, A., Rodríguez-Muñoz, A.** Validating the Job Crafting Questionnaire (JCRQ): A multi-method and multi-sample study. – *Work & Stress*, 2017, Vol. 31, No. 1, pp. 82-99.
74. **Nonaka, I., Konno, N.** The concept of “ba”: Building a foundation for knowledge creation. – *California Management Review*, 1998, Vol. 40, No. 3, pp. 40-54.
75. **Nonaka, I., Ryoko, T., and Toru, H.** *Managing flow: A process theory of the knowledge-based firm.* Palgrave Macmillan UK, 2008, 252 p.

76. **Oettingen, G.** Future thought and behaviour change. – *European Review of Social Psychology*, 2012, Vol. 23, No. 1, pp. 1-63.
77. **Oettingen, G., Marquardt, M. K., Gollwitzer, P. M.** Mental contrasting turns positive feedback on creative potential into successful performance. – *Journal of Experimental Social Psychology*, 2012, Vol. 48, No. 5, pp. 990-996.
78. **Oettingen, G., Mayer, D., Timur Sevincer, A., Stephens, E. J., Pak, H. J., Hagenah, M.** Mental contrasting and goal commitment: The mediating role of energization. – *Personality and Social Psychology Bulletin*, 2009, Vol. 35, No. 5, pp. 608-622.
79. **Oldham, G. R., Hackman, J. R.** Not what it was and not what it will be: The future of job design research. – *Journal of Organizational Behavior*, 2010, Vol. 31, No. 2-3, pp. 463-479.
80. **Panksepp, J.** *Affective neuroscience: The Foundations of Human and Animal Emotions.* Oxford University Press, 1998, 480 p.
81. **Panksepp, J.** Can PLAY diminish ADHD and facilitate the construction of the social brain?. – *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 2007, Vol. 16, No. 2, pp. 57-66.
82. **Panksepp, J.** The basic emotional circuits of mammalian brains: do animals have affective lives?. – *Neuroscience & Biobehavioral Reviews*, 2011, Vol. 35, No. 9, pp. 1791-1804.
83. **Panksepp, J., Wright, J. S., Döbrössy, M. D., Schlaepfer, T. E., Coenen, V. A.** Affective Neuroscience strategies for understanding and treating depression: From preclinical models to three novel therapeutics. – *Clinical Psychological Science*, 2014, Vol. 2, No. 4, pp. 472-494.
84. **Perez Rios, J.** *Design and diagnosis for sustainable organizations: the viable system method.* Springer Science & Business Media, 2012, 250 p.
85. **Petrou, P., Demerouti, E., Schaufeli, W. B.** Job crafting in changing organizations: Antecedents and implications for exhaustion and performance. – *Journal of Occupational Health Psychology*, 2015, Vol. 20, No. 4, pp. 470-481.
86. **Pickering, A.** The science of the unknowable: Stafford Beer's cybernetic informatics. – *Kybernetes*, 2004, Vol. 33, No. 3/4, pp. 499-521.

