# The impact of individual motivation profiles on job crafting behaviours over time:

# A four wave, within-person study among low-skilled workers

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*Submitted for the award of PhD*

*June 2019*

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*A Thesis Submitted to Dublin City University Business School in Partial Fulfilment of the Requirements for the Degree of Doctor in Philosophy June 2019*

# Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Doctor of Philosophy is entirely my own work, that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Date: 14th June 2019

# Acknowledgements

Although my name is on this thesis, it represents the support, help and guidance of many people. Embarking on this journey while working required the support and generosity of my colleagues and management and I'm particularly indebted to Audrey Lim and Sean Dixon for their flexibility and encouragement in helping me stay on track at work while meeting the demands of part-time study.

For guidance on the oftentimes gruelling PhD journey, I've relied on the kind words and listening ears of many fellow researchers at DCU including Frances O'Connell, Grace Fox, Adele Grazi, Gary Power and Colette Real to name just a few. Expert guidance has been invaluable on the more complex aspects of the quantitative analyses in this study from Dr. Chris Stride, Gerry Conyngham and Dr. Lisa Van der Werff, and on the writing process from Dr. Daniel Soule and Dr. E. Alana James.

I have been very lucky in my supervisor team. Professor Finian Buckley has always been ready with a wealth of insights and invaluable critiques. But beyond that, his faith in this research has been a source of psychological support and his humour has kept a smile on my face even when the road seemed long. My second supervisor, Dr. Janine Bosak, has provided thoughtful feedback and unstinting positivity throughout this process; her kind words have stayed with me and fuelled my progress. I would like to that my examiners for their detailed and considered feedback: internal examiner, Dr. Melrona Kirrane, and external examiner, Professor Marylène Gagné, to whom I am very grateful for travelling to attend the viva.

During the course of my PhD, two little men became the centre of my world. Sam, who is now almost four, and Thomas, who is two. Their wonderful arrival would surely have put a stop to my studies were it not for my family. It is not possible to put into words how grateful I am to my amazing husband Liam for throwing himself wholeheartedly into parenthood, PhD cheerleading, and general household management, giving me the encouragement and freedom to reach the finish line. My parents, step-mum and mother in law have been invaluable in supporting us as a family during those particularly wild times. Finally, my mam, Linda, my sister, Jenny, and my friends have kept me sane, kept me laughing and kept me (relatively) balanced throughout this process – for that I will be always be grateful.

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# List of Frequently Used Acronyms

| | |
|---|---|
| **AM** | Amotivation |
| **BCH** | Bolk, Croon and Hagenaars |
| **CFA** | Confirmatory factor analysis |
| **COR** | Conservation of Resources |
| **EM** | External Regulation - Material |
| **ES** | External Regulation - Social |
| **FOF LGM** | First-order factor latent growth modelling |
| **ID** | Identified regulation |
| **CD** | Increasing challenging job demands |
| **HD** | Decreasing hindering job demands |
| **SS** | Increasing social job resources |
| **SR** | Increasing structural job resources |
| **IN** | Intrinsic motivation |
| **IT** | Introjected regulation |
| **JD-R** | Job Demands-Resources |
| **LGM** | Latent growth modelling |
| **LPA** | Latent profile analysis |
| **SOF LGM** | Second-order factor latent growth modelling |
| **SDT** | Self-determination theory |

# Abstract

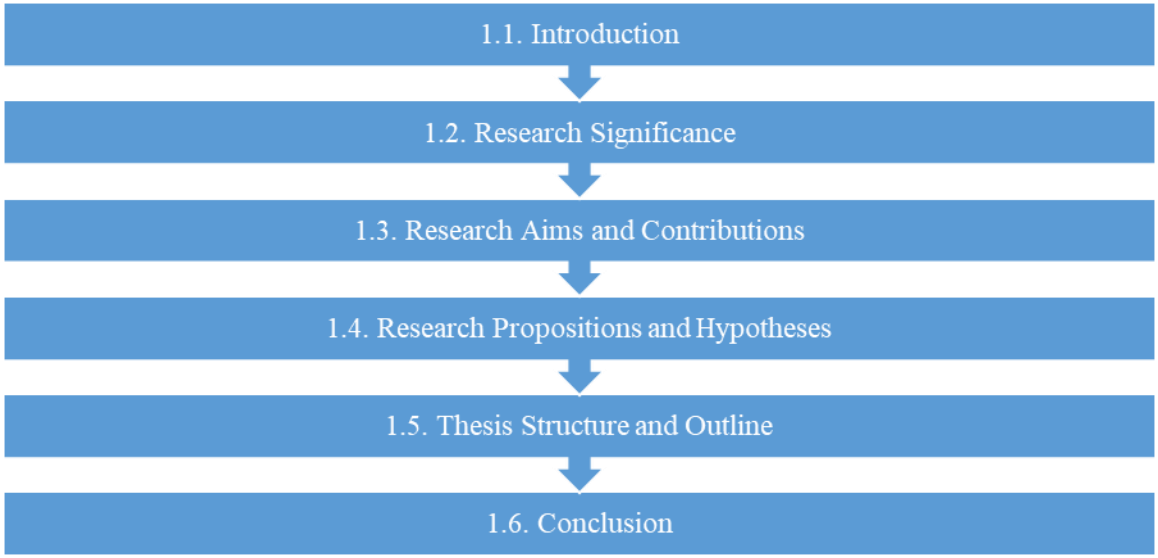
The impact of individual motivation profile on job crafting behaviours over time:
A four wave, within-person study among low-skilled workers

Sarah Farrell

The present study proposes that motives for working, and more specifically, the simultaneous experience of multiple work motives within an individual, have the potential to predict proactive behaviours at work. It examines this proposition among low-skilled workers, identifying their individual motivation profile based on forms motivational regulation within Self-Determination theory, and the subsequent proactive behavioural enactment of this motivation over time, operationalized as expansive and restrictive job crafting. First, it presents a new classification model for naturally-occurring motivation profiles, applying latent profile analysis to identify these profiles among 992 low-skilled workers and building on similar research within heterogeneous working populations. Four motivation profiles emerged from the population, including 'core' profiles evident in heterogeneous populations, and 'peripheral' or context-specific profiles. Second, a model of job crafting over time is presented, integrating Self-Determination theory, the Job Demands-Resource model, Conservation of Resources theory and Broaden-and-Build theory of positive emotion. Hypotheses from the temporal model of job crafting are tested using latent growth modelling over 4 waves. As hypothesized, at variable level, trajectories of expansive crafting were continuous, while those of restrictive crafting were non-continuous, and levels and trajectories of crafting varied significantly by motivation profile. Specific hypotheses regarding crafting by motivation profile were also largely supported. Findings revealed that the lowest levels of expansive crafting occur among *Amotivation Dominant/Balanced Low* profiles, and that as levels of expansive job crafting increase so too do levels of autonomous motivation in a given profile. In addition, continuous trajectories of expansive crafting only occur among individuals with a balance of autonomous and controlled motivation in their profiles (*Balanced* profiles), while restrictive job crafting is always non-continuous regardless of profile. Contributions to theory are discussed along with implications for practice and future research.

# CHAPTER 1

# Introduction and Overview




## 1.1. Introduction

Which behaviours at work impact individual and organizational outcomes and what drives these behaviours? This enquiry speaks to the very heart of organizational psychology research. Examining motives for action and, indeed, how specific motives predict specific actions, can enhance our understanding of individual and organizational outcomes of behaviour at work, particularly where relationships between behaviours and outcomes are not as expected. For example, the proactive work behaviour of job crafting can lead to positive individual and organizational outcomes but not always (Rudolph, Katz, Lavigne, & Zacher, 2017). The current research examines how naturally occurring motivation profiles in a low-skilled working population predict specific forms and levels of job crafting. By examining the motives behind this behaviour, this research aims to provide insights into why outcomes may not always be positive. In addition, this study takes account of the fact that work does not occur at a single point in time but over time and that cross-sectional representations may not reveal the full nature of these relationships. Therefore this research goes further to examine patterns within types of job crafting (e.g. expansive or restrictive) over time and how they vary as a function of the motivation profile of an individual.

Thus, the present study has three goals. The first is to examine naturally occurring work motivation profiles within a low-skilled blue collar population, adding to a new but developing area of research on core and peripheral motivation profiles based on Self-Determination theory. In doing so, this study proposes and tests the utility of a new classification model for these profiles. The second goal is to posit and test a theory of the impact of time on job crafting activities, based on the integration of job crafting theories (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001) with specific tenets of the

Job Demands-Resources model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), Self-Determination theory (Gagné et al., 2015; Ryan & Deci, 2017), Broaden-and-Build theory of positive emotions (Fredrickson, 2001), and Conservation of Resources theory (Hobfoll, 2001). The third and final goal is to extend that new theorizing by proposing and testing a role for motivation profile as a predictor of the level and trajectory of job crafting activities over time.

This introductory chapter begins by highlighting the importance and relevance of two organizational research domains which are central to this study: work motivation and proactive work behaviours. The former is presented from the perspective of Self-Determination theory, and the latter is operationalised as job crafting. It will emphasize the importance of studying these areas among low-skilled workers, given that these workers currently make up more than 80% of the global workforce. It highlights existing theory and research that contribute to our understanding of these topics and a number of limitations associated with both. It proceeds to explore these limitations, highlighting specific gaps in our understanding of job crafting and work motivation which the current research seeks to address. These contributions include generating new knowledge about propositions which have been made in literature and not yet tested including the existence of 'core' profiles among low-skilled workers, the extent to which motivation predicts job crafting, and the proposition that job crafting is dynamic over time. They also include contributions to significant theoretical gaps with new theorizing about how various forms of job crafting activities might change over time, and the ways in which motivation might predict patterns of job crafting, along with related testing of this theorizing among the study population. The chapter proceeds to present the specific propositions and hypotheses that this research seeks to test. The final section of the chapter provides a brief overview of the structure of this thesis document, chapter by chapter.

### 1.2. Research Significance

This section opens by emphasizing the importance of conducting studies among low-skilled workers who make up more than 80% of the global workforce but less than 10% of industrial-organization psychology research samples (Bergman & Jean, 2016; Griggs et al., 2016). It highlights the importance of the fields of work motivation and proactive work behaviours as central fields within organizational research (Kanfer, Frese, & Johnson, 2017; Tornau & Frese, 2013). It briefly outlines previous theory and research within these fields including rich insights into the role of work motivation in individual and organizational outcomes (e.g. Van den Broeck, Ferris, Chang, & Rosen, 2016) and the importance of proactive work behaviours at all levels of the organization to enhance organizational outcomes including performance (e.g. Rudolph et al., 2017; Tornau & Frese, 2013). It highlights a number of recent developments and opportunities within and across these research domains and their suitability for further examination among low-skilled workers.

Recent analyses in the field of industrial-organizational psychology research have revealed that samples consistently under represent low-skilled workers (Bergman & Jean, 2016). The most recent figures from the Industrial Labour Organization confirm that low-skilled workers make up 80.7% of the global workforce, representing a total figure of over 2.6 billion people (International Labour Organisation, 2018). However, in an examination of research published in five top tier journals over a two year period, just 7% focussed on un-skilled or low-skilled workers (Bergman & Jean, 2016; Griggs et al., 2016). This underrepresentation risks misrepresenting the experience of work to such an extent that common findings in the literature may in fact be uncommon among the workforce as a whole (Bergman & Jean, 2016) and thereby reduce the utility of findings for practitioners. In order to address this issue, it is recommended that I-O psychology researchers engage in replication studies among low-skilled worker groups to ensure we build our knowledge of constructs, and relationships between them, for the workforce as a whole (Bergman & Jean, 2016). In consideration of the focal areas of the present study, it is important to investigate how the internal experience of work motivation, the reported behaviour of job crafting and the nature of the relationship between these two constructs occurs for low-skilled workers. For example, the unique characteristics of low-skilled work may not always contribute to the satisfaction of basic needs for competence and even autonomy to the same extent as high-skilled work, thus these worker groups may experience different levels of autonomous and controlled motivation, leading to unique motivation profiles and in turn to specific patterns of job crafting. These focal areas are explored in more detail in the rest of this section.

Work motivation is an internal psychological experience that reflects how we socially construct and perceive work, and therefore how we direct our energy toward behaviour in work settings. Psychologists have sought to identify and understand this experience for well over a century (Fancher, 1990); indeed it is a central objective of the discipline. This effort has yielded a rich field of motivational theory including needs based theories (e.g. Maslow, 1943), theories of individual differences (e.g. Barrick, Mount, & Li, 2012), context-based theories (e.g. Hackman & Oldham, 1976) and goal setting theories (e.g. Locke & Latham, 1990). Among these, Self-Determination theory (SDT; Deci, Connell, & Ryan, 1989; Ryan & Deci, 2017) is a particularly comprehensive needs-based theory which, takes the democratic view that all individuals have the same level of basic needs for competence, autonomy and relatedness to be satisfied across life domains, highlights the role of the social context in satisfying these needs, and emphasizes individual differences in causality orientation and the role of goal contents in influencing motivational experiences. It proposes different forms of motivation which can be experienced as *controlled* with a sense of 'having to' or as *autonomous* with a sense of volition, the experience of which is predicted by the extent to which basic needs are satisfied in the domain.

SDT has been widely applied and validated in the work domain with the satisfaction of basic needs and the experience of autonomous motivation demonstrating positive relationships with positive individual and organizational outcomes (Ryan & Deci, 2017; Van den Broeck et al., 2016). Nevertheless, a central tenet of SDT, that all forms of motivational regulation can be experienced simultaneously by an individual within a single domain, has only recently begun to be tested via the identification of naturally occurring motivation profiles which vary in both the quantity and quality of motivational regulation (Howard, Gagné, Morin, & Van den Broeck, 2016). This person-centred approach is ground-breaking in the field in that it allows for the exploration of this core tenet of SDT. It enables researchers to gain much needed insight into how forms of motivational regulation interact to affect outcomes within specific working populations, such as low-skilled workers. A further research opportunity presents itself in the fact that, while the individual and organization outcomes of motivational regulation have been well-established, an examination of proximal behavioural enactments resulting from motivation regulation as conceptualised within SDT, and by extension, motivation profiles, is almost entirely absent from studies in the field (De Cooman, Stynen, Van den Broeck, Sels, & De Witte, 2013).

Proactive work behaviour is potentially a powerful example of a proximal behavioural enactment of motivational experiences. Job descriptions would have to be very detailed, and managers omnipresent, to guide and direct all work behaviours. Therefore it has long been recognized that organizations rely on proactive work behaviours to meet goals, to solve problems and to develop (e.g. Katz & Kahn, 1966). This is most intuitively the case in dynamic working environments, cutting edge industries, and jobs that are heavily dependent on the use of personal initiative. Yet, it is also the case in stable and routine working environments, due to the changing nature of working teams, the inevitability of unforeseen problems, the fast pace of technological and production-based change, and the changing needs and demands of customers (Parker, Bindl, & Strauss, 2010). Indeed, proactive work behaviours in a range of working contexts have been found to be associated with positive performance outcomes (Fuller & Marler, 2009). Because of the inherent role for the self in driving these proactive behaviours, research in this area holds great promise in revealing how the motivation profile of an individual can impact their behaviours at work, particularly over time, and responds to recent calls for studies on motivation and proactivity (Kanfer et al., 2017).

Job crafting is a specific type of proactive work behaviour where individuals deliberately alter the design of their jobs to create meaning (Wrzesniewski & Dutton, 2001). Job crafting activities that increase resources, demands, or expand the task, relational or cognitive boundaries of a job have been described as “expansive job crafting” (Wrzesniewski & Dutton, 2001, p. 185). Conversely, those that decrease demands or restrict the task, relational or cognitive boundaries of a job can be described as “restrictive job crafting”. All crafting activities occur among different types and ranks of workers

(Berg, Wrzesniewski, & Dutton, 2010; Nielsen & Abildgaard, 2012; Tims, Bakker, & Derks, 2012). Job crafting represents a unique form of proactive work behaviour in that it involves the employee making proactive changes to the design of their jobs to meet their needs across all domains of their lives (Wrzesniewski & Dutton, 2001). This stands opposed to alternative forms of proactive work behaviour such as organizational citizenship behaviour which always meet organizational needs. As such, job crafting does not consistently demonstrate relationships with positive organizational outcomes (Rudolph et al., 2017).

Job crafting is particularly interesting to examine in the context of SDT for two reasons. Firstly, job crafting reflects self-driven attempts by employees to satisfy their own needs rather than those of the organisation (Wrzesniewski & Dutton, 2001) and as such aligns with the SDT view of the satisfaction of basic needs as primary drivers of behaviour. Secondly, job crafting has been conceptualised as how individuals adjust the resources and demands of their job (Tims & Bakker, 2010), providing a link to the conceptualisation of motivation as the internal regulation of behaviour relating to external demands as outlined in SDT. Finally, both areas lend themselves well to studies among low-skilled workers. Within SDT, the need to satisfy basic needs exists at the same level for all individuals and the experience of different forms of motivation regulation has been well demonstrated among all types of workers, albeit not yet simultaneously (Howard et al., 2016; Ryan & Deci, 2017). Within job crafting research, crafting behaviours have been found to occur all levels of the organization (e.g. Berg et al., 2010; McClelland, Leach, Clegg, & McGowan, 2014; Nielsen & Abildgaard, 2012) but examinations of low-skilled workers have been minimal and recently called for by leaders in the field (Bakker & Oerlemans, 2018). Moreover, both fields place an emphasis on the importance of enabling a positive worker experience and providing opportunities for individuals to grow and flourish at work (Ryan & Deci, 2017; Wrzesniewski & Dutton, 2001; Wrzesniewski, Lobuglio, Dutton, & Berg, 2013). This is particularly important among this cohort of workers who consistently demonstrate lower job satisfaction and wellbeing than their high-skilled, professional or management counterparts (Bergman & Jean, 2016; Griggs et al., 2016; Hu, Kaplan, & Dalal, 2010; Nielsen & Abildgaard, 2012).

### 1.3. Research Aims and Contribution

The following section draws on the research developments and opportunities highlighted above to outline the specific gaps in our understanding of job crafting and work motivation which the current research seeks to address by listing the five main contributions it aims to make. These contributions include generating new knowledge about propositions which have been made in literature and not yet tested including, the existence of 'core' profiles in a blue-collar environment, the extent to which motivation predicts job crafting, and the proposition that job crafting is dynamic over time. They also include contributions to significant theoretical gaps with new theorizing about how various forms of

job crafting activities might change over time, the ways in which motivation might predict various forms of job crafting, and related testing of this theorizing in the study population.