87. **Posner, J., Russell, J. A., Peterson, B. S.** The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. – *Development and Psychopathology*, 2005, Vol. 17, No. 3, pp. 715-734.
88. **Roenneberg, T.** What is chronotype?. – *Sleep and Biological Rhythms*, 2012, Vol. 10, No. 2, pp. 75-76.
89. **Rosseel, Y.** Lavaan: An R package for structural equation modeling and more. Version 0.5–12 (BETA). – *Journal of Statistical Software*, 2012, Vol. 48, No. 2, pp. 1-36.
90. **Rosseel, Y., Oberski, D., Byrnes, J., Vanbrabant, L., Savalei, V., Merkle, E., Chow, M.** Package ‘lavaan’. [Retrieved: June, 17, 2017].
91. **Russell, J. A.** A circumplex model of affect. – *Journal of Personality and Social Psychology*, 1980, Vol. 39, No. 6, pp. 1161 - 1178.
92. **Russell, J. A.** Affective space is bipolar. – *Journal of Personality and Social Psychology*, Vol. 37, No. 3, 1979, pp. 345-456.
93. **Russell, J. A.** Core affect and the psychological construction of emotion. – *Psychological Review*, 2003, Vol. 110, No. 1, pp. 145-172.
94. **Russell, J. A.** Emotions are not modules. – *Canadian Journal of Philosophy*, 2006, Vol. 36, No. 1, pp. 53-71.
95. **Russell, J. A.** Is there universal recognition of emotion from facial expression? A review of the cross-cultural studies. – *Psychological Bulletin*, 1994, Vol. 115, No. 1, pp. 102-141.
96. **Russell, J. A.** (2015). My psychological constructionist perspective, with a focus on conscious affective experience. Barrett, L. F., & Russell, J. A. (Eds.), *The Psychological Construction of Emotion* (pp. 183-208). Guilford Publications.
97. **Sackett, P. R., Lievens, F., Van Iddekinge, C. H., Kuncel, N. R.** Individual differences and their measurement: A review of 100 years of research. – *Journal of Applied Psychology*, 2017, Vol. 102, No. 3, pp. 254 - 273.
98. **Salmela-Aro, K., Rantanen, J., Hyvönen, K., Tilleman, K., Feldt, T.** Bergen Burnout Inventory: reliability and validity among Finnish and Estonian managers. – *International Archives of Occupational and Environmental Health*, 2011, Vol. 84, No. 6, pp. 635-645.

99. **Schaufeli, W. B., Bakker, A. B., Salanova, M.** The measurement of work engagement with a short questionnaire: A cross-national study. – *Educational and Psychological Measurement*, 2006, Vol. 66, No. 4, pp. 701-716.
100. **Schaufeli, W. B., Salanova, M., González-Romá, V., Bakker, A. B.** The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. – *Journal of Happiness Studies*, 2002, Vol. 3, No. 1, pp. 71-92.
101. **Schaufeli, W. B., Taris, T. W.** (2014). A critical review of the Job Demands-Resources Model: Implications for improving work and health. Bauer, G F., Hämmig, O. (Eds.), *Bridging Occupational, Organizational and Public Health* (pp. 43-68). Netherlands: Springer
102. **Schwanger, M.** Integrative systems methodology: heuristic for requisite variety. – *International Transactions in Operational Research*, 1997, Vol. 4, No. 2, pp. 109-123.
103. **Schwanger, M.** *Intelligent organizations: Powerful models for systemic management* (2nd Edition). Springer Science & Business Media, 2009, 240 p.
104. **Schwanger, M., Scheef, C.** A test of the viable system model: Theoretical claim vs. empirical evidence. – *Cybernetics and Systems*, 2016, Vol. 47, No. 7, pp. 544-569.
105. **Seligman, M.E.P., Csikszentmihalyi, M.** Positive Psychology: An introduction. – *American Psychologist*, 2000, Vol. 55, No. 1, pp. 5–14
106. **Sivo, S. A., Fan, X., Witta, E. L., Willse, J. T.** The search for "optimal" cutoff properties: Fit index criteria in structural equation modelling. – *The Journal of Experimental Education*, 2006, Vol. 74, No. 3, pp. 267-288.
107. **Tims, M., Bakker, A. B., Derks, D.** Development and validation of the job crafting scale. – *Journal of Vocational Behavior*, 2012, Vol. 80, No. 1, pp. 173-186.
108. **Tims, M., Bakker, A. B., Derks, D.** Job crafting and job performance: A longitudinal study. – *European Journal of Work and Organizational Psychology*, 2015, Vol. 24, No. 6, pp. 914-928.
109. **Tims, M., Bakker, A. B., Derks, D.** The impact of job crafting on job demands, job resources, and well-being. – *Journal of Occupational Health Psychology*, 2013, Vol. 18, No. 2, pp. 230-240.

110. **Tims, M., Derks, D., Bakker, A. B.** Job crafting and its relationships with person–job fit and meaningfulness: A three-wave study. – *Journal of Vocational Behavior*, 2016, Vol. 92, pp. 44-53.
111. **Tracy, J. L., Randles, D.** Four models of basic emotions: a review of Ekman and Cordaro, Izard, Levenson, and Panksepp and Watt. – *Emotion Review*, 2011, Vol. 3, No. 4, pp. 397-405.
112. **Tsoukas, H.** (2010). Practice, strategy making and intentionality: a Heideggerian onto-epistemology for strategy as practice. Golsorkhi, D., Rouleau, L., Seidl, D., & Vaara, E. (Eds.), *Cambridge Handbook of Strategy as Practice* (pp. 47-62). Cambridge University Press.
113. **Van den Broeck, A., Vansteenkiste, M., De Witte, H., Lens, W.** Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. – *Work & Stress*, 2008, Vol. 22, No. 3, pp. 277-294.
114. **Warr, P.** The measurement of well-being and other aspects of mental health. – *Journal of Occupational and Organizational Psychology*, 1990, Vol. 63, No. 3, pp. 193-210.
115. **Warr, P., Bindl, U. K., Parker, S. K., Inceoglu, I.** Four-quadrant investigation of job-related affects and behaviours. – *European Journal of Work and Organizational Psychology*, 2014, Vol. 23, No. 3, pp. 342-363.
116. **Wingerden, J. V., Bakker, A. B., Derks, D.** A test of a job demands-resources intervention. – *Journal of Managerial Psychology*, 2016, Vol. 31, No. 3, pp. 686-701.
117. **Wright, J. S., Panksepp, J.** An evolutionary framework to understand foraging, wanting, and desire: the neuropsychology of the SEEKING system. – *Neuropsychoanalysis*, 2012, Vol. 14, No. 1, pp. 5-39.
118. **Wrzesniewski, A., Dutton, J. E.** Crafting a job: Revisioning employees as active crafters of their work. – *Academy of Management Review*, 2001, Vol. 26, No. 2, pp. 179-201.
119. **Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B.** Reciprocal relationships between job resources, personal resources, and work engagement. – *Journal of Vocational Behavior*, 2009, Vol. 74, No. 3, pp. 235-244.

APPENDICES

Appendix 1. Literature overview table for Figure 6.

Independent measure(s)	Dependent measure(s) or nested independent measure(s)	Outcome(s)	Design	Reference
Approach temperament (possible proxy for trait-level work-engagement)	Crafting job demands and job resources	Approach temperament predicted both seeking of job resources and job demands	Cross-sectional	Bipp, Demerouti 2015 [1]
Job crafting (manipulated through intervention)	Personal and organisational level job resources, in-role performance	Increase in job crafting-enhanced in-role performance (1-year later) and increased feedback, professional development and self-efficacy related resources.	Longitudinal intervention study with control group	Wingerden <i>et al.</i> , 2016 [2]

<p>Job resources and job demands</p>	<p>Work engagement; organisational commitment; work-related burnout and depression</p>	<p>Job demands as weak positive predictor for future burnout and weak negative predictor for future work engagement; job resources as weak positive predictor for future work engagement and weak negative predictor for future burnout; work engagement predictor for future organisational commitment</p>	<p>Longitudinal panel study</p>	<p>Hakkanen <i>et al.</i>, 2008b [3]</p>
<p>Job crafting (manipulated through intervention)</p>	<p>Personal and organisational job resources</p>	<p>In terms of personal resources, the difference between pre-post measures showed a lower level of negative emotionality and higher level of self-efficacy in the intervention group. At the level of organisational job resources, the intervention group had a higher leader-member exchange quality and developmental opportunities if pre-post levels in the intervention group were compared. Of note, conventional SEM analysis failed to find the expected results.</p>	<p>Longitudinal intervention study with control group</p>	<p>Heuvel <i>et al.</i>, 2015 [4]</p>

<p>Future time perspective</p>	<p>Crafting of job resources and both constructive and hindering demands; work engagement and in-role performance.</p>	<p>Increase in future time perspective over 1-year period increased constructive job demands and job resources, which, in turn, predicted increase in work engagement and job performance. Decrease in future time perspective decreased job demands and concordantly decreased work engagement and job performance.</p>	<p>Longitudinal study</p>	<p>Kooij <i>et al.</i>, 2017 [5]</p>
<p>Crafting structural and social job resources. Crafting challenging and hindering job demands.</p>	<p>Job resources; work engagement; job satisfaction and burnout.</p>	<p>Crafting structural and social job resources predicted increase in respective resources, which, in turn, increased engagement, job satisfaction and decreased burnout. Crafting challenging job demands did not result in decrease of respective job demands, but a notable increase in challenging job demands decreased burnout.</p>	<p>Longitudinal study</p>	<p>Tims <i>et al.</i>, 2013 [6]</p>