### 1.3.1. A comprehensive classification model for motivation profiles

If researchers are to meaningfully compare and contrast naturally occurring motivation profiles across study populations, and across different worker cohorts, a consistent method for classifying and naming profiles is essential. Research is in its early days, but the number and granularity of classifications of motivation profiles already varies considerably along with the nomenclature applied to those profiles making cross-study comparisons challenging (e.g. Graves, Cullen, Lester, Ruderman, & Gentry, 2015; Howard, Gagné, Morin, & Van den Broeck, 2016; Valero & Hirschi, 2016; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). The current research presents an a posteriori classification model that aims to rectify this situation. It is developed in consideration of the core characteristics of forms of motivational regulation within SDT (Ryan & Deci, 2017) by synthesizing the defining characteristics of profiles that have emerged to date in motivation profile research. It is then validated via an examination of the antecedents and outcomes of proposed classifications from the research to date.

### 1.3.2. An examination of motivation profiles among low-skilled workers

Low-skilled workers can perceive themselves as undervalued and are certainly under-researched in the field of I-O psychology (Bergman & Jean, 2016; Quinn, 2018). Although motivation profiles have not been examined among this specific worker cohort, research in SDT has found that interventions can support the internalization of motivational regulation within organizational settings (Deci et al., 1989; Hardré & Reeve, 2009; Stone, Deci, & Ryan, 2009). As such, with knowledge of existing profiles among low-skilled workers, motivational interventions have the potential to improve their experiences of work. To this end, the current research asks what motivation profiles arise among these workers. Are they reflective of previously identified 'core' profiles? Or do they differ? If they differ how and why might that be? To answer these questions, the study examines naturally occurring motivation profiles based on SDT, in a sample of 992 low-skilled workers based in the UK using latent profile analysis, replicating studies within heterogeneous samples conducted by Howard, Gagné, Morin and Van den Broeck (2016). It identifies 'core' and context-dependent profiles based on the proposed classification model outline above and explores reasons for why these profiles, and not others in the proposed classification model, might arise.

### 1.3.3. Presenting and testing a theory of job crafting and time

Job crafting was originally conceptualised as a dynamic activity that changes over time and in response to individual needs and the environment (Wrzesniewski & Dutton, 2001). This dynamism is reflective of the underpinning philosophical perspective within job crafting theory that the experience

of a job is subjective and the job itself, a fluid social construct. However, the ways in which job crafting changes over time have not yet been examined. Indeed, beyond the initial statement of its dynamism (Wrzesniewski & Dutton, 2001), there has been no theorizing about exactly how and why job crafting activities might change over time. The current research presents an integrated temporal model of job crafting drawing on the Job Demands-Resources model (Demerouti et al., 2001), Conservation of Resources theory (Hobfoll, 2001), Broaden and Build theory of positive emotions (Fredrickson, 2001) and Self-Determination theory (Ryan & Deci, 2017). In doing so, it hypothesizes how and why different forms of job crafting (expansive and restrictive) demonstrate unique patterns of change over time. It then applies univariate second-order factor latent growth modelling over four waves of data to test these hypotheses.

### 1.3.4. The role of motivation profiles in levels of job crafting

The role of motivational orientation in job crafting activity was proposed some years ago (Wrzesniewski & Dutton, 2001) but has never been directly tested. It is of particular interest for two reasons. Firstly, motivational orientation is proposed to impact not just levels of job crafting activities but the scope and expansiveness of these activities, and we can infer, their impact on the organization. By examining expansive and restrictive forms of job crafting as conceptualised within the JD-R based model of job crafting (Tims & Bakker, 2010; Tims et al., 2012), this study aims to reveal how motivation impacts not just quantity of job crafting but also the quality or form of job crafting. Secondly, motivation theory and research has developed far beyond the intrinsic-extrinsic distinction of forms of motivation proposed to impact job crafting in 2001 (Kanfer et al., 2017; Wrzesniewski & Dutton, 2001). Updating this proposition, by applying SDT (Ryan & Deci, 2017), and more specifically, the simultaneous experience of multiple forms of motivational regulation captured within motivation profiles (Howard et al., 2016) as well as the inclusion of amotivation as a form of motivational regulation (Gagné et al., 2015; Howard et al., 2016), provides a much more nuanced understanding of this proposed antecedent of job crafting. The present study makes and tests specific hypotheses about the relationships between motivation profile and levels and forms of job crafting by applying latent profile analysis with auxiliary variables.

### 1.3.5. The role of motivation profiles in job crafting over time

Finally, experienced autonomous motivation has repeatedly been found to positively impact persistence in a range of activities over time (Deci & Ryan, 2008a). This finding has never been examined in the context of job crafting activities. This study draws further upon propositions and findings of SDT to explain how and why different forms of job crafting might vary over time as a function of motivation profiles, predicting specific impacts on the trajectory of job crafting associated within each conceptually distinct set of motivation profiles outlined in the proposed classification model described above. The resulting hypotheses are tested by an examination of means at each time

point by profile over four waves and the application of latent growth modelling by profile (multi-group and BCH approach).

### 1.4. Research Propositions and Hypotheses

Based on the above, a number of propositions and hypotheses put forth and tested among a population of 992 low-skilled workers over four waves of data collection in a 9 month period are outlined in this section.

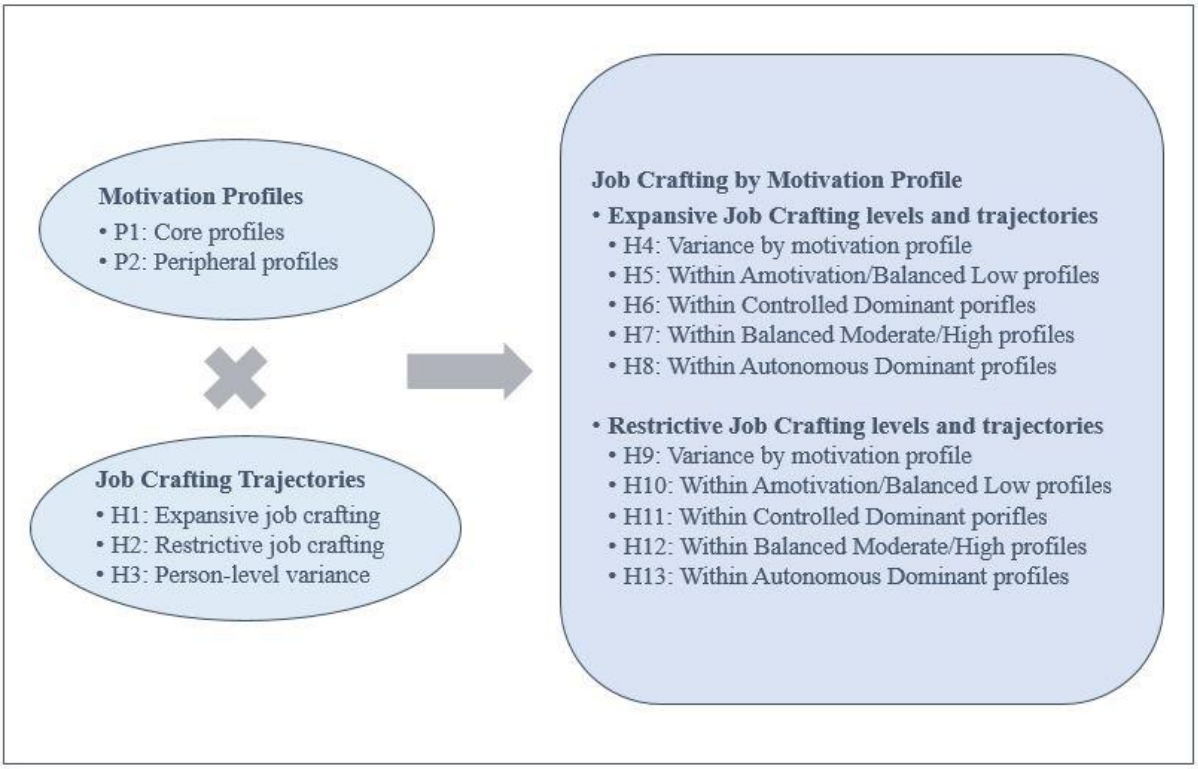



*Figure 1-A Overview of Study Propositions and Hypotheses*

#### 1.4.1. Propositions regarding naturally-occurring motivation profiles

The two propositions in this study are presented as alternatives to formal hypotheses given the exploratory nature of the process of identifying of naturally-occurring motivation profiles

Based on profiles that consistently arise in studies of naturally occurring motivation, it is proposed that:

**Proposition 1:** Two "core profiles" will emerge: *Amotivation Dominant* and *Balanced High.*

Based on the low-skilled nature of the work and the structured, highly engineered nature of the working environment in the study sample, it is proposed that:

**Proposition 2:** One or more *Controlled Dominant* motivation profile will be present.

### 1.4.2.Hypotheses

The scope of this research results in a significant number of formal hypotheses. For clarity, these are grouped under the following three headings: job crafting, time and variance across individuals; motivation profiles and expansive job crafting; and motivation profiles and restrictive job crafting.

#### 1.4.2.1. Job crafting, time and variance across individuals

The following hypotheses regarding the levels and trajectories in different forms of job crafting – expansive and restrictive – over time and the variance in levels and trajectories across individuals are tested:

**Hypothesis 1:** The trajectories of all forms of expansive job crafting a) reflect a continuous positive trend over time and b) are therefore aligned with each other.

**Hypothesis 2**: The trajectory of the restrictive job crafting act of decreasing hindering job demands a) reflects a non-continuous trajectory over time and b) therefore, differs from trajectories of expansive job crafting.

**Hypothesis 3**: a) Levels and b) trajectories of all forms of job crafting vary significantly across individuals.

#### 1.4.2.2. Motivation profiles and expansive job crafting

For expansive job crafting, the hypotheses regarding motivation profiles are as follows:

**Hypothesis 4:** Levels (a) and trajectories (b) of expansive forms of job crafting vary by motivation profile.

More specifically, regarding the nature of variation in levels and trajectories in expansive job crafting within motivation profiles:

**Hypothesis 5:** *Amotivation Dominant/Balanced Low* profiles will demonstrate

a) The lowest starting levels of expansive crafting among all motivation profiles,

b) in a negative continuous trajectory over time.

**Hypothesis 6:** *Controlled Dominant* motivation profiles will demonstrate

a) higher starting levels of expansive crafting than *Amotivation Dominant/Balanced Low* profiles and lower levels than *Balanced (Moderate/High*) *or Autonomous Dominant* motivation profiles,

b) in a non-continuous trajectory over time.

**Hypothesis 7:** *Balanced (Moderate/High)* motivation profiles will demonstrate

a) higher levels of expansive crafting than *Amotivation Dominant/Balanced Low* and *Controlled Dominant* motivation profiles and lower levels than *Autonomous Dominant* motivation profiles,

b) in a flat/positive linear trajectory over time.

**Hypothesis 8:** *Autonomous Dominant* motivation profiles will demonstrate

a) the highest levels of expansive crafting among all motivation profiles,

b) in a positive continuous trajectory over time.

#### 1.4.2.3. Motivation profiles and restrictive job crafting

For restrictive job crafting, the hypotheses regarding motivation profiles are as follows:

**Hypothesis 9:** Levels (a) and trajectories (b) of restrictive forms of job crafting vary by motivation profile.

Regarding the nature of variation in levels and trajectories in restrictive job crafting within motivation profiles:

**Hypothesis 10:** *Amotivation Dominant/Balanced Low* groups will demonstrate

a) the highest levels of restrictive crafting among all motivation profiles,

b) in a non-continuous trajectory over time.

**Hypothesis 11:** *Controlled Dominant* motivation profiles will demonstrate

a) lower levels of restrictive crafting than *Amotivation Dominant/Balanced Low* profiles and higher levels than *Balanced (Moderate/High*) or *Autonomous Dominant* motivation profiles,

b) in a non-continuous trajectory over time.

**Hypothesis 12:** *Balanced (Moderate/High*) motivation profiles will demonstrate

a) the lowest levels of restrictive crafting among all motivation profiles,

b) in a non-continuous trajectory over time.

**Hypothesis 13:** *Autonomous Dominant* motivation profiles will demonstrate

a) lower levels of restrictive crafting than *Amotivation Dominant/Balanced Low* and *Controlled Dominant* motivation profiles and higher levels than *Balanced (Moderate/High*) motivation profiles,

b) in a non-continuous trajectory over time.

### 1.5. Thesis Structure and Outline

This final section outlines the structure of the thesis, providing a brief summary of the contents and aims of each chapter.

Chapter 2 aims to provide a comprehensive, critical literature review of Self-Determination theory (SDT) to justify its selection as a focal theory of this research, with a particular focus on its application to the work domain. It aims to provide background information in support of the integrated temporal model of job crafting presented in Chapter 4 and related hypotheses regarding motivation and levels and trajectories of job crafting. Finally, it highlights recent developments in motivation profile research, and outlines the relevant theory and research to support a new classification model of motivation profiles, the investigation of naturally occurring motivation profiles among low-skilled workers, and the specific propositions regarding these profiles which are presented at the end of the chapter.

Chapter 3 provides detailed review of job crafting theory and cross-sectional research findings with a particular focus on links demonstrated between job crafting and variables linked to work motivation. Applying Roe's (2008) classification of longitudinal research, it critically examines the quality of longitudinal research in the job crafting literature and highlights gaps in both theory and research.

Key tenets of four distinct theories, SDT (Ryan & Deci, 2017), JD-R Model (Demerouti et al., 2001), COR Theory (Hobfoll, 2001) and Broaden and build theory of positivity (Fredrickson, 2001), are integrated in Chapter 4 to form a temporal model of job crafting, with specific hypotheses relating to how expansive and restrictive job crafting demonstrate different levels and trajectories over time and vary across individuals. Theory is then presented relating to individual differences based on motivation profile group in levels and trajectories of job crafting over time. A set of related hypotheses are specified, with those relating to expansive and restrictive job crafting presented separately. An explanation of the research design within which these hypotheses will be tested follows in Chapter 5.

Within Chapter 5, the research design is presented to explore the propositions and hypotheses of the study. This chapter provides an overview of the philosophical approach to the current research and its related methodological implications along with key design considerations including those relating to longitudinal design. Participants and procedures, measures used and their reliability, response rates and data preparation and screening steps are described. The data analysis strategy and related considerations are summarized pending a full description of steps taken in Chapter 6.

Chapter 6 expands on the data analysis strategy outlined in Chapter 5 by presenting detailed descriptions of the data analysis tools applied in the study and practices related to their application. This study involved an extensive range of analyses. These are grouped in six overarching phases, some of which include a series of steps. The first phase involves the application of confirmatory factor analysis and a presentation and review of the descriptive statistics and correlational analyses of the variables in this study. The second phase presents latent profile analyses to identify naturally occurring motivation profiles among the study population and related multinomial logistic regression for demographic variables. The third phase presents a longitudinal analysis utilising univariate latent growth modelling to test hypotheses relating to the levels and trajectories of job crafting over time, including measurement invariance testing. The fourth, fifth and sixth phases of analysis present the results of three sets of analyses to test hypotheses relating to the impact of motivation profiles on job crafting: multi-group first-order factor latent growth modelling (LGM); latent profile analysis with distal outcomes using 3 step method in *Mplus*; and a review of growth parameters from first-order factor LGM (multi-group and the BCH approach). The results outlined in this chapter and their implications for theory, research and practice are discussed in detail in Chapter 7.

The final chapter, Chapter 7, presents a recap of the theoretical and empirical aims of this research, the propositions explored and the hypotheses tested. It presents the findings, highlighting the underpinning theoretical basis where propositions or hypotheses were supported and suggesting possible explanations for a limited number of unexpected results. It describes implications for theory and research in the fields of SDT and job crafting, and the potential for the practical application of contributions including the classification model of motivation profiles, the temporal model of job crafting and related results in organizational settings. It highlights the limitations of the research design and suggests potential avenues for future research to explore.

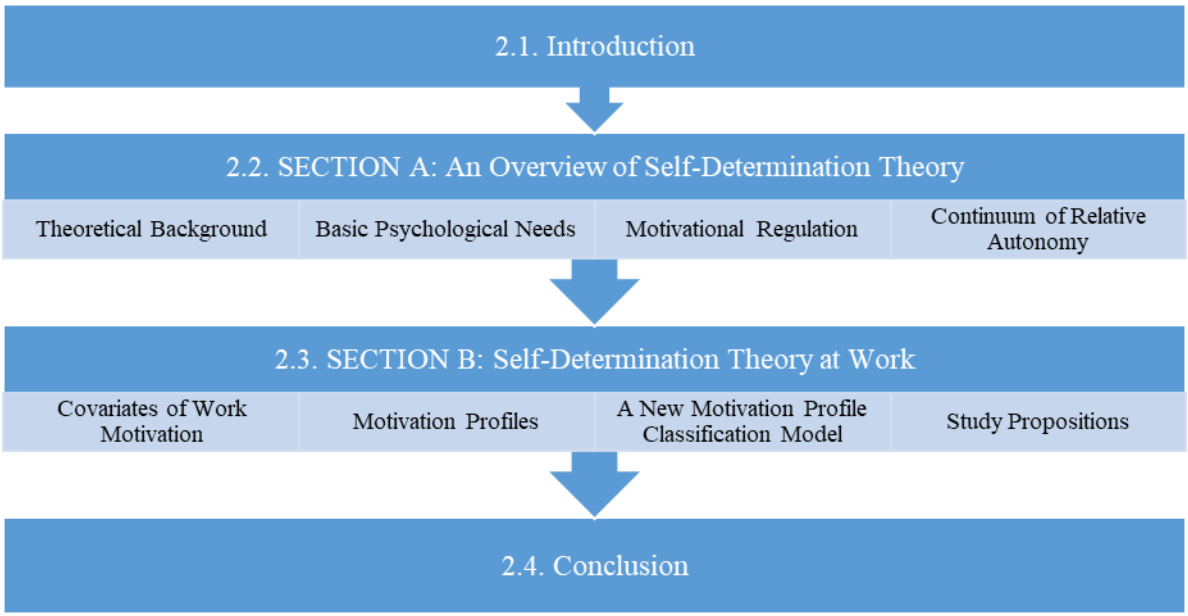
## 1.6. Conclusion

This chapter provided an overview of the current thesis. It opened by highlighting the significance of theory and research in fields of work motivation and proactivity at work, and, more specifically, job crafting. It emphasized the demonstrated importance and utility of findings in these research domains for both organizational success and individual wellbeing. It also highlighted the relevance and potential of knowledge in these areas to improve the working life of low-skilled workers, who make up over 80% of the global workforce (International Labour Organisation, 2018) but are underrepresented in industrial-organizational psychology literature. It outlined the contribution this study makes by examining motivation profiles among a low-skilled worker population, replicating existing research conducted among heterogeneous samples (Howard et al., 2016). Alongside this contribution, this study presents a new classification model for motivation profiles which aims to aid the comparison of motivation profiles across study samples and different worker cohorts. Significant

contributions of the study include the presentation, and testing of, a temporal model of job crafting, addressing a longstanding gap in job crafting theory and research, and an integrative model of motivation and job crafting which explains and tests how motivation profiles impact both levels and trajectories of restrictive and expansive job crafting. The specific propositions and hypotheses of the research were listed. Finally, an overview of the structure of the thesis, including the content and aims of each chapter was presented.