<p>Crafting of job resources and job demands</p>	<p>Work engagement and job satisfaction</p>	<p>Increase in challenging and quantitative job demands as a predictor for increases in work engagement. Increasing social job resources as a predictor for work engagement and job satisfaction.</p>	<p>Longitudinal study</p>	<p>Nielsen, Abilgaard 2012 [7]</p>
<p>Task-level job resources</p>	<p>Work engagement, personal initiative, future job resources</p>	<p>Task-level job resources predicted future work engagement. Work engagement predicted future personal initiative and future job resources. In addition, current personal initiative predicted future work engagement. Reciprocal relationships seem to indicate the presence of positive gain spiral.</p>	<p>Longitudinal (panel) study</p>	<p>Hakanen <i>et al.</i>, 2008a [8]</p>
<p>Crafting social and structural job resources</p>	<p>Own work engagement, dyad partner's job crafting behaviour and work engagement</p>	<p>Crafting own social and structural job resources related to higher work engagement. Crafting social resources led to higher crafting behaviour in dyads partners' work crafting behaviour that increased the dyads partners' work engagement.</p>	<p>Cross-sectional study with dyadic colleague pairs</p>	<p>Bakker <i>et al.</i>, 2016 [9]</p>

<p>Seeking resources and challenges, reducing demands, trait-level willingness to change</p>	<p>Seeking resources, seeking challenges, reducing demands, exhaustion and task performance.</p>	<p>Seeking resources predicted future task performance; seeking challenges reduced future exhaustion level; reducing demands increased future exhaustion and current exhaustion negatively affected future task performance.</p>	<p>Longitudinal study in organisation going through reorganisation</p>	<p>Petrou <i>et al.</i>, 2015 [10]</p>
<p>Intentions to craft hindering and challenging job demands and challenging resources (manipulated through intervention); work engagement</p>	<p>Work engagement; crafting of hindering and challenging job demands and challenging job resources; in-role performance</p>	<p>Intervention induced intentions to craft hindering and challenging job demands led to respective crafting behaviours. Crafting of challenging job demands was enhanced by high work engagement level. Only crafting of challenging job demands and resources (measured as one construct) led to increased work engagement, which resulted in increased in-role performance.</p>	<p>Longitudinal intervention study</p>	<p>Tims <i>et al.</i>, 2015 [11]</p>

<p>Individual job crafting and collaborative job crafting</p>	<p>Person-job fit and work engagement</p>	<p>Both individual and collaborative job crafting had a person-job fit mediated effect on work engagement (crafting increasing the fit, which, in turn, was related to higher engagement level). In addition, individual job crafting but not collaborative job crafting had a direct effect on work engagement.</p>	<p>Cross-sectional study</p>	<p>Chen <i>et al.</i>, 2014 [12]</p>
<p>Crafting of job resources, challenging and hindering job demands.</p>	<p>Work meaningfulness, person-environment fit</p>	<p>Crafting of job resources and both challenging and hindering job demands led to higher rating for person-environment fit, which resulted in higher rating for work meaningfulness.</p>	<p>Longitudinal (weekly) experience sampling study</p>	<p>Tims <i>et al.</i>, 2016 [13]</p>
<p>Intervention to increase job crafting behaviour</p>	<p>Job crafting behaviours, exhaustion and job performance (assessed “non-objective” performance)</p>	<p>Job crafting intervention increased job-crafting behaviour, work engagement, decreased exhaustion and increased rated work performance but not measured (objective) work performance.</p>	<p>Longitudinal intervention study with control group; two waves study</p>	<p>Gordon <i>et al.</i>, 2018 [14]</p>