# CHAPTER 2

# Self-Determination Theory and Motivation Profiles




## 2.1. Introduction

Self-determination theory (SDT) has been described as both a "macro-theory of human motivation" by its authors (Deci & Ryan, 2008b) and an untestable "grand perspective" on motivation by others (Kanfer et al., 2017). It focusses on the 'reason-to' or motive for human action, thought and development (Deci & Ryan, 2008b, 2008a; Gagné & Deci, 2005; Ryan & Deci, 2006). The theory is well-used: "self-determination theory" is referred to in more than 5000 articles on web of science and the top 5 articles have been cited more than 20000 times[1]. It has been applied in a wide range of domains, including health (e.g. Williams, Grow, Freedman, Ryan, & Deci, 1996) education, (e.g. Deci, Vallerand, Pelletier, & Ryan, 1991), sport (e.g. White & Sheldon, 2014), parenting (e.g. Bernier, Carlson, & Whipple, 2010), gaming (e.g. Lubans et al., 2013) and of course, the world of work, the focal domain of this study (Gagné et al., 2015; Van den Broeck et al., 2016).

It includes the concepts of basic psychological needs, the satisfaction of which, through the social environment, leads to varying levels and forms of motivational regulation. Forms of motivational regulation vary in the degree to which they are intrinsic or extrinsic. Extrinsic forms vary in the degree to which they are autonomous (i.e. where they sit on a continuum of relative autonomy) and whether they have an internal or external perceived locus of causality.

[1] Based on keyword search of "self-determination theory" by citation date on Web of Science on 25th April 2018 (www.webofknowledge.com)

SDT acts as an overarching theoretical framework for six mini-theories: cognitive evaluation theory explains how the social environment impacts intrinsic motivation; organismic integration theory explains how motivation becomes internalized; basic psychological needs theory explains how basic needs impact well-being and vitality; causality orientations theory explains how individual differences in orientations toward the social environment impact motivation; goal contents theory explains how variation in goal contents relate to basic need satisfaction; and, finally, relationship motivation theory explains the role of needs for relatedness and autonomy in interpersonal relationships and the internalization of motivation. With regard to its relevance to organizations, SDT argues that its principles support the dual goals of profitability and well-being by focussing on the concurrence of performance and wellbeing outcomes (Deci, Olafsen, & Ryan, 2017).

It is beyond to scope of this chapter to explore the full depths of this detailed and far-reaching perspective on motivation and its application to a wide range of domains. Instead the first section provides a generic overview of the theory by outlining the position of SDT in the wider landscape of motivational theory along with its key underpinning theoretical principles. It explains basic psychological needs, forms of motivational regulation and the processes related to them referring to the SDT mini-theories only where relevant to the current research.

The second section explores the evidence supporting these theoretical concepts and processes in the work domain. It emphasizes findings relating to job design, effort and proactivity at work as focal areas for the present study which examines job crafting as an outcome of motivation. Specific gaps in SDT research relating to job design and proactivity which the present study will address are outlined. Recent studies in the field involving motivation profiles are critically reviewed. Motivation profiles are highly pertinent to the study of SDT as different forms of motivation can not only be experienced simultaneously by an individual but also interact with each other to lead to differing outcomes. Finally, a proposed classification model for motivation profiles, as well as propositions relating to naturally occurring motivation profiles in the low-skilled study population are presented.

## 2.2. SECTION A: An Overview of Self-Determination Theory

This section provides an overview of self-determination theory. It begins by situating the theory within the wider context of motivation theory, and psychology at large. In particular, it highlights that while a normative needs theory, SDT reflects the role of the environment and individual differences; it describes how SDT conceives motivation as having both qualitative and quantitative dimensions, with forms of motivation sitting along a continuum based on the degree to which they are experienced as autonomous; and emphasizes the ways in which SDT draws on a range of disciplines within and beyond psychology including psychoanalysis,

development psychology, biology and evolutionary theory. The section progresses to identify the principles underlying the theory including its philosophical and theoretical underpinnings of vitalism, subjectivism and social embeddedness, the agentic nature of humans and a positive psychology orientation. It describes the key concepts of SDT including basic psychological needs of autonomy, competences and relatedness, forms of motivational regulation and how cognitive evaluations of the social environment impact on intrinsic motivation. It concludes with a description of the internalization of experienced motivation as outlined in the SDT mini-theory: organismic integration theory.

### 2.2.1. Theoretical background and philosophical principles of SDT

Motivational psychology seeks to identify the internal forces which, within social contexts, move individuals to intentional behaviour. Theories of human motivation date back to the beginning of the 20th century, when the field of psychology was in its earliest stages with theories of biologically based motivations such as instincts and drives developed by William James and Sigmund Freud among others (Fancher, 1990). These gave way to normative needs based theories (Maslow, 1943; Murray et al., 1938) and theories which incorporated individual differences in levels of needs (Hackman & Oldham, 1976; McClelland, 1961), personality differences (Barrick & Mount, 1991), different motivational or goal orientations (e.g. approach/avoidance (Kanfer & Heggestad, 1997), different promotion/prevention orientations (Higgins, 1997) and different approaches to developing or demonstrating competence (Dweck, 1986; Nicholls, 1984). A number of theories emphasized context based factors in motivation, often in work settings, such as task and job characteristics (Hackman & Oldham, 1976) and the wider social context (e.g. Ward, Lundberg, Ellis, & Berrett, 2010). Yet others developed important theories of goal setting (Locke & Latham, 1990), goal selection (Ajzen, 1991; Vroom, 1964), goal striving and self-regulation processes (Bandura, 1986; Bauer & Baumeister, 2011; Carver & Scheier, 2001; Frese & Zapf, 1994; Kehr, 2004; Scholer & Higgins, 2011).

In this rich field, Self-Determination Theory (SDT) has been categorised as a normative needs based theory (Kanfer et al., 2017) in that it suggests the same basic needs exist for all individuals to the same level (Ryan & Deci, 2017). At the same time, this categorization belies a more nuanced model of motivation which describes the influence of the environmental context on the process of internalizing external demands into autonomous forms of motivational regulation, and on individual differences in causality orientation and goal contents. In addition, SDT sits apart from other motivational theories that take a qualitative perspective about type of motivation such as promotion or prevention orientation within regulatory focus theory (Scholer & Higgins, 2011) or type of goal orientation (VandeWalle & Cummings, 1997). It is also distinct from theories that focus on the quantity of motivation experienced such as social

learning theory (Bandura, 1986) and goal setting theory (Locke & Latham, 1990, 2002) which present motivation as unitary, varying only in amount or intensity. Finally, it is distinct from theories such as expectancy theory (Vroom, 1964) which suggest motivation has two dimensions extrinsic motivation and intrinsic motivation which can be added to get a total level of motivation. Instead, SDT considers both quantity (or intensity) of motivation, and quality of motivation, represented by various forms of motivational regulation, as important for individual outcomes in all domains (Van den Broeck, Lens, De Witte, & Van Coillie, 2013). In assuming that extrinsic forms of motivation sit on a continuum of relative autonomy, SDT draws on McGregor's (1960) "Theory Y" approach to management. Influenced by (Maslow, 1954), Theory Y applies a hierarchical structure of needs (sustenance, safety, security, esteem, self-actualization) to the work setting. Here self-actualization can be equated with autonomous motivation and each level of the hierarchy can be seen as increasingly autonomous, reflecting an early continuum structure.

SDT draws on a number of concepts and principles from psychology and other scientific disciplines. From the psychoanalytic tradition, it includes a role for ego energy associated with the need for competence and intrinsic motivation (R. W. White, 1959), the concept of introjection, and the importance of internalization and integration for mental health and wellbeing (e.g. (Freud, 1923)). It is important to note that the macro-theory focuses on the internal experiences of the self rather than self-concepts or identities themselves. It is these internal experiences that can result in the internalization of regulations so that they are integrated with the self (Ryan & Deci, 2017). The macro-theory adopts the biological principle that all organisms have an innate drive toward complexity, development and integrated functioning (Ryan & Deci, 2017). Humans have evolved to be curious, social and active beings with propensities for intrinsic motivation, internalization and social integration to satisfying innate needs for competence, autonomy and relatedness. The satisfaction of these needs is conditional: it can be thwarted or supported by social conditions. This concept can be found in many fields of psychology (developmental, psychoanalysis) and in wider evolutionary and biological theory (Mayr, 2004; Waller, 1998)

SDT presents a specific philosophical perspective on human nature. It assumes that individuals are agentic and can act and have power over their environment. It also assumes that internalized forms of motivation lead to positive outcomes for humans (wellbeing, health, happiness, fulfilled potential) and to optimal human functioning allowing individuals to flourish. As a normative needs theory, it posits that all individuals have the same basic needs to the same level and therefore all have the same potential for thriving. It is humanistic in that it reflects our potential for self-actualization through our unique human capacity for self-awareness, by being

aware of our needs, values and the feeling of being autonomous or controlled. It is this capacity that allows us to regulate our own behaviour. SDT reflects emergentism and vitalism in its view that humans cannot be not reduced to puppets controlled by their environment in the tradition of behavioural psychology, nor to complex biological computers as in some fields of cognitive science, nor again to a set of physical and chemical processes as viewed by reductionist neuroscientists (Ryan & Deci, 2017). Rather, it focusses on the importance of the psychological: the internal processes that explain our human experience of perception, emotion and cognition. SDT situates individuals in their environment in stating that, while we engage in reflective processes of self-regulation, these are strongly influenced by our social context. Indeed, environmental conditions can be created that prompt the internalization of motivational regulation. Yet it is our perceptions of these social contexts, not the contexts themselves, which are the proximal drivers of behaviour. The theory acknowledges our biological and evolutionary origins and boundaries in that it recognises innate organismic and human drives from which we cannot escape, and which prompt us to act in often predictable ways. SDT has been critiqued as a culturally specific theory rooted in western individualist culture (Deci et al., 2017; Markus & Kitayama, 1991) and as such not universally applicable nor reflective of all human nature. However, subsequent research appears to invalidate this critique. Chirkov, Ryan, Kim and Kaplan (2003) in a study including South Korea, Russia, Turkey and US, found the autonomous enactment of behaviours were psychologically healthier. Research in Bulgaria, which was still a socialist economy at the time, with companies primarily under state control, compared state employees with those of the capitalist US private sector. Manager autonomy support predicted basic needs being met which predicted engagement and wellbeing for both samples (Deci et al., 2001).

Finally, SDT is a positive psychology theory in seeking to promote human well-being across multiple life domains including parenting, education, sport and exercise, health, working life and in clinical settings. Its emphasis is on creating environments that support the satisfaction of needs to promote the process of internalization of motivation required for optimal human functioning, well-being and performance and not on what is briefly mentioned as *regressive transitions*; that is, the process of becoming amotivated or demotivated (Ryan & Deci, 2017).

#### 2.2.2.The concepts of SDT: Basic psychological needs

SDT postulates that there are three distinct basic psychological needs which all humans share: autonomy, competence and relatedness. We act upon our environment to satisfy these needs. While these needs do not reflect all human needs (e.g. need for justice; see Kanfer et al., 2017), they are described with SDT as the primary drivers of motivational regulation and behavioural enactment (Ryan & Deci, 2017). The degree to which they are satisfied by the environment

leads to varying forms and levels of motivational regulation and subsequent individual outcomes and, in the work domain, organizational outcomes, often via behavioural enactment. Therefore they are foundational to the experience of motivational regulation and related proximal behavioural enactments of this motivation examined in the present study (i.e. job crafting). This section outlines these basic needs and explains how they can be satisfied.

The three basic psychological needs proposed by SDT are as follows:

> *Autonomy:* Autonomy originates from the Greek words for self (*auto*) and regulation (*nomos*) and literally means to be regulated by the self (Ryan & Deci, 2017; De Charms 1968). It refers to a feeling of choice or volition over one's own behaviour. Thus such behaviour is congruent with an individual's values and or interests. It is a subjective experience and therefore distinct from autonomy as used in job design models which is a reference to an objective task or job characteristic (Hackman & Oldham, 1976). It does not refer to independence, as an individual can exercise autonomy by actively choosing to be dependent on another, by, for example, relying on the instructions of an expert. It is similar to McClelland's (1961) notion of power but refers to power over the self rather than others.
>
> *Competence:* Competence refers to a feeling of capability to be effective in one's environment (Broeck, Vansteenkiste, Witte, Soenens, & Lens, 2010). It is similar to self-efficacy (Bandura, 1986) and can be related to similar ideas such as outcome expectancy (Vroom, 1964), achievement needs in organizational contexts (McClelland, 1961) and effectance in psychoanalysis (R. W. White, 1959). It is evident in the inherent striving that is characteristic of human nature.
>
> *Relatedness:* The final need is for relatedness to others. This need can be linked to earlier conceptualisations of basic needs such as Maslow's need for love and belonging (Maslow, 1954) and refers to the need to feel supported by others (Baumeister & Leary, 1995; Howard, Gagné & Bureau 2017), to belong, to be socially significant among close others, to be accepted, and to support others in turn (Baumeister & Leary, 1995).

SDT proposes that these basic needs are innate. They are underpinned by the drive toward complexity and development that is an innate feature of all organisms including humans (Ryan & Deci, 2017). More specifically, SDT assumes that all people are inherently "active… curious…and eager to succeed"; this is because success generates positive feelings related to need satisfaction as our basic needs are met (Deci & Ryan, 2008a, p14). This approach to basic

needs means that all individuals start on a level playing field and do not, as posited by alternative theories (Hackman & Lawler, 1971; McClelland, 1961) have inherently different growth need strengths which have been used in the past to explain variation in perceptions of job characteristics or performance on the job. Rather variation in such outcomes is linked to differences in the degree to which needs are satisfied by the environment in the relevant domain, related motivational experiences and, where relevant, subsequent proximal behaviours enactments (Ryan & Deci, 2017). The social environment in which individuals operate can support our inherent active curiosity or thwart it. The nature of this interaction between our basic needs and the environment as perceived explains different forms of experienced motivation (Deci & Ryan, 2008a).

Basic need satisfaction is essential for wellbeing (Ryan & Deci, 2017). If basic needs are thwarted people can react in a range of ways, including passivity, psychopathology, greed, addiction, perfectionism, anti-social behaviour and aggression. Within SDT, basic needs provide the basis for making predictions about which characteristics of the social environment will lead to optimal human functioning. Specifically, autonomy supportive- (choice and encouragement), effectance supportive- (structure and positive informational feedback) and relationally supportive-environments (caring involvement) lead to positive performance and well-being outcomes because they contribute to the satisfaction of basic needs (Ryan & Deci, 2017), and thereby support the internalization of experienced motivational regulation and the prompting of related actions. Thus, the social environment in SDT can be viewed as the arena in which basic psychological needs are met and the motivational mechanism through which action or behaviour is prompted depends on the degree to which this environment meets an individual's basic psychological needs. The following section examines these motivational mechanisms, or forms of motivational regulation in more detail as key variables in the present study.

### 2.2.3. The concepts of SDT: Forms of motivational regulation

SDT defines motivation as the "reasons underlying behaviour" (Ratelle, Guay, Vallerand, Larose, & Senécal, 2007) and posits that these reasons vary in form, guiding both behaviours which directly meet basic needs and lead to need satisfaction (intrinsic motivation) and behaviours where the outcome may meet basic needs but the behaviour itself is not inherently satisfying (extrinsic motivation). As outlined earlier in this chapter, by identifying various forms of motivation, SDT differs from related theories which argue that motivation varies only in quantity of motivation experienced, not in form. Specifically, drive theories (e.g. Hull, 1943) state that physiological needs create a drive state (or a single amount of motivation) and cognitive theories (e.g. Bandura, 1986; Vroom, 1964) state that either the perceived value of the

outcome, and belief in one's capacity to attain it, determines the amount of motivation or lack of motivation. Conversely, SDT is multi-dimensional; it identifies different sources and forms of motivation (Gagné et al., 2015). This section outlines the key differences between intrinsic and extrinsic motivation, explains the various forms of extrinsic motivation and explains how experienced forms of motivation can change via either internalization or regressive transition. Central to the present study are the definitions of each form of motivational regulation (intrinsic, integrated, identified, introjected, external and amotivation) as key variables in this study and the supported contention that all forms can be experienced simultaneously as the theoretical basis for the analysis of motivation profiles in the study population.

#### 2.2.3.1. Intrinsic versus extrinsic motivation

The first distinction made by SDT in forms of motivation was that between intrinsic and extrinsic forms (Deci, 1975; Ryan & Deci, 1985). Intrinsic motivation is a fully autonomous form of motivation, experienced with a feeling of choice and volition, which drives an activity because the activity itself is inherently interesting and stimulating and, as such, generates positive feelings for the individual. Extrinsic motivation drives an activity because one or more consequences of the behaviour are of value to the individual. It can vary in the degree to which it is experienced as autonomous or controlled and there are numerous forms of extrinsic motivation proposed in SDT which will be described in this section.