<p>Job demands and resources</p>	<p>Composite Self Determination Theory derived basic psychological needs satisfaction component, vigour and exhaustion (proxy to work engagement)</p>	<p>Job demands weak predictors for psychological needs satisfaction but a strong direct predictor for exhaustion level. Job resources strong predictor for psychological need satisfaction and job-related vigour. Basic psychological needs partially mediated the effect of job demands and resources on exhaustion and vigour by being associated with lower exhaustion and higher vigour levels.</p>	<p>Cross-sectional study</p>	<p>Van den Broeck <i>et al.</i>, 2008 [15]</p>
<p>Work engagement, job insecurity</p>	<p>Relational and physical job crafting, demands-abilities fit, needs-supplies fit</p>	<p>Work engagement increased future physical and relational job crafting, that in turn increased demands-abilities fit and needs-supplies fit respectively. Job insecurity with concurrent high work engagement was a strong predictor for relational job crafting, while low work engagement and high job insecurity predicted low relational job crafting activity.</p>	<p>Longitudinal study</p>	<p>Lu <i>et al.</i>, 2014 [16]</p>

<p>Crafting structural and social job resources; crafting challenging demands; job boredom and work engagement</p>	<p>Crafting structural and social job resources; crafting challenging demands; job boredom and work engagement</p>	<p>Seeking challenges predicted increased resource-related job crafting behaviours, which, in turn, predicted further seeking of challenges. Seeking challenges also predicted lower future job boredom and higher work engagement. Work engagement predicted social and structural resources crafting, while job-related boredom lessened the subsequent structural resources crafting.</p>	<p>Longitudinal panel study</p>	<p>Harju <i>et al.</i>, 2016 [17]</p>
<p>Job crafting of resources (social and structural) and demands (hindering and challenging)</p>	<p>Peer-rated employability, work engagement, performance and crafting behaviour. Self-rated low work engagement (cynicism)</p>	<p>Crafting of social and structural resources and challenging job demands associated with lower cynicism and higher peer-rated employability, work engagement and performance. Self-rated job crafting behaviour strongly correlated with peer ratings across four identified dimensions.</p>	<p>Cross-sectional</p>	<p>Tims <i>et al.</i>, 2012 [18]</p>

<p>Job resources (appreciation, climate, innovativeness) and job demands (pupil misbehaviour)</p>	<p>Work engagement</p>	<p>Job resources predicted future work engagement, especially under the conditions of high job demands. The job demands and resources' interactional effect on work engagement was strongest for innovativeness.</p>	<p>Longitudinal study</p>	<p>Bakker <i>et al.</i>, 2007 [19]</p>
<p>Job resources and demands</p>	<p>Job-related burnout (negative work engagement)</p>	<p>Elevated level of job demands with low level of job resources strong predictor for elevated level of cynicism and exhaustion.</p>	<p>Cross-sectional</p>	<p>Bakker <i>et al.</i>, 2005 [20]</p>
<p>Hindering (uncontrollable work pressure) and challenging (emotional demands) job demands; personal resources</p>	<p>Work engagement and flourishing</p>	<p>Challenging job demands enhanced the effect of personal-level job resources (self-efficacy and optimism) on the level work engagement and flourishing composite score. Hindering job demands attenuated the effect of personal-level job resources (self-efficacy and optimism) on the level work engagement and flourishing composite score.</p>	<p>Longitudinal quantitative experience sampling</p>	<p>Bakker, Sanz-Vergel 2013 [21]</p>

<p>Challenging and hindering job demands, job resources.</p>	<p>Work engagement, work-related burnout</p>	<p>Challenging demands and job resources increased work engagement. Resources decreased work burnout. Hindering demands attenuated engagement and increase the level of burnout.</p>	<p>Meta-analytic structural equation modelling</p>	<p>Crawford <i>et al.</i>, 2010 [22]</p>
---	---	--	--	--

Source: (references are presented on the right column of the table); table created by author.

Appendix 2: REF-ENG scale (in Estonian)

LEGAL NOTE: REF-ENG scale is copyrighted by author of the thesis. Scale can be used in non-commercial settings without asking permission. Commercial usage of the scale implies expressed written permission by the author of the thesis.

Minu tööülesanded...