The intrinsic-extrinsic distinction does not originate from SDT (Deci & Ryan, 2008a). Earlier motivational theories included both forms of motivation and proposed they could be added together to get a measure of total motivation (Atkinson, 1964; Porter & Lawler, 1968). However, subsequent research found that an extrinsic reward linked to an activity decreased intrinsic motivation related to that activity (see Deci et al., 1999 for a meta analysis). These findings have particular salience for working environments, in which the vast majority of participants received monetary rewards for the work they complete. To account for why this might be Deci and Ryan (1985) wrote cognitive evaluation theory, a mini-theory which describes how social environments influence intrinsic motivation. It suggests that intrinsic motivation provides a sense of freedom which fulfils the basic need for autonomy. On the other hand, extrinsic motivation is perceived as an attempt to control behaviour and therefore leads to a reduction in autonomy. This, in turn reduces the degree to which our basic need for autonomy is satisfied and thus our intrinsic motivation in the activity is affected (Ryan & Deci, 2000).

The impact of external reward and incentives on intrinsic motivation has been hotly debated within organization psychology for some decades (Cerasoli, Nicklin, & Ford, 2014). While a meta-analysis by Deci et al., (1999) found support for the undermining impact of incentives on intrinsic motivation, another meta-analysis in the same year (Eisenberger, Pierce, & Cameron,

1999), albeit heavily dependent on laboratory studies, produced contradictory results (Kanfer et al., 2017). A more recent meta-analysis has help to clarify the issue, finding that intrinsic motivation has stronger impacts on performance than incentives in specific situations (Cerasoli et al., 2014). Their findings suggest that individuals who experience higher levels of intrinsic motivation perform better. When incentives are not performance contingent, intrinsic motivation is a better predictor of performance. When they are performance contingent, intrinsic motivation has a weaker link to performance, arguably because it's sharing the effect with the incentive. Intrinsic motivation explains more performance effects in field versus laboratory studies, in work versus school settings, and in quality of performance versus quantity of performance. Intrinsic motivation also predicts quantity of performance, just not as strongly as incentives. However, the authors note that overall, the findings tend to support those of the meta-analysis by Deci et al., (1999): more controlling incentives are associated with lower intrinsic motivation, less controlling incentives with higher intrinsic motivation. The outcomes of this debate are highly relevant to the study of work as the vast majority of individuals in working environments experience extrinsic rewards and many jobs are not wholly intrinsically interesting.

A key principle that emerges from the debate on how extrinsic motivation impacts intrinsic motivation, and one that is central to the present study, is the conclusion that individuals can experience different forms of motivation at one time and that these forms of motivation interact to impact outcomes. This becomes particularly relevant to the study of motivation profiles, containing multiple forms of motivational regulation, when extrinsic forms of motivation are added to the mix. Extrinsic forms of motivation proposed, and generally supported, within SDT literature are as follows:

#### 2.2.3.2. External regulation

External regulation is the least self-determined or autonomous form of extrinsic motivation and is not internalized. External regulation has an external perceived locus of causality in that it is driven by forces outside the individual. As a controlled form of motivation, it is experienced with a sense of "having to", rather than "choosing to" complete an activity. It has been linked to committing less effort to an activity and potentially lower quality work than the experience of intrinsic motivation (Cerasoli et al., 2014; Howard et al., 2016), and taking shortcuts to reach the reward or avoid the punishment (Deci & Ryan, 2008a). This can be attributed to the fact that when the reason for a behaviour is dominated by external regulation, significant effort can be required to counter internal resistance based on conflicting values, and the temptation to engage in more autonomously motivated activities. As such, while external rewards can positively impact performance, they can be difficult to sustain over time as the perceived value of the

resource received diminishes and the effort of the behaviour becomes exhausting (Ryan & Deci, 2017). The existence of two types of external regulation has been evidenced in the construction of the multidimensional motivation at work scale (MWMS, Gagné et al., 2015) discussed in Chapter 5, which found support for external regulation based on material gains or losses, and that based on social rewards and punishments.

However, SDT suggests that if basic needs are met by an activity, individuals have a tendency to internalize the regulation of activities which may originally have been externally regulated. As individuals internalize regulations they can do so in three ways that are increasingly autonomous but also qualitatively distinct. These existence of these distinct dimensions has been repeatedly demonstrated using a number of scales which have been developed in this active field (e.g. MWMS, Gagné et al., 2015; WEIMS, Tremblay, Blanchard, Villeneuve, & Taylor, 2009; AMS, Vallerand et al., 1992).

#### 2.2.3.3. Introjected regulation

Introjected regulation is the least internalized form of internal motivation around an activity. In this situation an individual only partially internalizes the regulation of an activity. As such the regulation is experienced as controlled rather than with a feeling of autonomous ownership. The source of control and pressure, or perceived locus of causality, is internal via self-esteem and ego involvement which involves the reward of pride and the threat of guilt or shame. It is intrapersonal and as such is more enduring than external regulation. It is based on self-critiques or self-aggrandizement often where the perception of self-worth is dependent on the behaviours of others. It is associated with unstable levels of self-esteem (Kernis & Paradise, 2002) and anxiety (Ryan & Deci, 2017). It is often based on projections where individuals project feelings of approval or disapproval on to significant others which can reflect the actual conditional regard of significant others experienced during childhood. It can lead to perfectionism and be linked to competitive domains where comparisons occur. It requires more energy and effort than autonomous forms of motivation and can be draining (Ryan & Deci, 2017). Yet, its correlates can be distinct from those associated with other controlled forms of motivation such as external regulation (e.g. Graves, Cullen, Lester, Ruderman, & Gentry, 2015). Indeed, issues have been reported with the common practice of including introjected motivation in composite measures of controlled motivation due to the fact that it is both positive and negative, internal and yet can be perceived as external, and sits right in the middle of the continuum of relative autonomy; it has been suggested that the practice could lead to low reliability and a loss of important information (Howard et. al., 2017). Thus it is an important goal for future SDT research to examine its unique outcomes as well as its within-person interactions with other forms of motivational regulation.

#### 2.2.3.4. Identified regulation

Identified regulation is the second type of internalization of extrinsic motivation. An individual recognises and internalizes the value of the activity and accepts responsibility for it as their own. They experience a greater sense of autonomy with an internal perceived locus of causality, without experiencing external pressure or control. Because individuals have fully identified with the value of a behaviour, they find it less effortful to sustain over time. This acceptance of the regulation as important and of inherent value, means the behaviour is experienced as volitional. Behaviours driven by identified regulation are more stable than introjected regulations because there is less conflict and resistance to their enactment (Ryan & Deci, 2017). It is commonly included in composite measures of autonomous motivation along with intrinsic motivation.

#### 2.2.3.5. Integrated regulation

Integrated regulation is where an individual identifies with the regulation of an activity but also integrates it fully with their own sense of self. It becomes part of who they are. As such it is experienced as autonomous with an internal perceived locus of causality. It requires self-reflection and can involve adapting the behaviour or previously held attitudes. Once a behaviour is integrated, motivation is without conflict, or effort and experienced as authentic and stable over time (Ryan & Deci, 2017). Neuroscience has found support for decision making activity in the right medial prefrontal cortical areas which handle self-knowledge processing among those with higher need satisfaction provide some support for the existing of integration (Di Domenico, Fournier, Ayaz, & Ruocco, 2013). Unfortunately, while conceptually and potentially biologically distinct is has been difficult to differentiate from identified regulation in measurement tools. A small study by (Moran, Diefendorff, Kim, & Liu, 2012) did find evidence of a distinct integrated dimension in a measure designed for the study, albeit validation of the tool was limited by the size of the study ($n$ = 226). Subsequently, in a meta-analysis of 461 samples ($n$ = 205136), it was often highly correlated with intrinsic or identified regulation or both which suggests that a theoretical revision may be needed to reconceptualise or remove from the continuum of motivational regulation (Howard et al., 2017).

#### 2.2.3.6. Amotivation

Finally, amotivation is described as non-regulated and is characterised by a lack of ‘reason to’. An amotivated individual will either not engage in a behaviour or do so without intentionality. It can originate from a lack of perceived competence to complete the behaviour or a belief that completing the behaviour cannot secure the desired outcome. Both can be categorised by a lack of control and both are described in social cognitive theory (Bandura, 1986). SDT adds a second source of amotivation that is autonomous, reflecting a lack of interest in the behaviour or the

outcome (Ryan & Deci, 2017). Therefore an individual experiencing amotivation may a) not see the value in the behaviour itself (autonomous), b) not see the behaviour as linked to a valued outcome (controlled), c) see a link to an outcome but not value it (autonomous), or d) see the valued outcome linked to a behaviour but feel unable or incompetent to complete the behaviour (controlled) ((Deci & Ryan, 2008a). It may also represent a defiance or resistance to influence or what has been describe as a "motivated non-action" (Ryan & Deci, 2017).

#### 2.2.4.The continuum of relative autonomy

The above forms of motivational regulation are related to each other based on three dimensions: whether they are intrinsic or extrinsic, the degree to which they are autonomous (as opposed to controlled), and whether they are perceived as being caused internally or externally. The distinction between intrinsic and extrinsic motivation has been superseded by the more specific delineation of whether motivation is driven by choice and volition, potentially as an expression of the self, (i.e. autonomous), or is driven by an internal or external control (i.e. controlled). This latter distinction can be described as the position of a form of motivational regulation on a *continuum of relative autonomy*. Intrinsic motivation is the most autonomous form of motivational regulation, amotivation is the least. Forms of extrinsic motivation are described as falling in between these two extremes on the continuum in the following order (from autonomous to controlled): integrated, identified, introjected and external regulation (Ryan & Connell, 1989). Variation in the locus of causality has also been described as existing on a continuum (Ryan & Connell, 1989). Perceived local of causality differentiates between forms of motivation which originate internally (intrinsic motivation, integrated regulation, identified regulation, introjected regulation) and that which originates externally (external regulation). Following this example, identified regulation is self-determined internalized regulation with an internal perceived locus of causality and external regulation is not internalized, less self-determined and has an external perceived locus of causality. The continuum has been described as providing an underlying structure for the different dimensions or forms of motivational regulation (Howard, Gagné, Morin, & Forest, 2018; Howard et al., 2017). Indeed, quantitative measures have been developed on the basis of the continuum which distinguish between, or allow composites of, autonomous and controlled forms of motivation and have been widely used in research (e.g. Gagné et al., 2015; Tremblay et al., 2009). Conversely, the continuum of the perceived locus of causality is much less frequently applied or tested in research.

There is no indication in the theory that an individual moves through the continuum of relative autonomy as a form of progression (Chemolli & Gagné, 2014) only that they may experience the forms of motivation on this continuum. However, the motivation associated with a job or task may change. Organismic integration theory (OIT, Ryan & Deci, 2017), a mini-theory

within SDT, explains the means through which extrinsically motivated behaviour changes position on the continuum to become autonomous. It takes the proposition from biology and developmental psychology that natural tendencies to internalize and integrate exist among organisms. It suggests that human development is a process of internalizing, elaborating, refining and integrating our view of ourselves and the world around us and that we have tendency to move towards integration, and the internal autonomous regulation of behaviour, under the right conditions.

These developmental tendencies toward internalization reflect the satisfaction of basic needs. They are linked highly linked to the need for competence, to master behaviours observed. At the same time, it reflects the modelling of behaviour of important others, participation in and belonging to others and is therefore linked to the need for relatedness. The need for autonomy is satisfied as behaviour is increasingly internalized. Thus both developmental internalization and integration require information from the social context and can result in the experience of external, introjected, identified or integrated motivational regulation which vary in their levels of associated autonomy and also in their antecedents and outcomes. More specifically, external regulation requires need for competence to be satisfied to some degree; introjected regulation requires both competence and relatedness needs to be satisfied to some degree; identified and integrated regulation also require autonomy needs to be met, thus all three are optimal for the internalization of motivation. Therefore need supportive environments can facilitate integration and internalization and need thwarting environments can limit internalization (Ryan & Deci, 2017). This role for need satisfaction as an antecedent of motivational regulation has been well-established in research. In their meta-analysis of 99 studies on the role of basic needs satisfaction in the workplace, Van den Broeck, Ferris, Chang and Rosen, (2016) found that need satisfaction accounted for 42% of the variance in intrinsic motivation and each need accounted for unique variation in amotivation, external regulation, introjected and identified regulation with the exception of autonomy, which did not account for variance in introjected motivation beyond competence and relatedness (positive). The results highlight the role of approval or respect from others in external motivation (Gagné et al., 2015) and the role of individual projections of how others view them in introjected regulation (Ryan & Deci, 2017). However, overall variance in external and introjected motivation explained by basic need satisfaction was low, 1% by all three needs (Van den Broeck et al., 2016) supporting the theory that need satisfaction leads to autonomous forms of motivation rather than controlled forms. All need satisfactions were negatively related to amotivation with autonomy and competence need satisfaction negatively related to external regulation. Relatedness need satisfaction was unrelated to external regulation. All need satisfactions were positively related to internal forms of regulation: introjected, identified and intrinsic motivation.

Finally, highlighting the fact that SDT tends to focus on the positive, the internalization process is outlined in significant detail in numerous writings on SDT, most recently in Ryan & Deci, (2017). Yet, there are only brief explicit mentions of *regressive transitions*, that is, the process of externalization of regulation (e.g. Deci, Schwartz, Sheinman, & Ryan, 1981; among students). Much of the work around the impact of extrinsic rewards on intrinsic motivation outlined earlier reflects this process of regressive transitions. Indeed, a recent study on the introduction of attendance awards in a laundry plant highlights the process, revealing the unintended negative motivational consequences caused by reducing basic need supports at work (Gubler, Larkin, & Pierce, 2016) also reflected regressive transitions. Further theoretical elucidation along with related longitudinal research, albeit beyond the scope of this study, is required to bring clarity to this regressive process.

To conclude, SDT posits that the satisfaction of basic psychological needs and experienced forms of motivational regulation, and their composites, mediate between social contexts and behavioural outcomes. While SDT provides a role for individual differences in these relationships, specifically, causality orientation and goal contents, it is reasonable to suggest that these are not focal areas of SDT and as such it is, at least to some degree, a normative theory of motivation (Kanfer et al., 2017). The depth of the theory is driven by its identification of the internal processes that driven human motivation, and more particularly how they co-occur and interact internally to predict behavioural outcomes. While basic psychological needs and forms of motivational regulation are representations of psychological processes which are not directly observably, the behavioural outcomes of these processes can be observable, as can the neurological processes (Ryan & Deci, 2017). The next section of this chapter presents an overview of covariates of motivational processes within the work domain, the focal domain of the present study, with a particular focus on the role of job design and outcomes of effort and proactive behaviour as relevant constructs within the present study. It includes a critical review of recent research on within-person motivation profiles, proposes a classification model for these profiles and discusses which naturally occurring profiles which may be expected to emerge in the low-skilled worker population in the present study.

## 2.3. SECTION B: Self-Determination Theory in the Work Domain

The research literature related to SDT is vast, covering the fields of health (e.g. Ng et al., 2012), exercise (e.g. Sebire, Standage, Gillison, & Vansteenkiste, 2013), sport (e.g. White & Sheldon, 2014), parenting (e.g. Bernier et al., 2010), education (e.g. Ratelle et al., 2007) and clinical settings (e.g. Zuroff, Koestner, Moskowitz, McBride, & Bagby, 2012). Evidence of the role of basic psychological need satisfaction and different forms of motivational regulation, with the exception of integrated motivation, has been well established across gender, age, nationality, domain and various quantitative measurement scales (Howard et al., 2017). The following section examines research findings from the application SDT at work, as the focal domain of this study. It begins by reviewing findings relating to the covariates of motivational regulation. The implications of these in the blue-collar work setting of the present study are highlighted with a particular focus on findings related to proactivity at work as the longitudinal outcome in this study, a topic examined further in Chapter 3. The nature of amotivation and its potential impact on proactive work behaviour is also discussed, pending the presentation of detailed hypotheses in Chapter 4. Finally, recent research on within-person motivation profiles is reviewed in detail and a proposed classification model and related nomenclature for motivation profiles is presented along with specific propositions about naturally occurring profiles expected to emerge in exploratory analysis among the low-skilled worker population in the present study.

### 2.3.1. Covariates of work motivation

This sub-section outlines key individual and situational covariates and outcomes linked to basic need satisfaction and forms of motivational regulation. The content reflects the dominance of variable-centred research designs in the field to date. Findings related to the situational factor of job design, outcomes of investing effort and proactivity at work are examined individually, and those based on the use of the recently developed MWMS (Gagné et al., 2015) which is applied in the present study are highlighted due to their relevance to the present study.

SDT argues that individual differences influence motivational regulation. It addresses individual differences in motivational regulation through two mini-theories. Firstly, causality orientation theory (Deci & Ryan, 1985) proposes that individuals have a dominant orientation which can colour their perception of the environment and social context so that those with intrinsic or autonomy orientations see more choice, interest and values, and those with extrinsic or controlled orientation see more reward, and social controls. Those with impersonal or amotivated orientation perceive more lack of control over outcomes, and incompetence. Research suggests that those with more extrinsic than intrinsic orientations were less satisfied

with their jobs, and lives (Vansteenkiste et al., 2007). This effect was moderated by income so that, among those with extrinsic orientations, those with high salaries were happier but still less happy than those with intrinsic orientation and high salaries.

Secondly, goal content theory (Kasser & Ryan, 1996) accounts for individual difference in goal contents. It suggests that individual can have intrinsic life goals, for personal growth, physical health, meaningful relationships and community contributions or more extrinsic aspirations for wealth, beauty or power/fame. Higher levels of extrinsic than rather than intrinsic life goals led to work family conflict, emotional exhaustion, turnover intentions mediated by basic need satisfaction (Vansteenkiste et al., 2007). Intrinsic goal orientation among employees in New Zealand was linked to organizational citizenship behaviours (Roche & Haar, 2013). Van den Broeck, Vansteenkiste, Lens, and De Witte (2010) found that intrinsic goal orientation was also positively associated with flexibility at work and a subsequent study found that it moderated (strengthened) the negative relationships between learning opportunities and exhaustion, and between autonomy and impaired health responses (Van den Broeck, van Ruysseveldt, Smulders, & de Witte, 2011). Beyond these mini- theories, person-environment fit, which represents the degree to which individuals believe that they have their needs met by, and/or share similar characteristics with, their working environment has been found to predict basic need satisfaction (Greguras & Diefendorff, 2009).

From a situational perspective, the role of the manager in supporting the satisfaction of basic needs at work has been established as a primary driver of need satisfaction and autonomous forms of motivation. Manager support for basic needs predicts positive outcomes including creativity (Hon, 2012), acceptance of change (Gagné, Koestner, & Zuckerman, 2000), engagement (Lu, Wang, Lu, Du, & Bakker, 2014); employee retention (Otis & Pelletier, 2005), life and work satisfaction (Moreau & Mageau, 2012; Nie, Chua, Yeung, Ryan, & Chan, 2015), often through autonomous motivation (e.g. Williams et al., 2014). When managers are not supportive, lower levels of internalized motivation and higher levels of controlled motivation have been found along with negative individual and organizational outcomes (Fernet, Austin, Trépanier, & Dussault, 2013; Trépanier, Fernet, & Austin, 2013). Outcomes of interventions designed to increase manager support for basic needs have validated these findings (Deci et al., 1989; Hardré & Reeve, 2009; Stone et al., 2009).

With regard to outcomes of motivational regulation at work, it is clear that, as succinctly put by Chemolli and Gagné (2014), “different (motivational) regulations produce different outcomes and not just different levels of the same outcomes” (p. 3). Consequences of need satisfaction and need frustration have been well-documented and validate their role in the motivational process. Satisfaction of these basic needs results in greater enjoyment of work, performance and

higher wellbeing (Baard, Deci, & Ryan, 2004; Van den Broeck et al., 2016) lower exhaustion (Van Den Broeck, Vansteenkiste, De Witte, & Lens, 2008) and less organizational deviance (Lian, Lance Ferris, & Brown, 2012). Need frustration leads to exhaustion and lower levels of well-being (Gillet, Fouquereau, Forest, Brunault, & Colombat, 2012; Vander Elst, van den Broeck, de Witte, & de Cuyper, 2012) although it has been argued that more work is needed to examine the process and impact of need frustration (Ryan & Deci, 2017). Autonomous motivation has been linked to affective and normative commitment (Gagné, Chemolli, Forest & Koestner, 2008); knowledge sharing (Gagné, Tian, Soo, Zhang, & Hosszu, 2019), less emotional exhaustion (Fernet, Austin, & Vallerand, 2012) and perceived usefulness of new learning, future use of new learning, playfulness and enjoyment of learning among highly educated employees from UN (Ryan & Deci, 2017). Conversely, controlled motivation predicts greater emotional exhaustion (Fernet et al., 2012) and knowledge hiding(Gagné et al., 2019). Cerasoli et al. (2014) in their robust 40 year meta-analysis, found that intrinsic motivation demonstrates consistent relationships with all types of job performance regardless of the use of incentives, and influences performance quality more strongly than performance quantity. They found that incentives have a stronger relationship with performance quantity only in specific circumstances.

The following three sub-sections highlight three specific covariates of motivational regulation that have particular relevance to the present study: Job design, effort and proactivity at work.

#### 2.3.1.1. Job design

The design of the job itself is a situational factor which has demonstrated links to motivational regulation and one that has particular relevance to the present study as job crafting can be understood as a form of employee-led job design. The job characteristics model (JCM, Hackman & Oldham, 1976) proposes that a job can be designed in ways that enhance motivation. Research has found that job characteristics from this model such as task significance, job autonomy and feedback led to increased intrinsic motivation via empowerment measures such as experienced autonomy and competence among technical and teleworkers (Gagné, Senecal, & Koestner, 1997). Kuvaas (2008) found that intrinsic motivation partially mediated the relationship between job characteristics (autonomy and interdependence) and work performance. Similarly, work environments that provide positive job characteristics such as challenging work (Van den Broeck, De Cuyper, Luyckx, & De Witte, 2012) or choice at work help to meet basic psychological needs (Stone et al., 2009).

The job demands-resources model (JD-R; Bakker & Demerouti, 2007) suggests that jobs can be designed based on the demands of the job and the resources that are made available. It is a stress model that suggests the need to balance job demands with job resources, thereby buffering the

negative effects of demands with the supportive impact of resources. Fernet et al. (2013) examined resources (managerial support and positive feedback) among school board employees and found that satisfaction of the three basic needs mediated the link between the resource-demand ratio within the job and work outcomes (personal accomplishment, exhaustion and depersonalization). Among a heterogeneous sample of 745 Belgian employees, Van Den Broeck et al. (2008) found that basic need satisfaction partially mediated the relationships between job demands and exhaustion, and between job resources and vigour. They also found that basic need satisfaction fully mediated the relationship between low job resources and exhaustion. In other words, it appears that job demands and resources impact work outcomes through their impact on basic needs satisfaction and motivation.

A recent meta-analysis of basic need satisfaction at work examined the role of job demands and resources (Van den Broeck et al., 2016). Autonomy need satisfaction was not related to cognitive demands, but was negatively related to job demands, workload and emotional demands. Competence need satisfaction was positively related to cognitive demands, unrelated to workload and negatively related to emotional demands and job demands. Relatedness need satisfaction demonstrated a positive relationship with cognitive demands. Positive relationships with cognitive demands may be related to its perception as a challenge stressor (Crawford, LePine, & Rich, 2010). With regard to resources, autonomy and relatedness need satisfaction were positively related to job autonomy, social support and feedback. Competence need satisfaction was positively related to job autonomy and social support. Thus it is likely that the experience of demands and resources at work, and, it can be supposed, any attempt by employees to change these job demands and resource via job crafting, is influenced by basic need satisfaction and by extension, experienced motivational regulation. Findings support this supposition: the resource of decisional control over job demands among university professors was linked to lower levels of burnout but only for autonomous motivated employees (Fernet, Guay, & Senécal, 2004). Decisional control over job demands can be itself be perceived as a job demand, which may be experienced as a challenge for those who are autonomously motivated but a stressor for those who are not (Van den Broeck, de Cuyper, De Witte, & Vansteenkiste, 2010). The present study seeks to explore this finding by examining how motivation profile impacts the ways in which individuals take on challenging demands, or indeed decrease demands perceived as hindrances. It is expected that individuals with profiles dominated by autonomous motivation may consistently take on challenging demands over time. Conversely, it is expected that those whose profiles are dominated by controlled motivation engage in higher levels of decreasing hindrance demands, albeit this may not occur consistently over time as only demands that arise and are unrelated to external rewards or punishments will be perceived as hindrances. These expectations are fully elucidated in the Chapter 4.

#### 2.3.1.2. Effort

The role of motivation in predicting how individuals apply effort is relevant the present study to the extent that it examines effortful behavioural outcomes of motivation (i.e. job crafting). De Cooman, Stynen, Van den Broeck, Sels, and De Witte, (2013) in their cross-sectional study of 689 heterogeneous Belgian employees proposed that job demands thwart, and job resources promote, the fulfilment of basic psychological needs. They also proposed that basic needs and autonomous motivation mediate the relationship between job design and work effort. Unexpectedly, they found that work pressure was positively related to need satisfaction, which partially mediated its relationship with work effort. The primary reason for this is likely to be related to work pressure being perceived as a challenging demand (Van den Broeck, de Cuyper, et al., 2010). The present study helps to explore this finding by examining how individuals handle both hindering and challenging work demands based on their motivation profile. It can be expected that those whose profiles are dominated by autonomous motivation may take on more challenging demands and exert more effort.

In the study by De Cooman et al. (2013), low-skilled blue collar workers reported lower levels of autonomous motivation and higher levels of effort. Given that the sample in the present study is made up of low-skilled workers, it is interesting to examine how motivation profiles among this cohort impact effort exerted in taking on job demands or indeed any avoidance of the exertion of effort via decreasing job demands. Due to evidence of fewer need supports being available in blue-collar working environments (Bergman & Jean, 2016; Griggs et al., 2016; Hu et al., 2010; Nielsen & Abildgaard, 2012), it may be that external regulation plays a stronger role in the extent to which demands are taken on among this cohort. Work behaviours among those who experience high levels of external regulation will feel more effortful than among those who experience higher autonomous forms of motivation, due to potential the internal conflicts and resistance associated with controlled motivational regulation (Ryan & Deci, 2017) which might explain the increased levels of reported effort in the De Cooman study (De Cooman et al., 2013). The more controlled and external the form of motivational regulation, the less sustainable it is (Baumeister, Bratslavsky, Muraven, & Tice, 1998). Indeed, variable-centred research has found that while autonomous forms of motivation predict persistence over time, controlled forms are weaker predictors over time (e.g. Pelletier, Fortier, Vallerand, & Brière, 2001 with competitive swimmers). Furthermore, external regulation can lead individuals to accomplish tasks "in the least effortful way" with less attention to quality (Ryan & Deci, 2017; p. 185). De Cooman et al. (2013) argue that examining effort invested helps to bridge the gap in research dominated by situational and personal antecedents and employee/organizational outcomes which skips over behavioural enactment as a result of the motivational regulation. Further longitudinal research is certainly needed to explore the nature

and stability of behavioural outcomes over time when examining motivational regulation, including on a within-person basis. The current research by focussing on the proactive work behaviour of crafting job demands and resources and utilising a longitudinal within-persons design fills these gaps.

Finally, some questions regarding the relationship between amotivation and the investment of effort have been raised in the research literature. Recent studies (Howard et al., 2017; Sheldon, Osin, Gordeeva, Suchkov, & Sychev, 2017) have suggested that while sitting next to external regulation on the continuum of self-determination, amotivation may differ significantly from it based on a second dimension relating to level of effort or exertion. This suggests that those who experience high levels of external regulation can be characterised as more active than those who experience high levels of amotivation. Conversely, it can also be proposed that amotivated people may act autonomously and proactively to reject tasks. Despite the fact that recent person-centred studies have found that amotivation has dominated the profiles of 13-27% of employees (Howard et al., 2016), it has not consistently been included in many measures of SDT (e.g. MAWS, Gagné et al., 2010; BREQ, Markland & Ingledew, 1997), and therefore related findings are limited. As described later in this chapter, the current research seeks to explore the existence of naturally occurring *Amotivation Dominant* profiles in low-skilled working populations, to examine the interaction of amotivation with other forms of motivational regulation and to identify how amotivated individuals invest effort and engage in proactive behaviour at work, specifically job crafting. Detailed hypotheses relating to how individuals with *Amotivation Dominant* profiles craft their jobs are presented in Chapter 4.

#### 2.3.1.3. Proactive work behaviours

Parker et al. (2010) called for researchers to integrate the fields of proactive work behaviour and SDT to determine to how to motivate proactive work behaviour. While still relatively few in number, studies in this area support a role for basic needs satisfaction and autonomous motivation in proactive work behaviours. Parker, Williams, & Turner (2006) showed that autonomy, trust and support at work, all aligned with basic needs satisfaction, predicted proactive work behaviours. Grant, Nurmohamed, Ashford and Dekas (2011) found that high personal initiative, high autonomous motivation and low controlled motivation led to proactive work behaviours and that participants in the studies with higher levels of autonomous motivation achieved better performance outcomes: job applicants got more offers and call centre employees generated more revenue. White (2015) found that autonomous motives of employees in the service industry predicted positive emotions and quality of service in an area requiring the employees to act proactively (i.e. in customer interactions), and that autonomous motives predicted subsequent customer satisfaction. In a related area, a diary study among 76 students

in an innovation boot camp focussed on designing sustainable products, Devloo, Anseel, De Beuckelaer and Salanova (2015) found evidence of a mediating role for intrinsic motivation in the relationship between basic need satisfaction and innovative work behaviour and a reciprocal relationship between innovative work behaviour and need satisfaction. Thus autonomous forms of motivational regulation appear to prompt proactive work behaviours, and may themselves be enhanced by these behaviours.

With regard to controlled forms of motivation, Strauss, Parker and O'Shea (2017) examined the interplay of controlled and autonomous motivation and its impact on the effect of proactive behaviour on job strain, applying principles of proactive goal regulation processes and self-regulatory depletion effects (Bindl, Parker, Totterdell, & Hagger-Johnson, 2012; Bolino, Valcea, & Harvey, 2010; Hahn, Frese, Binnewies, & Schmitt, 2012). They found that when controlled motivation is high and not buffered by similar or higher levels of autonomous motivation, proactive work behaviour will result in job strain. Proactive behaviours require energy, effort and exertion (Fay & Hüttges, 2016) but can be initiated under a range of motivational states. They highlight the depleting nature of the behaviour under controlled motivational states, due to the requirement for self-control. They did not find any anticipated relationship between autonomous dominated or balanced profiles and job strain due to the buffering effect of autonomous motivation. This buffering effect is based on related positive emotions, proactive goal regulation, and reduced resource expenditure. Similarly, the group with low autonomous and low controlled motivation did not demonstrated a relationship to job strain as, in their view, individuals did not expend a lot of energy in proactive work behaviours. It is worth noting however, that low levels of motivation reflect low levels of intention to act which is distinct from intention not to act as reflected in amotivation in SDT theory (Ryan & Deci, 2017) and therefore amotivated groups, which were not included in this research, may demonstrate different relationships. They highlight the need for longitudinal research into the role of motivation in proactive work behaviours suggesting examining different types of proactive behaviour. Their study utilised the MWMS, with the exclusion of the measure of amotivation, and used composite measures of autonomous and controlled motivation. Further insight may be gained by including all forms of motivational regulation individually. For example, in validating the MWMS, Gagné et al. (2015) found consistent significant correlations between identified regulation and proactivity.

Job crafting represents a unique form of proactive work behaviour in that it involves the employee making proactive changes to the design of their jobs (Wrzesniewski & Dutton, 2001). The conceptualisation of job crafting as how individuals adjust the resources and demands within their job (Tims & Bakker, 2010), provides a direct semantic link to the conceptualisation

of motivation as the internal regulation of behaviour relating to external demands within SDT. Chapter 3 examines job crafting in more detail and Chapter 4 presents a new theorizing and related hypotheses on its relationship with work motivation profiles.

Research confirms that situational factors such as job design can, in certain circumstances, support the internalization of motivation at work and that the experience of autonomous forms of motivation can in turn predict effort and proactive work behaviours. With regard to the latter, when people experience controlled forms of motivation, the simultaneous experience of autonomous motivation helps to prevent job strain related to engagement in proactive work behaviours. This is because forms of motivation can interact with each other in ways that are beyond what additive theories of motivation have proposed. Recent work on motivation profiles exploring the within-person levels of various forms of motivation (Howard et al., 2016), has shown that where levels of the various forms of autonomous motivation experienced by an individual are greater than controlled forms of motivation, performance outcomes are positive. Future research in this area will helpful to further examine what behaviours individuals with different motivation profiles enact that may lead to these differences in performance assessments and outcomes. This profile-based research is examined next.

### 2.3.2.Motivation profiles

It is well established in both theorizing and related research findings within the SDT field, that numerous forms of motivational regulation can be experienced by an individual at the same time (Chemolli & Gagné, 2014; Gagné & Deci, 2005). For example, studies in educational domains have reported that rather than being on a single dimension, both intrinsic and extrinsic motivation are endorsed by 50% of students (Harter & Jackson, 1992). As evidenced by the above review, variable centred research designs dominate the field of SDT research at work, meaning that it is not possible to know if an individual who endorsed, for example, intrinsic motivation also endorsed external regulation. Research in the field of SDT at work has begun to focus on patterns of motivation within individuals. Person-centred analysis allows for the interaction between different types of motivation to be examined (Vansteenkiste et al., 2009) and for naturally occurring within-person patterns to be identified rather than those based on proposed dimensional relationships (Moran et al., 2012) . It also allows researchers to test the impact of quality of motivation versus quantity of motivation on outcomes of interest. This final sub-section presents a critical review of motivation profile research to date, a proposed classification model for application in future motivation profile research to aid comparisons across studies, and a number of propositions related to the exploratory examination of motivation profiles in the present study population.

#### 2.3.2.1. Motivation profiles: Research findings

In examining existing motivation profile research in detail, this review identifies, in each study, the degree to which comparable forms of motivation were measured, the nature of profiles identified and their relative size, the different roles of quality of motivation and quantity or motivation therein, and any covariates or outcomes associated with these profiles. Gap or weaknesses of the studies are highlighted. This information provides the basis for the synthesis of these findings into the comprehensive classification model for motivation profiles which follows and for propositions about the types of profiles which might emerge in the present study.

One of the earlier pieces of within-person research on motivation profiles was conducted in Canada (Ratelle et al., 2007). Using the Academic Motivation Scale (AMS; Vallerand et al., 1992), researchers measured intrinsic motivation, identified, introjected and external regulation and amotivation among high school and third level students. Their analysis sought to identify naturally occurring patterns using group based finite mixture modelling (Nagin, 2005) rather than a priori categories (e.g. Vansteenkiste et al., 2009). In two studies of high school students (n = 4498/942), they identified three groups within the samples: High controlled and amotivation where amotivation was higher than controlled motivation (*Amotivated;* 5.9%/7.3% of sample respectively) moderate autonomous and controlled with low amotivation (*Moderately Motivated;* 45.9%/59.4%); and high autonomous and controlled with low amotivation (*Highly Motivated;* 48.2%/33.3%). The latter two groups had the best school functioning outcomes in both studies compared to the first group in both samples. The *Highly Motivated* group performed better than *Moderately Motivated* group and the *Amotivated* group was the strongest predictor of school drop-out. In study 1, more girls were in the *Highly Motivated* group, more boys were in the *Amotivated* but this finding was not replicated in study 2. In the third study of 410 college students, only the *Highly Motivated* profile was replicated (38.6%). Two additional profiles emerged: low to moderate on all forms of regulation (*Low Motivation;* 25.1%) and an autonomously motivated group with low levels of controlled motivation and amotivation (*Autonomously Regulated*; 36.3%). The *Low Motivation* group performed worse on grades achieved and persistence; the *Autonomously Regulated* group were twice as likely to persist as the *Highly Motivated* group. More women were in the *Autonomously Regulated* group with more men in the *Low Motivation* group.