<i>... tekitavad minus tülpimust</i>	-3 -2 -1 0 1 2 3	<i>... pakuvad mulle positiivset väljakutset</i>	ENG.1
<i>... on suures plaanis mitte midagi tähendavad või muutvad</i>	-3 -2 -1 0 1 2 3	<i>... on tähenduslikud ja edasiiviivad kogu organisatsiooni jaoks</i>	ENG.2
<i>... on mind mittearendavad</i>	-3 -2 -1 0 1 2 3	<i>... on mind arendavad</i>	ENG.3
<i>... tähendavad nende täitmise korral ühe tüütu kohustuse lõppu</i>	-3 -2 -1 0 1 2 3	<i>... tekitavad läbi positiivse eneseületuse saavutustunnet ja uhkust</i>	ENG.4
<i>... on mind rõhuvad ja kurnavad</i>	-3 -2 -1 0 1 2 3	<i>... tekitavad minus entusiasmi ja huvi</i>	ENG.5
<i>... on oma olemuselt sellised, et proovin neid täita mõttes kohalolekuta ja minimaalselt pingutades</i>	-3 -2 -1 0 1 2 3	<i>... on minu jaoks piisavalt tähtsad, et parima tulemuse nimel isegi raskusi kohates endast maksimum anda</i>	ENG.6

Minu tööülesanded...

... on kurnavalt rutiinsed	-3 -2 -1 0 1 2 3	... on loovad ja uue proovimist võimaldavad	REF.1 (removed item)
... tekitavad hirmu või ärevust	-3 -2 -1 0 1 2 3	... on lõõgastavad	REF.2
... on pingelised	-3 -2 -1 0 1 2 3	... on mängulised	REF.3
... on tugeva ajalise survega	-3 -2 -1 0 1 2 3	... on mittepakilised	REF.4
... nõuavad minu oskuste juures suurt pingutust	-3 -2 -1 0 1 2 3	... ei nõua minu oskuste juures olulist pingutust	REF.5

Minu tööülesanded...

... vähendavad minu eneseusku	-3 -2 -1 0 1 2 3	... suurendavad minu eneseusku	EFF.1
... tekitavad minus muret	-3 -2 -1 0 1 2 3	... tekitavad minus kindlustunnet	EFF.2
... tekitavad minus soovi eemalduda	-3 -2 -1 0 1 2 3	... annavad mulle indu	EFF.3
... on perspektiivitud	-3 -2 -1 0 1 2 3	... pakuvad mulle uusi tegutsemisvõimalusi	EFF.4

Minu tööülesanded...

... uinutavad tähelepanu	-3 -2 -1 0 1 2 3	... nõuavad minult kõrgendatud tähelepanu	ACTIV.1
... toovad endaga kaasa vähe ootamatusi	-3 -2 -1 0 1 2 3	... toovad endaga kaasa ootamatusi ja üllatusi	ACTIV.2
... on emotsionaalselt vabad	-3 -2 -1 0 1 2 3	... nõuavad emotsionaalset enesekontrolli	ACTIV.3
... ei nõua minult pidevat olukorra tähelepanelikku jälgimist	-3 -2 -1 0 1 2 3	... nõuavad minult hetkeolukorrast head ülevaadet	ACTIV.4

KOKKUVÕTE

INSTRUMENTAALNE JA LAIALDANE TEE TÖÖALASE KASVUNI TÖÖALASE HAARAVUSE JA TÖÖALASTE RESSURSSIDE NING NÕUDMISTE MUDELI VAATES

Mait Metelitsa

Magistritöö seadis eesmärgiks tuumafekti teooriale (ing. k. *core affect theory*; ülevaateks: Russell 2003) tuginedes konstrueerida tööga seotud emotsionaalseid ja motivatsioonilisi seisundeid selgitav ja süstematiseeriv mudel. Väljapakutud mudel hõlmab endas kahte afektiivset baasdimensiooni, mis kirjeldavad tööalaste ressursside võitmist ja sellega seoses tajutud enesetõhususe kasvu (lühend: EFF) ning tööalast aktiveeritust (lühend: ACTIV). Kaks afektiivset faktorit loovad aluse, mille baasilt, afektiivset tausta situatsioonispetsiifilise infoga sidudes, saavad tekkida kitsamad tööga seotud emotsionaalsed seisundid, mida on mudelis kirjeldatud kahe faktoriga. Esiteks, kontiinum tööalasest läbipõlemisest kuni tööalase haaravuseni (ENG). Teiseks, vahemik tööalasest ärevusest kuni tööalase reflektiivsusest (REF). Need kaks kitsamat alaskaalat annavad ka magistritööga väljapakutavale mudelile nime: REF-ENG mudel.