The findings, among influences of gender and, potentially, age, highlight a role for the social environment in the motivation profiles that arise therein. For example, *Amotivated* profiles emerged in school settings where students are required to be there, but not in university settings where at least some students will have chosen to go. In addition, it was of interest that profiles

combining autonomous and controlled motivation performed just as well on some measures as more autonomously dominant profiles suggesting that quantity and quality matters, at least when autonomous motivation levels are equal or dominant. Finally, the study confirmed the theorized simultaneous experience of different forms of motivation which has subsequently been reflected in academic settings in later research (Litalien, Gillet, Gagné, Ratelle, & Morin, 2019).

Vansteenkiste et al. (2009) presented person-centred, cross-sectional research on motivation profiles of 887 high school students and 484 college students using the Academic Self-Regulation Scale (Ryan & Connell, 1989). They identified four a priori profiles via cluster analysis: *good quality*: high autonomous, low controlled; *poor quality*: low autonomous, high controlled; *high quantity*: high autonomous, high controlled; and *low quantity*: low autonomous low controlled. They noted that the *high quality* group performed best on education related outcomes followed by *high quantity*, *low quantity* and finally *low quality.* The study did not include a measure of amotivation. While the simple, intuitive structure of the a priori profiles in this study may be useful from the perspective of diagnostics and interventions (Vansteenkiste et al., 2009), it is questionable in light of similar research which found different naturally occurring profiles (Ratelle et al., 2007) and subsequent analysis which suggests that composite measures of autonomous and controlled motivation may be confounded due to the alignment that introjected motivation demonstrates with both autonomous and controlled forms of motivation (Howard et al., 2017).

To the best of the author's knowledge, Moran et al., (2012) was the first study to examine naturally occurring motivation profiles in the work domain using exploratory cluster analysis. In a relatively small sample of 225 employees (62 supervisors) from across 12 organisations varying by industry and location within China, researchers identified five motivation profiles from measures of intrinsic motivation, integrated, identified, introjected and external regulation; amotivation was not included. They were as follows: low on introjected and moderate on all other regulations (*Low Introjected;* 16%); moderate on all forms of regulation (*Moderately Motivated;* 30. 2%); low on intrinsic motivation and integrated regulation and moderate on identified, introjected and external regulation (*Low Autonomy;* 12%); high autonomous and low controlled motivations (*Self-Determined;* 15%); and high on all forms of motivation (*Motivated;* 26.2%). The *Self-Determined* and *Motivated* groups had the most favourable correlates with need satisfaction, performance and work environment perceptions. The *Low Autonomy* group had the least favourable.

While the study was limited by the omission of amotivation, the use of an unvalidated measure written specifically for this research, and the small sample size, it replicated profiles which

emerged in other domains (e.g. Ratelle et al., 2007). These included the existence of quantity based profiles (high, moderate or low on all forms of motivation) and the existence of quality based profiles (dominant on controlled or autonomous forms of motivation). The authors also proposed that profiles may differ based on work context. While they found no differences in motivation profile based on age, gender or length of time in role, the *Self-Determined* and *Motivated* groups reported experiencing highest levels of need supportive environments (e.g. social support and job characteristics) and need satisfaction suggesting that when autonomous motivation is present, controlled motivation does not have detrimental impact on individual outcomes.

Focussing on naturally occurring motivation profiles using composite measures of autonomous and controlled motivation, a Belgian/Dutch study (Van den Broeck et al., 2013) applied exploratory cluster analysis to find four profiles: High autonomous and controlled motivation (HA/HC), high autonomous and low controlled motivation (HA/LC), low autonomous and high controlled (LA/HC), and low autonomous and controlled motivation (LA/LC). The findings were based on a representative sample ($n$ = 1797 via street interview) and two additional samples from divergent organisations (Belgian public sector ($n$ = 287) and Dutch call centre agents ($n$ = 270)). The HA/HC and HA/LC profiles reported highest levels of job satisfaction, work engagement, enthusiasm and lowest levels of burnout and strain; the LA/HC and LA/LC reported the opposite.

The study was limited by the fact that it used abridged 4 item composite measures of autonomous and controlled motivation rather than measures for each individual form of motivational regulation; amotivation was excluded. The groups differed by demographics: more males and temporary workers were in the HA/HC group; more females, those in secure employment, and those with strong educational backgrounds were in the HA/LC group; more temporary, blue-collar, and lower educated individuals were in the LA/HC group; and more male, moderately educated, non-management and agency workers were in the LA/LC group. The groups did not differ by age or part-time status. Profiles with high autonomous motivation were consistently associated with high job satisfaction, high engagement/enthusiasm and low burnout and job strain regardless of levels of controlled motivation. Among the profiles, the impact of levels of controlled motivation on wellbeing and satisfaction outcomes could not be established consistently. However, the ambiguity around findings for controlled motivation is potentially related to oversimplified, abridged, composite measures of motivation, confounded by the inclusion of introjection within controlled motivation and lacking a measure of amotivation (Chemolli & Gagné, 2014; Howard et al., 2017).

Graves et al., (2015) examined motivation profiles among 321 well educated, primarily white, private sector managers measuring external motivation, introjected motivation, identified motivation, and intrinsic motivation only (MAWS, Gagne et al., 2010). Applying latent profile analysis, 6 profiles emerged: *Very Low Internal, Low Internal, Moderately Low Internal, Moderately High, High Internal and Self-Determined*. Increases in perceived supervisor support decreased the likelihood of being in the *Low* and *Very Low Internal* profiles instead of the *Self-Determined* profile. Increases in perceptions of organizational politics increased likelihood of being in the *Moderately Low Internal* profile. *Self-Determined* profile was higher than all other profiles except *High Internal* in job satisfaction and commitment. *High Internal* profile was higher than the three low internal profiles in satisfaction and commitment and higher than the *Moderately Internal* profile in satisfaction. The *Very Low Internal* profile had significantly higher intent to turnover than the *Self–Determined, High Internal* and *Moderately High* profiles. Overall, the internalization of motivation was beneficial for outcomes in this study.

The profiles of this study included two that recur in almost all of motivation profile based studies to date: a very low/amotivated profile and a highly motivated profile. It is also noteworthy that emergent profiles were both quantity based (e.g. *Moderately High*) and quality based (e.g. *Self-Determined*) reflecting outcomes in other motivation profile research. Finally, it is interesting to note that there are two autonomous dominated profiles identified: high internal and self-determined which may be reflective the sample of highly educated private sector managers.

Valero and Hirschi (2016) applied an integrative model of motivation based on Parker et al.'s (2010) model of proactive motivation in research involving samples of adolescent students (n = 577, 15 years old) and apprentices (n = 949, 17 years old). They used autonomous goals, positive affect and occupational self-efficacy as latent profile indicators. While the study did not apply SDT, the findings are noteworthy. They found five consistent profiles: low positive affect (4%/12%), unmotivated (9%/6%), slightly unmotivated (30%/23%), moderately motivated (42%/54%), motivated (14%/6%).

Due to the theoretical basis of the study, controlled forms of motivation or amotivation were not included. However, both quantity based (e.g., moderately motivated) and quality based (e.g. low positive affect) profiles emerged.

Howard, Gagné and colleagues (2016) arguably take a much more detailed and rigorous approach to within-person motivation research than any of their predecessors by a) identifying motivation profiles using advanced LPA techniques rather than cluster analysis; b) using reliable and well-established measured (i.e. MWMS; Gagné et al., 2015); c) reflecting the

complexity of experienced motivation by including all demonstrably distinct forms of motivation within SDT (i.e. including amotivation and excluding integrated motivation (see recent meta-analysis findings: Howard et al., 2017)); d) relying on strong theoretical foundations (i.e. SDT); and, e) applying the autonomous and controlled framework as a post hoc analytical framework rather than a measure; and f) focussing on a large heterogeneous group of working adults in two countries (Canada n=723, Belgium n=286), from technology, government and manufacturing sectors. Four profiles emerged from the analysis. Two reflected those that emerge among the majority of motivation profile studies: *Amotivated* and *Highly Motivated*. The *Amotivated* profile was associated with distinctly low well-being outcomes. This highlights the importance of including amotivation as a specific measure, rather than just reporting low levels of motivational regulation. A *Balanced* profile emerged reflecting average levels of all forms of motivation/amotivation. Finally a *Moderately Autonomous* profile emerged with above average levels of intrinsic motivation and below average on all other forms.

Once more these profiles reflect both quality based profiles (*Moderately Autonomous*) and quantity based profiles (*Highly Motivated*). The key finding of the analysis was that as long as the profile shape is dominated by autonomous rather than controlled forms, well-being and performance outcomes appear to be positive, thus that quality of motivation may supersede quantity of motivation in predicting work and employee outcomes. This was demonstrated by the fact that the *Balanced* profile, which was similar in overall levels of motivation to the *Moderately Autonomous* profile demonstrated significantly lower levels of performance and wellbeing. The authors highlight that research is identifying "core profiles" which might be found everywhere and others which are more peripheral and may be specific to working contexts or types of employees (Solinger, Olffen, Roe, & Hofmans, 2013). There was also evidence that profile membership was a function of job category (Howard et al., 2016). The study was marginally limited by having just three job categories which may have missed some of the nuance associated with samples with different work and organisational characteristics.

### 2.3.3.Motivation profile classification model and study propositions

With six individual forms of motivational regulation, numerous profiles can be anticipated to naturally occur across all organisations. As evident from the above review, studies to date have used diverse naming conventions to describe motivation profiles which can make it difficult to differentiate or compare profiles across studies. The current research aims to rectify this situation by proposing a classification model that can be applied to emergent motivation profiles. Figure 2-A outlines this model, which is based on motivation profile research to date and the premises of self-determination theory. It reflects the consistent emergence in research of profiles either characterised by their dominant quality of motivation (quality-driven) or those

without a dominant quality of motivation, characterised instead by the quantity of overall motivation (quantity-driven). This distinction is not novel to the current proposal: previous profile studies have attempted to identify the different impact of quality versus quantity in motivation profiles (e.g. Van den Broeck et al., 2013). However, to date, these characteristics have not yet been used to create a coherent classification model for motivation profiles.

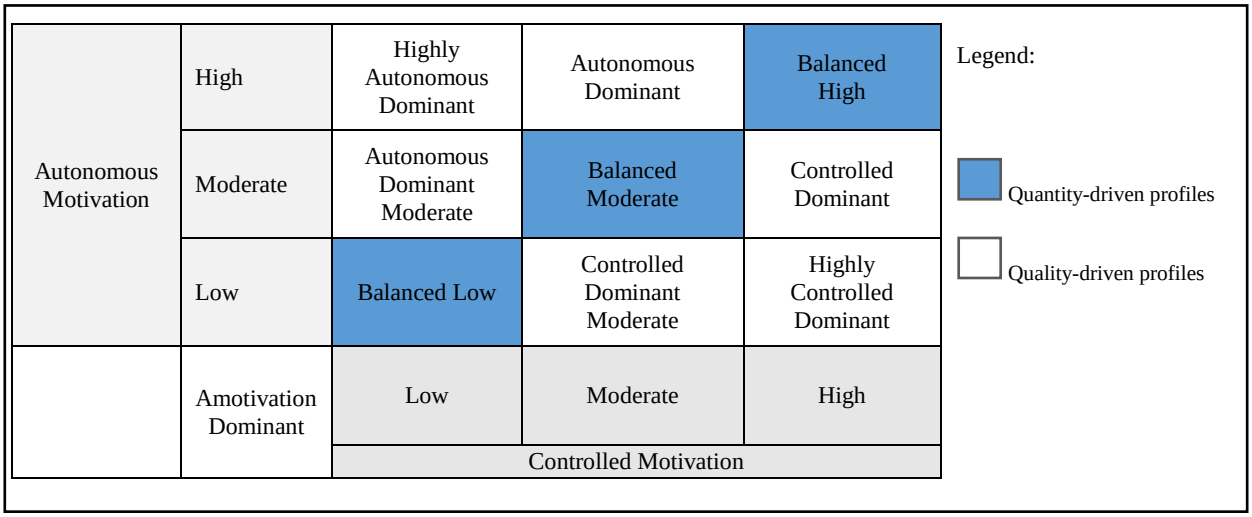



*Figure 2-A Proposed Classification Model for Quantity-Driven and Quality-Driven Motivation Profiles*

These categories of profile demonstrate predictable outcomes in the literature within and across categories (see Table 2.1). Within quality-driven profiles, *Autonomous Dominant* profiles are consistently associated with more positive outcomes than *Controlled Dominant* or *Amotivation Dominant* profiles. Within quantity driven profiles, *Balanced High* profiles are associated with more positive outcomes than *Balanced Moderate* or *Balanced Low* profiles. Across these profile categories, *Balanced High* and *Autonomous Dominant* profiles (incl. high or moderate) are associated with similar positive outcomes and more positive outcomes than all other profiles (*Controlled Dominant*, *Amotivation Dominant* or *Balanced Moderate* or *Balanced Low*). In other words, unless autonomous motivation is high (as in *Balanced High*), *Autonomous Dominant* profiles appear to outperform all other profiles with regard to positive outcomes. For example, with similar levels of overall motivation, *Autonomous Dominant Moderate* profiles lead to more positive outcomes than *Balanced Moderate* profiles (Howard et al., 2016). *Amotivation Dominant* profiles are related to the lowest levels of positive outcomes. These distinct outcomes associated with quantity- and quality-driven profiles support the validity of the proposed nomenclature.

The model is applied, and the appropriate classification is identified by examining the relative average levels of autonomous motivation (Intrinsic, Identified) and controlled motivation (Introjected, External Regulation) within a population as indicated by standardized means.

*Amotivation Dominant* is indicated when Amotivation is high and all other types of motivation are at or below average as described Howard, Gagné, Morin and Van den Broeck (2016). Further details of the application of the model in the present study are provided in the relevant data analysis section in Chapter 6.

It can be expected the presence these profiles in a population may be related to nationality, culture, organisational context and job characteristics. The present study seeks to explore the impact on these by examining motivation profiles among a low-skilled worker group in a single highly engineered UK based organisation. As this research will seek to identify naturally occurring profiles, the nomenclature is applied here as an a posteriori classification, as opposed to an a priori prediction.

Table 2.1 Examinations of Naturally Occurring Motivation Profiles – Differences in Outcomes of Quality-Driven and Quantity Driven Profiles

| **Study** | **Population** | **Quality-driven** | **Quantity-driven** |
|---|---|---|---|
| Ratelle et al., 2007<br>Study 1 & 2 | High School Students | *Amotivation Dominant* predicted school drop out | *Balanced Moderate* and *Balanced High* predicted best school functioning outcomes, with the latter outperforming the former |
| Ratelle et al., 2007<br>Study 3 | College Students | *Autonomous Dominant* twice as likely to persist as *Balanced High* | *Balanced Low* worst on grade achievement and persistence |
| Moran et al., 2012 | Employees/Workers | *Autonomous Dominant* most favourable correlates with need satisfaction, performance and work environment perceptions<br>*Controlled Dominant* least favourable correlates with need satisfaction, performance and work environment perceptions | *Balanced High* most favourable correlates with need satisfaction, performance and work environment perceptions (no difference with *Autonomous Dominant*) |
| Van den Broeck et al., 2013 | Employees/Workers | *Autonomous Dominant* highest levels of job satisfaction, work engagement, enthusiasm, lowest levels of burnout and strain<br>*Controlled Dominant* had lowest levels of job satisfaction, work engagement, enthusiasm, highest levels of burnout and strain | *Balanced High* had highest levels of job satisfaction, work engagement, enthusiasm, lowest levels of burnout and strain (no difference with *Autonomous Dominant*)<br>*Balanced Low* had lowest levels of job satisfaction, work engagement, enthusiasm, highest levels of burnout and strain (no difference with *Controlled Dominant*) |
| Graves et al., 2015 | Managers | *Autonomous Dominant* profiles were higher than *Controlled Dominant* profiles on satisfaction and commitment | *Balanced Moderate* profile had lower intent to turnover than *Controlled Dominant* profiles and lower satisfaction and commitment than *Autonomous Dominant* profiles |
| Howard et al., 2016 | Employees/Workers | *Amotivation Dominant* associated with lowest job satisfaction and engagement and highest burnout of all profiles<br>*Autonomous Dominant Moderate* demonstrated significantly higher performance and wellbeing outcomes than *Balanced Moderate* and no difference with *Balanced High* | *Balanced Moderate* profile demonstrated significantly lower performance and wellbeing outcomes than *Autonomous Dominant Moderate Balanced High* profile demonstrated significantly higher performance and wellbeing outcomes than *Balanced Moderate* |

#### 2.3.3.1. Propositions regarding motivation profiles

Given the exploratory nature of this analysis, explicit hypotheses are not presented in the present study. Nevertheless, based on findings from other examinations of naturally occurring motivation profiles, especially those where individual forms of regulation have been measured (Graves et al., 2015; Howard et al., 2016; Moran et al., 2012; Ratelle et al., 2007), it is proposed that two 'core' profiles will emerge: *Amotivation Dominant* and *Balanced High.* A number of profile studies have also seen a *Balanced Low* profile emerge (Ratelle et al., 2007; Van den Broeck et al., 2013). Howard, Gagné, Morin and Van den Broeck (2016) equate this profile with their *Amotivation Dominant profile.* Therefore it is of interest to see if this profile emerges distinctly or only *Amotivation Dominant* emerges.

The nature of the population and working environment in this study allows for a further proposition. Van den Broeck et al. (2013) found that blue-collar, lower educated workers were dominant in a high controlled, low autonomous motivation profile; the population for the present study are comprised of blue collar, low-skilled workers. In addition, their working environment is highly engineered, including close monitoring, a focus on errors and error resolution, and repetitive piecemeal tasks and therefore, job characteristics may not be supportive of autonomy and competence needs. Thus, it can be proposed that one or more *Controlled Dominant* motivation profiles may be present. These propositions, displayed in Figure 2-B, are discussed again in the Chapter 7, in light of the results presented in Chapter 6.

| |
|---|
| **Proposition 1:** Two "core profiles" will emerge: *Amotivation Dominant* and *Balanced High.* |
| **Proposition 2:** One or more *Controlled Dominant* motivation profiles will be present. |

*Figure 2-B Study Propositions*

In summary, research applying the tenets of self-determination theory to the work domain has consistently demonstrated the role of basic need supports and the design of the job in positive individual and organizational outcomes via autonomous motivation. Different forms of motivational regulation predict, not just outcomes like performance and job satisfaction, but also behavioural mediators of these outcomes such as how individuals invest effort at work and the extent and forms of proactive behaviour in which they engage. These findings have been made possible by the development of a range of quantitative measures of motivational regulation, among which the MWMS (Gagné et al., 2015) is the most comprehensive measure available in terms of the forms of regulation it measures and the extent of its validation. The long standing tenet of SDT theory that different forms of motivation can be experienced

simultaneously by the same individual has finally been fully supported by a recent stream of research into motivation profiles. The present study builds on this existing research by applying latent motivation profile analysis to a low-skilled worker population. It further contributes to this field of research by proposing a comprehensive classification model for motivation profiles to allow profiles to be easily compared across different studies in the future.

### 2.4. Conclusion

With its focus on creating optimal conditions for the satisfaction of basic psychological needs, SDT has the potential to improve all domains of life for individuals, including working life. Numerous forms of motivational regulation exist on a continuum of autonomy from autonomous (self-regulated) to controlled (externally regulated) (Deci & Ryan, 2008b). Reasons to engage in work can be intrinsic or extrinsic and these extrinsic forms of motivation differ in the degree to which they are internalized. The forms of motivation that people experience at work are determined by the extent to which the work meets their basic needs for autonomy, competence and relatedness (Gagné et al., 2010). If work satisfies these needs, it impacts work motivation in different ways (Gagné & Deci, 2005). Satisfaction of needs for competence and relatedness allows experienced motivation to become internalized, as evidenced in increasingly autonomous forms of motivational regulation. If work satisfies needs for autonomy, it can determine the extent to which these forms become internalized. If needs are fully satisfied at work, even where work is not intrinsically enjoyable, individuals can experience identified or integrated motivation (Gagné & Deci, 2005) and experience optimal outcomes in wellbeing and performance.

Work is unique from other domains because, with the possible exception of unpaid workers, extrinsic reward is integral to work. Individuals receive monetary reward in return for work completed. Indeed, for the vast majority of workers who lack financial independence, getting paid is one of their primary reasons for coming to work. If this were the only reason to work, external regulation would dominate their motivational experience. However, because individuals can experience different forms of motivation simultaneously, many organizations successfully focus on creating working environments which facilitate the internalization of motivation, creating other reasons for coming to work beyond pay. These include recognition and promotions which feed ego needs and act as a buffer against low self-esteem (introjected motivation), highlighting the value of the work (identified regulation), and fostering deep connection between the individual and the organization such that the work becomes part of who they are (integrated regulation). Alongside autonomous and controlled forms of motivation, organizations must understand how to address amotivation, or the intent not act. The experience of amotivation and how it impacts behavioural outcomes at work has been largely absent from

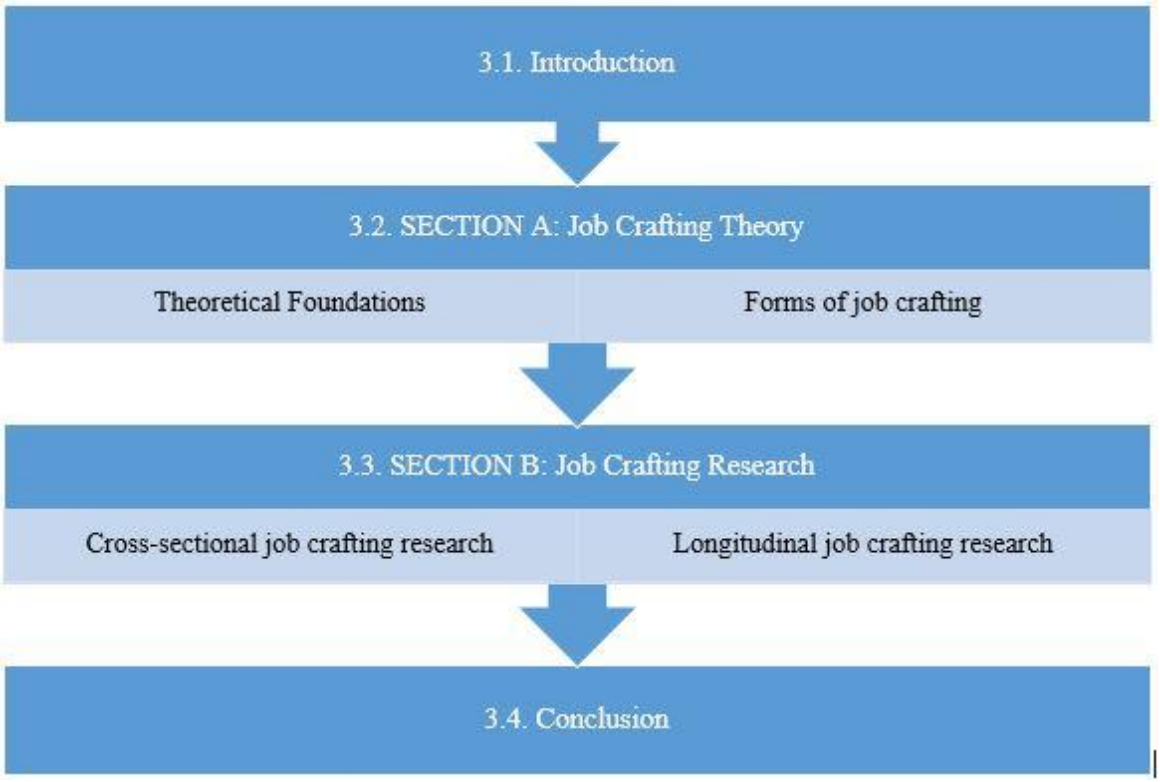
the work motivation research to date. Thus, it becomes clear why within-person research is so important to allow researchers to understand the full picture of experienced work motivation within an individual. Recent research looking at the motivation profiles of individuals, found that autonomous motivation predicts performance and wellbeing even where controlled motivation exists (Moran et al., 2012) and that as long as the profile is dominated by autonomous motivation, positive outcomes can be predicted (Howard et al., 2016). It is where autonomy is low in the profile and controlled motivation dominates, that positive outcomes suffer (Howard et al., 2016; Moran et al., 2012). Future research needs to explore the nature of motivation profiles at work, including the role of amotivation therein, and the circumstances in which they arise (specific jobs, specific sectors etc.), a goal which the present study aims to contribute by focussing on low-skilled workers in a low autonomy environment.

While their antecedents and distal outcomes have been examined in detail, an identification of the proximal behavioural enactments resulting from various forms of motivational regulation has been lacking from the variable-centred research in SDT (De Cooman et al., 2013) and is almost entirely absent from the limited range of person-centred research. Research relating to different types proactive work behaviours holds great promise in revealing how the motivation profile of an individual impacts their behaviours at work, particularly over time. The current research will examine the impact of within-person motivation profile on the level and trajectory of their proactive behaviour over time. As the next chapter will explore, job crafting, the form of proactive work behaviour measured in this study is well suited to the study of motives because it has been conceptualised as a range of employee-driven behaviours that change the resources and demands within a job (Tims et al., 2012) and because these changes reflect the needs of the employee rather than the organisation (Wrzesniewski & Dutton, 2001). In examining the concept of job crafting, this study provides insights into the role of motivation in employee-led job design and the investment of effort.

Finally, in addressing the above points the current research responds to a number of calls among SDT authors and researchers, specifically: the call for longitudinal designs in SDT (Deci et al., 2017) and proactive behaviour research (Liu, Tangirala, Lee, & Parker, 2019), the call for work on motivation and proactivity (Kanfer et al., 2017), a call for contextualisation in organisational research (Howard et al., 2016; Rousseau & Fried, 2001) and the call for further exploration of amotivation (Howard et al., 2017). The next chapter examines job crafting, the form of proactive work behaviour measured as a longitudinal outcome in this study.

# CHAPTER 3

# Job Crafting Theory and Research




## 3.1. Introduction

How do the work activities of individuals differ based on their motivation profiles as described in the previous chapter? One of the concepts which may help to answer this question is the concept of job crafting. Job crafting is a proactive work behaviour in which individuals deliberately change the design of their jobs to create meaning (Wrzesniewski & Dutton, 2001). The concept is based on two core ideas: that employees are agentic and therefore will engage in activities not prescribed by the organization such as job crafting; and that the job itself is a social construct and therefore subject to alteration through job crafting. It is a thriving field of research. In the last two years alone, there have been well over 100 research articles published relating to job crafting.[2]

Much theorizing in the area has focussed on defining forms of job crafting activity. Two predominant approaches have been posited. The first by Wrzesniewski & Dutton (2001)

[2] Based on search on topic of "job crafting" between 2017 and 2019 on Web of Science on 20th March 2019 (www.webofknowledge.com)

suggests that job crafting can be either oriented toward changing the task boundaries, relational boundaries or cognitive boundaries of a job. The second, based on the Job Demands-Resource Model (JD-R Model; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), suggests that job crafting can be oriented towards increasing or decreasing demands or resources within a job (Tims & Bakker, 2010). The plethora of recent research studies has primarily sought to test the occurrence of these various forms of job crafting and identify their covariates.

Wrzesniewski and Dutton (2001) proposed specific links between crafting and motivation suggesting that forms of motivation experienced by an individual impact the nature of crafting activities in which they engage. However, where job crafting research studies have examined motivational factors, they have often treated them as outcome variables. Wrzesniewski and Dutton (2001) also proposed that job crafting is dynamic and that both levels and types of job crafting change over time within individuals. Yet, in-depth theoretical development of the links between motivation, time and job crafting has been limited. Indeed, researchers continue to call for further theorizing and research about the role of time in wider field of proactive work behaviours (Liu et al., 2019). The present study seeks to address these gaps by presenting and testing new theory which seeks to answer a number of questions. Are job crafting activities inherently dynamic in nature? Can we expect to see changes in crafting activity over the medium term (i.e. months) even when the environment remains relatively stable? Do levels of job crafting, and their trajectories, differ based on an individual's motivation profile?

This chapter is organized in two sections. The first section presents the wider theoretical and research context for the application of job crafting in this study including its theoretical foundations and assumptions, a description of forms of job crafting and a review of the relevant cross-sectional research in the field. The second section presents a critical review of time in job crafting theory and research. A model of job crafting over time is then proposed in Chapter 4.

## 3.2. SECTION A: Job Crafting Theory

In order to provide context for the application of job crafting in the present study, this section presents an overview of job crafting theory and research. It begins by outlining the theoretical context of job crafting, highlighting the relationships between job crafting and other proactive work behaviours and outlining the assumptions of agency and social constructionism underpinning the concept of job crafting. It proceeds to examine forms of job crafting, describing and comparing two theoretical models of job crafting: Wrzesniewski and Dutton's (2001) job crafting model and the Job Demands-Resource Model of job crafting (Tims & Bakker, 2010). Finally, it discusses their operationalisation in the field, and justifies the application of the JD-R model of job crafting in the present study.

### 3.2.1. Theoretical foundations and assumptions of job crafting

Job crafting theory sits within the wider field of proactive work behaviours which have a long history in industrial-organizational psychology. Fifty years ago, Katz and Kahn (1966) highlighted the importance of activities engaged in by employees which are outside the job as designed. Because there is no way to plan for and design every aspect of a role, organisations need individuals to complete activities that are outside of standard role behaviours (Staw & Boettger, 1990). During the 1970's and 1980's researchers explored these extra-role behaviours by identifying situational contexts in which they occurred. In the 1990's theory and research shifted its gaze toward the individual by looking at personality and behavioural tendencies around proactive work behaviours. The primary reason for this adjustment in focus was that, despite research demonstrating the impact of situational and job characteristics on employee behaviours (Hackman & Oldham, 1976), it was clear that individuals in similar jobs who experience similar situational variables, still enact those jobs in different ways (Biddle, 1979; Graen, 1976; Katz & Kahn, 1978). And, while positioned as positive in the literature, these proactive work behaviours could theoretically be counterproductive and have a negative impact on the organisation (Crant, 2000).

Thus the focus of theory development within proactive work behaviours began to shift from situational drivers and organizational benefits to reframe them from the perspective of the individual. In a seminal article representing this shift, Bell and Staw (1989) suggested that an individuals' proactive regulation of their work lives, along with their own personalities and traits, influence work outcomes. From this point, the individual became the focal point within proactivity research. Constructs developed within the field included those which viewed proactivity as an individual disposition, such as proactive personality (Bateman & Crant, 1993) as a behavioural tendency like personal initiative (Frese, Fay, Hilburger, Leng, & Tag, 1997); as an individual state like role-breadth self-efficacy (Parker, 1998); as a context specific behaviour, such as voice (Van Dyne & LePine, 1998); and as an innovation behaviour such as task revision (Staw & Boettger, 1990). It was in this context that Ilgen and Hollenbeck (1992) describe how emergent task elements can be created by the job holder and incorporated into their role to increase their job satisfaction. These employee-driven activities, which change the design of the job, are the foundations of the construct of job crafting.

Job crafting is a specific form of proactive behaviour which changes the design of a job or tasks therein and is characterised by being motivated by individual needs, and by contributing to individual meaning and identity (Wrzesniewski & Dutton, 2001). The emphasis here is on the dominance of the internal psychological experience and employee needs: individuals are

motivated by their basic needs to craft their jobs; external factors such as job and work characteristics may moderate this activity but they do not drive it. There are examples of other proactive work behaviours which can be classified as job crafting. Personal initiative is a behavioural tendency characterised by being consistent with the organizational needs rather than individual needs (Frese et al., 1997). At the same time, where organisational and individual needs overlap, individual instances of personal initiative could be correctly categorized as job crafting. Other context-specific proactive behaviours, such as coping (Aspinwall & Taylor, 1997) are motivated by individual needs and enhance individual meaning and identity and can be categorized as forms of job crafting.

An underlying assumption of job crafting is that employees are active agents. This assumption challenges a long-held views within organisational research up to the 1990's, that the individual is a passive recipient of the job as designed, a lump of clay to be sculpted by socialisation for organisational ends. The concept of employee agency is supported in wider organizational theory and research including psychological contract theory (Seeck & Parzefall, 2008), the Job Demands-Resources model of employee stress (Bakker & Demerouti, 2007; Tims et al., 2012) and models of employee-led job design (Fried, Grant, Levi, Hadani, & Slowik, 2007). In the latter area, the ongoing, unique interaction between an individual and their job results in changes to that job over time. This reflects the second assumption of job crafting theory: that the job is a social construct.

Within job crafting theory, Wrzesniewski and Dutton (2001) propose that there is no such thing as an objective job. Reflecting observations by earlier scholars (e.g. Sanchez & Levine, 2000; Weick, 1979), they argue that individuals have socially constructed knowledge of their jobs Socially constructed knowledge of a job then directs the activities in which employees engage at work, including their crafting endeavours, and it is these activities which reflect the job in reality. Thus, as a socially embedded process, job crafting is not an isolated instance of proactive work behaviour. It is a combination of proactive and adaptive processes where individuals who wish to engage in job crafting, adapt to the barriers that might exist within their working environment (Berg, Wrzesniewski, & Dutton, 2010). Hence job crafting results *in a continuous evolution of the job over time* based on proactive and adaptive processes (Berg, Wrzesniewski, et al., 2010; Fried et al., 2007). To date, there have been limited longitudinal studies in job crafting research which would allow this evolution to be demonstrated, a gap which the current research will address.

Finally, work meaning and identity is linked to social constructionism (Wrzesniewski & Dutton, 2001). In thinking and speaking about work, and in their actions at work, individuals construct a

work identity and give meaning to the role of work in their lives. Research has shown that even within a single profession, work meaning and identity can vary widely (Fine, 1996). These forms of meaning can be reflected in the motives for doing a job as described in SDT (Ryan & Deci, 2017). For example, where the primary motive for doing a job is to get paid, as reflected in the experience of material-driven external regulation (Gagné et al., 2015) or where it is because of identification with the value and contribution of the work as reflected in the experience of identified regulation (Ryan & Deci, 2017). This meaning can in turn impact how individuals think and act at work to impact their job design (Wrzesniewski & Dutton, 2001). More specifically, in relation to this present study, it can impact the forms of job crafting in which they engage and their persistence in these activities over time. The next sub-section examines these forms of job crafting in more detail.

### 3.2.2. Forms of job crafting activities

There are many ways in which an employee can alter the boundaries of their roles to reflect the meaning of their work or their work identity. These alterations can be made individually, or collectively with team members or management (Leana, Appelbaum, & Shevchuk, 2009); they can be visible or invisible to peers or managers (Lyons, 2008; Tims et al., 2012); and they may be radical or incremental adjustments over time (Berg, Wrzesniewski, et al., 2010). Given the potential range and vastness of forms of job crafting, authors have sought to design typologies which identify and classify forms of job crafting activities. In this sub-section, the two predominant approaches are examined and compared: the job crafting model (Wrzesniewski & Dutton, 2001) and an alternative classification of job crafting activities applying the Job Demands-Resources (JD-R) model which is utilised in the present study (Tims & Bakker, 2010; Tims et al., 2012).

#### 3.2.2.1. Wrzesniewski and Dutton's (2001) Job Crafting Model (JCM)

Wrzesniewski & Dutton (2001) proposed that all job crafting activities can be classified as one of three types: changing task boundaries, changing relational boundaries or changing cognitive boundaries. The first includes changing the type or quantity of job tasks. The second includes changing the nature of existing relationships, and adding or removing relationships. The final type refers to an employee changing their perception of their work as discrete parts or as a whole. While a number of studies have found evidence of all three types of job crafting (Berg, Grant, & Johnson, 2010; Berg, Wrzesniewski, et al., 2010; Hornung & Rousseau, 2007; Leana et al., 2009; Lyons, 2006, 2008), the model has been criticised for the generic nature of its classifications (Bakker, Tims, & Derks, 2012). Berg, Wrzesnifewski, et al. (2010) have

addressed this critique to some extent by applying qualitative findings to further delineate the classification into six types of job crafting.

However, Wrzesniewski and Dutton (2001) acknowledge that there may be other types of job crafting activities for which their model does not account. Subsequent research reveals job crafting as a form of career self-management (Lyons, 2006, 2008; Simmering, Colquitt, Noe, & Porter, 2003), and identifies crafting of leisure time in response to missed callings (Berg, Grant & colleagues, 2010) or to misalignments between work and work identity as a result of a merger (Kira, Balkin & San, 2013). Other identified forms of job crafting include organizational crafting where high level executives changed the organisation to align with their own work identities (Kira & Balkin, 2014) and forms of crafting that are directed towards interests and strengths use (Kooij, van Woerkom, Wilkenloh, Dorenbosch & Denissen, 2017). Finally, specific types of physical job crafting have emerged from qualitative examinations including temporal crafting, where individuals deliberately determine how they spend their time to align with their personal work-life balance needs, such as skipping lunch to leave work earlier; and locational crafting, where individuals manage where work time is spent, such as working from home to facilitate work-life balance (Sturges, 2012).