Alaskaala ENG kõrgem otspunkt vastab afektiivsele seisundile, mida iseloomustab kõrge tööalane aktiveeritus ja samaaegne tajutud enesetõhususe kasv. Kõrge ACTIV ja EFF loodud tausta sidumine tööalase kontekstiga on arvatavalt seotud tööalase haaravuse seisundiga (ing. k. *work engagement*). Teisisõnu, ENG alaskaalal kirjeldatud seisundis toimub uute tööalaste ressursside võitmine ja tajutud enesetõhususe kasv aktiivse (instrumentaalse) püüdluse tulemusena. Seetõttu on ka ENG faktoriga kirjeldatud tööalast arengut nimetatud *instrumentaalseks teeks tööalase kasvuni*.

ENG alaskaala madalam otspunkt on eeldatavalt seotud tööalase läbipõlemise tajumisega. Siin leiab aset emotsionaalne-motivatsiooniline seisund, kus hoolimata toimuvast tööalaste ressursside ja tajutud enesetõhususe langusest ei proovita ennast aktiivselt

mobiliseerides olukorda pöörata. Töös on esitatud võrdlus, kuidas mudeli kaks afektiivset telge (ACTIV ja EFF) ning nende lõikesse tekkivasse emotsionaalsesse-motivatsioonilisse ruumi asetuv ENG alaskaala madalam osa omab sisulist kattuvust tööalase läbipõlemise uurimiseks kasutatavate küsimustike skaalastruktuuridega. Seega magistritöös välja pakutud REF-ENG mudel ei ole tööalase haaravuse ega läbipõlemise konstrukti ümberdefineerimis katse – pigem üritus varasemalt kirjeldatud sidusamalt ja laiendatumalt käsitleda.

Võrdlevast vaatest on lähtunud ka töös arendatava lähenemise sidumisel tööalaste ressursside-nõudmiste mudeliga (ülevaateks: Bakker, Demerouti 2017; ingl. *job demands-resources model/theory* – JD-R *model/theory*). Esitades JD-R mudeli kujunemisloos võrdlevalt töös väljapakutava REF-ENG mudeliga, on rõhutatud käesoleva panuse temaatilist seost eelnevalt avaldatud töödega. JD-R mudeli selgeim paralleel magistritöös arendatava teoreetilise raamistuga tõstatub afektiivsete mõõdetega ACTIV ja EFF tasandil. Töös on kvalitatiivse võrdluse põhjal tehtud eeldus, et REF-ENG mudeli tuumafektiga seotud alaskaala tööalasest eneseaktiveerimisest (ACTIV) vastab JD-R mudeli tööalaste nõudmiste komponendile ning alaskaala tööalaste ressursside võitmisest ja sellega seotult tajutud enesetõhususe kasvust (EFF) vastab JD-R mudeli tööalaste ressursside komponendile.

Eeldatavalt on magistritöö suurim uudne sisuline panus seotud teise emotsionaalsesse-motivatsioonilise faktoriga, mis on nimetatud tööalase reflektiivsuse alaskaalaks (REF). Kirjeldatud alaskaala positiivne otspunkt on seotud afektiivse taustaga, mida iseloomustab madal tööalane eneseaktiivsus ja samaaegselt tajutud olukord tööalaste ressursside võitmisest ja sellega seotud enesetõhususe kasvust. Teisisõnu, tegemist on alternatiivse teega tööalaste enesetõhususe kasvuni lisaks ENG alaskaalal kirjeldatule. REF alaskaalal toimub areng *instrumentaalsest teest* eristuvalt madala tööalase eneseaktiivsuse kontekstis – seetõttu on REF alaskaalal kirjeldatud arengut kirjeldatud kui *laialdast teed tööalase arenguni*.

Magistritöös arendatava mudeli keskseks hüpoteesiks on faktorite ACTIV ja EFF loodud afektiivse tausta organiseeriv mõju kahele kitsamale sõltumatule emotsionaalsele-motivatsioonilisele alaskaalale ENG ja REF. Esmalt tähendab see, et ENG ja REF kovariatsioon on täielikult ära kirjeldatav ACTIV ja EFF loodud taustaga – siin avaldub

afektiivse tausta organiseeriv mõju. Teiseks ei tohiks afektiivsest taustast kirjeldamata jääv variatiivsuse osa ENG ja REF faktorite vahel kovarieeruda – siin avaldub kahe emotsionaalse-motivatsioonilise alaskaala sõltumatus. Mõlemale hüpoteesile õnnestus empiirilistes analüüsides ka positiivne kinnitus saada.

Otsivates lisaanalüüsides selgus, et kaks tööalase arengu teed on seotud erinevate organisatsiooniliste ressursidega. REF faktoriga seotud *laialdast teed* uute tööalaste ressurside võitmiseni ja sellega seotud enesetõhususe kasvuni ennustas tugevaimalt ette töötaja enda poolt kujundatav inforuum ja kliendikeskne organisatsioonikultuur. ENG alaskaalaga haakuvat *intensiivset ehk instrumentaalset arengut* ennustas üldistest näitajatest ette organisatsioonilise ühtsuse tajumine ja suurte tööülesannete väikesemateks mõtestatud sammudeks jagamine.

Töö suurimaks puuduseks on pilootuuringu läbilõikeline disain ja uuringusse kaasatud valimi pärinemine vaid ühest spetsiifilisema tegevusvaldkonnaga seotud organisatsioonist. Uuringu valimi moodustasid Eesti Töötukassa 670 vastajat, kes andsid arendatavale skaalale tagasiside iga-aastase töörahulolu-uuringu käigus. Seetõttu on vaja korraldada tulevasi kinnitavaid kordusuuringuid.

Töö suurim praktiline väärtus on eeldatavalt seotud REF-ENG mudeli pakutava sidusa kontseptuaalse raamistuga. Teades, milliselt afektiivselt baasilt erinevad tööga seotud emotsionaalsed-motivatsioonilised seisundid lähtuvad, saab mõtestatumalt planeerida organisatsioonitasandi sekkumisi, mille eesmärgiks on töötajate psühholoogilise heaolu parendamine. Näiteks saab REF-ENG mudeli pakutavat loogikat ära kasutada planeerimaks koolitusi või töötaja korraldust viisil, mis omaks suurimat positiivset mõju tööalasele haaravusele.

Lihtlitsents lõputöö reprodutseerimiseks ja lõputöö üldsusele kättesaadavaks tegemiseks

Mina, Mait Metelitsa

(sünnikuupäev: 20.11.1987)

1. annan Tartu Ülikoolile tasuta loa (lihtlitsentsi) enda loodud teose „INTENSIVE AND EXTENSIVE PATHS TO WORK-RELATED GROWTH IN CONTEXT OF JOB DEMANDS-RESOURCES MODEL AND WORK ENGAGEMENT“, mille juhendaja on professor Maaja Vadi,
 - 1.1 reprodutseerimiseks säilitamise ja üldsusele kättesaadavaks tegemise eesmärgil, sealhulgas digitaalarhiivi DSpace-is lisamise eesmärgil kuni autoriõiguse kehtivuse tähtaja lõppemiseni;
 - 1.2 üldsusele kättesaadavaks tegemiseks Tartu Ülikooli veebikeskkonna kaudu, sealhulgas digitaalarhiivi DSpace'i kaudu kuni autoriõiguse kehtivuse tähtaja lõppemiseni.
2. olen teadlik, et punktis 1 nimetatud õigused jäävad alles ka autorile.
3. kinnitan, et lihtlitsentsi andmisega ei rikuta teiste isikute intellektuaalomandi ega isikuandmete kaitse seadusest tulenevaid õigusi.

Tartus, 24.05.2018