Wrzesniewski and Dutton (2001)'s model does not explain when, how and why different types of job crafting are related to each other. In their qualitative study, Berg, Wrzesniewski, et al. (2010) explored the relationships between the three proposed types of job crafting and found evidence that task and relational changes are connected to each other, and that cognitive changes may pre-empt changes to tasks and relationships. The job crafting model also fails to specify how the antecedent variables within the model relate to each type of crafting activity even though the types of job crafting activities they highlight are distinct from each other and likely to have different antecedents. Furthermore, while suggesting that relational crafting affects work identity, the model does not provide any further explanation of how different types of job crafting relate to these proposed outcomes of identity and meaning.

The stream of research that draws on Wrzesniewski and Dutton's (2001) job crafting model is dominated by qualitative research. This has provided rich examples of job crafting. These include an ethnographic qualitative study of a team of 20 pattern makers in Italy based on 300 hours of observations, document analysis and interviews (Bertolotti, Macri, & Tagliaventi, 2005); semi-structured interviews with 33 employees from non-profit and for-profit organisation in the US (Berg et al., 2010); and qualitative study in Finland by Kira et al. (2013) examined crafting during a change period and how it relates to personal values and needs, referred to as authenticity. Quantitative studies of Wrzesniewski and Dutton's (2001) model

have been more limited in number and relatively disparate in their attempts to operationalize the model into a comprehensive quantitative measure (e.g. Ghitulescu, 2006; Leana et al., 2009; Slemp & Vella-brodrick, 2013; Lu, Wang, Lu, Du, & Bakker, 2014; Niessen, Weseler, & Kostova, 2016). Nevertheless, the most recent of these present good opportunities to develop quantitative research within this conceptualization of job crafting. An alternative classification model, the JD-R model of job crafting (Tims & Bakker, 2010) which includes a relatively consistent approach to quantitative research (Tims et al., 2012) is discussed next.

#### 3.2.2.2. The Job Demands-Resources Model & Job Crafting

While referring to the original job crafting model, Tims and colleagues (Tims & Bakker, 2010; Tims et al., 2012) created an alternative conceptualisation by applying the JD-R model to job crafting activities. As a theory of employee stress, the JD-R model (Bakker & Demerouti, 2007; Demerouti et al., 2001) draws on balance models of employee wellbeing such as the demand-control model (Karasek, 1979) and the effort reward imbalance model (Siegrist, 1996). It argues that a job can be viewed as a range of demands and resources (Van den Broeck, de Cuyper, et al., 2010). Demands require an investment of effort or energy from the employee and require skills and resources in order to be fulfilled. Resources help employees to meet or reduce demands and support the completion of work goals (Bakker & Demerouti, 2007; Demerouti et al., 2001). Jobs that are poorly designed, for example where demands exceed resources, can lead to employee burnout; jobs that are well designed can enhance work motivation and meet basic needs for autonomy, competence and relatedness (Bakker & Demerouti, 2007; Demerouti et al., 2001). While demands can drain energy, resources can provide support and act as a buffer against the potentially negative impact of demands, particularly in high demand jobs (Bakker & Demerouti, 2007; Demerouti et al., 2001). However, not all demands are draining. While hindrance demands may drain energy by directing attention away from personal goals, often resulting in negative emotions, challenging demands are stimulating, create positive affect and lead to personal growth, despite requiring an investment of energy (Van den Broeck, de Cuyper, et al., 2010)

Tims et al. (2012) identified four dimensions of crafting activities rooted in the JD-R Model: increasing challenging job demands (CD), increasing structural job resource (SR), increasing social job resources (SS) and decreasing hindering job demands (HD). Increasing challenging job demands is where employees alter the boundaries of their role to increase challenges for stimulating, motivating outcomes as well as the chance to experience growth (Tims et al., 2012). Challenges can include anything from a chef deciding to invest time in sourcing seasonal produce to a project manager taking the opportunity to expand a project to improve an aspect of

a new IT system. Seeking resources incorporates two dimensions of increasing structural job resources and increasing social job resources (Tims et al., 2012). Increasing structural resources is where employee seek to add resources within the structure of their job, such as broader decision making scope or additional training. Increasing social resources is where employees seek additional relationship support, such as advice from a colleague or feedback from their manager. Decreasing hindering demands is where employee reduce the demands of their job by, for example, declining a request to help on an extra task or minimizing contact with people who are emotionally demanding.

Bakker et al. (2012) describes the first three dimensions above as positive job crafting but they can also be identified as *expansive* in nature as they aim to increase both demands and resources within the job (Peeters, Arts, & Demerouti, 2016). Increasing challenging demands and seeking social and structural resources are positively related to situational and individual factors such as job autonomy (Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012), personal initiative (Tims et al., 2012), and proactive personality (Bakker et al., 2012), and to work outcomes like colleague-rated performance and engagement (Bakker et al., 2012; Petrou et al., 2012; Tims et al., 2012; Tims, Bakker, Derks, & van Rhenen, 2013). They are negatively related to negative work attitudes like individual cynicism (Tims et al., 2012). Of the three dimensions, recent findings suggest that increasing structural resources (Tims et al., 2012) and increasing challenging demands (Bakker et al., 2012) are most important for work engagement and other-rated performance (Rudolph et al., 2017). While seeking social resources has demonstrated significant, positive correlations with engagement, these are weaker than the other two dimensions (Tims et al., 2012), and it has demonstrated mixed relationships with other-rated performance (Bakker et al., 2012; Rudolph et al., 2017; Tims et al., 2012).

The final dimension, decreasing hindering job demands (HD), may be important for employees when demands become overwhelming or threaten burnout or when demands interfere or conflict with more meaningful work goals (Tims et al., 2012). This type of crafting behaviour has been described as the negative side of job crafting (Petrou et al., 2012) and has demonstrated non-significant negative correlations with work outcomes like performance (Tims et al., 2012) and engagement (Petrou et al., 2012; Tims et al., 2012). Research has also shown that this type of crafting behaviour has a negative relationship with proposed antecedents of job crafting such as autonomy (Tims et al., 2012). Thus, the variables and outcomes relating to this fourth dimension are demonstrably different than those of the positive job crafting dimensions (Tims et al., 2012, Rudolph et al., 2017). It can be identified as a *restrictive* form of job crafting, as it reduces demands within the job.

By applying the JD-R model to these four forms of job crafting, the model suggests ways in which these forms of job crafting can interact in a way that the Wrzesniewski and Dutton (2001) model does not. For example, it can be hypothesized, based on the model, that individuals might increase resources to allow them to increase demands and therefore that these forms of job crafting may be aligned and occur at the same time. The current research draws on this principle, as described later in Chapter 4. Furthermore, this stream of job crafting research has helped to explain how demand and resources interact within the JD-R model over time (e.g. Dikkers, Jansen, Lange, Vinkenburg, & Kooij, 2010). While the JD-R model focusses on available resources and the demands placed on employees, classifying job crafting activities by applying the JD-R model suggests that employees can influence demands and resources as well as be impacted by them (Bakker & Demerouti, 2007). This reciprocal relationship has since been supported by recent evidence (Bakker, Tims, & Derks, 2012; Dikkers et al., 2010; Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012; Tims, Bakker, Derks, & van Rhenen, 2013; Tims, Bakker, & Derks, 2012, 2013).

There are other advantages associated with this conceptualisation of job crafting. The JD-R based model is based on a model of employee stress and therefore linked to the needs of the employee, as opposed to a generic list of proactive behaviours which may or may not be driven by employee needs. In addition, Tims, Bakker, & Derks (2012) have developed a quantitative measure of this conceptualisation of job crafting, the Job Crafting Scale (JCS) which has been widely used and well-validated (Rudolph et al., 2017) and, as described later in this chapter, has allowed researchers to examine a wide range of situational and individual covariates. This measure is utilised in the present study and is discussed in more detail in Chapter 5.

A distinct disadvantage of the JD-R classification of job crafting is that excludes cognitive job crafting (Bakker et al., 2012). The authors of the classification suggest that cognitive crafting is essentially a form of adaptive reframing in response to an external situation. Job crafting is a proactive work activity, therefore as an adaptive activity it is argued that cognitive crafting does not meet the boundary conditions of the construct (Bakker et al., 2012). A second reason given for the exclusion of cognitive crafting is that job crafting in this classification is limited to changes in aspects of the job at task level (Tims et al., 2012), not about redesigning the job as a whole, as can be the case within cognitive crafting. By excluding cognitive job crafting, the JD-R classification is slightly removed from the social constructionist origins of job crafting theory, which suggests that the individual act of creating the idea of a job, as social construct, can be considered a form of cognitive job crafting (Wrzesniewski & Dutton, 2001). Indeed, Berg, Wrzesniewski, et al.'s (2010) view of cognitive job crafting includes reframing the job as a meaningful whole. They found evidence of this activity and suggest that job crafting can be

made up of a series of adaptive and proactive steps, particularly where employees need to adapt their job crafting intentions to organizational constraints. Researchers have recently begun attempts to resolve this issue and provide theoretical clarity about the role of cognitive job crafting and the boundaries of the construct (e.g. Zhang & Parker, 2019, Lazazzara, Tims, & Gennaro, 2019; Lichtenthaler & Fischbach, 2019), which although beyond the scope of this study, is much needed in the field.

Since the original classification of job crafting by Wrzesniewski and Dutton (2001) was published, it has itself been expanded and an alternative classification of forms of crafting has been proposed that applies the JD-R model. This latter classification has been utilised in the present study. These two approaches differ in a number of areas. The JD-R based classification of job crafting, while excluding cognitive job crafting, is particularly helpful in explaining to explain how forms of job crafting interact. From a methodological perspective, the JD-R based classification has led to the development of the most widely validated scale in job crafting research and a plethora of quantitative studies. In contrast, research that applies the Wrzesniewski and Dutton (2001) classification has been predominantly qualitative. This distinction is reflective of these two parallel approaches to job crafting research, each using a different classification approach and, to a certain degree, a distinct research methodology. While the development of the construct and the wider theory has benefited from these different perspectives, the lack of consensus on the inclusion of cognitive job crafting is important to resolve and recent attempts to do so in the literature are timely and welcome (Zhang & Parker, 2019). The second section of this chapter presents an overview of job crafting research relevant to the present study.

## 3.3. SECTION B: Job Crafting Research

In recent years, there has been an explosion of publications in the field of job crafting. The vast majority of this research is variable-focussed, examining antecedents, outcomes, mediators and moderators of job crafting without the use of repeated measures (Roe, 2008). The present study expands this bank of research with the addition of a person-centred, longitudinal research design. This section opens with a brief review of job crafting covariates and a more detailed review of two specific areas directly relevant to present study: approach and avoidance behaviours, and work meaning and motivation. For the purposes of the remainder of this chapter and later chapters, job crafting activities are described as either expansive or restrictive reflecting the extent to which they either increase or decrease the task, relational or cognitive boundaries of a job. Finally, considering that job crafting was proposed as a dynamic construct

over 15 years ago (Wrzesniewski & Dutton, 2001), the role of time in job crafting research has been limited to date. Thus, this section concludes with a detailed review of time in job crafting literature, applying Roe's (2008) categorization of time in applied psychological research as a frame of reference and establishing the state of the field before the temporal of model of job crafting is presented in Chapter 4.

### 3.3.1. Cross-sectional job crafting research

Job crafting occurs regardless of the type of work (e.g. call centre workers (McClelland et al., 2014), blue collar workers (Nielsen & Abildgaard, 2012), sales professionals (Lyons, 2006) and teachers (Leana et al., 2009)), across all levels of the organization (Berg, Wrzesniewski, et al., 2010) and in stable or changing environments (Demerouti, Xanthopoulou, Petrou, & Karagkounis, 2017; Kira et al., 2013; Petrou, 2013). However, Wrzesniewski and Dutton (2001) suggest that the impact of individuals needs on job crafting is moderated by perceived opportunities to craft as indicated by the features of the job or working environment. There is evidence of increased levels of job crafting in environments with supportive supervision (e.g. Radstaak & Hennes, 2017), work place autonomy (e.g. Petrou et al., 2012) and within environments that support team level decision making (Cullinane, Bosak, Flood, & Demerouti, 2017).

Job crafting has demonstrated relationships with a long list of individual factors such as education level (Leana et al., 2009), calling orientation (Leana et al., 2009), work identity (Kira et al., 2013), individual competitiveness (Lyons, 2006), readiness to change (Lyons, 2008), conscientiousness and neuroticism (C. Bell & Njoli, 2016), dark personality traits (Roczniewska & Bakker 2016), self-efficacy (Miraglia, Cenciotti, Alessandri, & Borgogni, 2017; Tims, Bakker, & Derks, 2014a), and proactive personality (Bakker et al., 2012). Indeed, Bakker et al. (2012) found evidence that expansive job crafting mediates the relationships between proactive personality and peer-rated job performance providing the first evidence that job crafting activities can be the means through which individual factors, such as proactive personality, impact performance as originally proposed by Wrzesniewski and Dutton in 2001. However, a meta-analysis by Rudolph et al., (2017) in summarizing results from numerous studies, highlights a key finding noted earlier in this chapter. Expansive and restrictive job crafting differ significantly in their relationships with individual covariates. Expansive forms of job crafting are consistently linked with individual factors such as big five personality traits and proactive personality and promotion focus; restrictive job crafting is linked with prevention focus.

With regard to outcomes, these differences persist. Positive outcomes are primarily linked to expansive forms of job crafting. These outcomes include need satisfaction (Slemp & Vella-Brodrick, 2013), wellbeing (Gordon et al., 2018; Hakanen, Seppälä, & Peeters, 2017), job satisfaction (Nielsen & Abildgaard, 2012), person-job fit (Lu et al., 2014) and reciprocal relationships with commitment (Qi et al., 2014) and engagement (Tims, Bakker, & Derks, 2014b). Conversely, restrictive job crafting is linked with turnover intentions (Rudolph et al., 2017). These differences are reflected in the temporal model of job crafting presented in the next chapter.

#### 3.3.1.1. Approach and avoidance

It is hypothesized in the following chapter that specific patterns of behaviour are linked to specific forms of job crafting. Bipp & Demerouti (2014), applied Elliot and Thrash's (2010) approach and avoidance temperament to job crafting activities among a population of international employees studying a masters at a Dutch university. Approach temperament demonstrated links to seeking increased resources and increased demands. Avoidance temperament demonstrated links to crafting for reduced demands. A subsequent intervention study among 89 Dutch employees, in which employees were directed to pursue either approach goals or avoidance goals, found that those who focussed on avoidance goals engaged in more demand-reducing crafting behaviour. Interestingly, those who were asked to focus on approach goals demonstrated less crafting to increase demands or resources, perhaps due to the prior commitments to focus on specific goals or due to the fact that the goals were performance-approach goals rather than mastery-approach goals. This research suggests that specific types of job crafting may be aligned with specific behavioural orientations, specifically, approach behaviours with expansive job crafting and avoidance behaviours with restrictive job crafting. This has subsequently been explored in recent meta-syntheses of qualitative job crafting research (Lazazzara et al., 2019) and theoretical reviews of job crafting (Zhang & Parker, 2019). These findings are applied within the temporal model of job crafting presented in Chapter 4.

#### 3.3.1.2. Meaning and motivation

The present study, by examining motives behind job crafting, seeks to explain why restrictive job crafting does not consistently demonstrate relationships with positive outcomes. Work motivation and motivational orientation have been proposed to predict different crafting activities from the earliest iteration of job crafting theory (Wrzesniewski & Dutton, 2001), yet this contention remains to be directly tested. Specifically, job crafting theory suggests that intrinsic motivational orientation results in more expansive and far-reaching crafting activities than extrinsic (Wrzesniewski & Dutton, 2001). Similarly, Self-Determination theory (SDT)

suggests that when our basic needs are met at work, we experience more autonomous motivation which predicts proactivity, an autonomous behaviour (Ryan & Deci, 2017). According to SDT, we all experience the same level of basic needs so having them does not necessarily provide a reason to act at work; they can be met in other domains. Rather, having them met at work by supportive environments, fosters specific types and profiles of experienced motivation to act at work. As outlined in the next chapter, these resulting actions include types, levels and patterns of job crafting over time. While a relationship between the within-person experience of motivational regulation outlined in SDT and the proactive behaviour of job crafting has not yet been fully elucidated or tested, a number of studies have begun to explore motivational factors and job crafting.

Research in the wider area of proactivity at work has found that the personal initiative activities engaged in by those who experienced intrinsic work motivation were more likely to be positively associated with performance than similar activities by those who experienced extrinsic work motivation (Grant et al., 2011). The authors suggest that this is because these activities are more expansive and more persistent for individuals who are intrinsically motivated by their work.

With regard to studies involving job crafting, motivational constructs have demonstrated antecedent relationships with job crafting. For example, spirituality has been found to be related to increases in intrinsic motivation leading in turn to increases in job crafting and performance (Moon, Youn, Hur, & Kim, 2018). Wrznesniewski and Dutton (2001) proposed three needs as antecedent motivations for job crafting: need for control over work and work meaning, need for positive self-image and need for human connection with others. Niessen, Weseler, & Kostova, (2016), in their two wave study of 118 workers from Germany-based organizations, operationalised these as "reason to" forms of motivation. They found that need for positive self-image at T1 predicted relational and cognitive crafting at T2, two weeks later, and self-efficacy moderated the relationship between need for human connection and relational crafting. Conversely, Tims et al. 2012 found that work motivation, specifically engagement, is an outcome of job crafting. A subsequent study by Tims et al., (2016) included a measure of greater good motivations within a meaningfulness measure (Work and Meaning Inventory; Steger, Dik, & Duffy, 2012) as an outcome of job crafting. While the three scales of positive meaning, meaning making and greater good motivations were collapsed into one latent factor for the analysis, making it difficult to identify the role of motivations specifically, they did find support for a relationship between job crafting and meaningfulness through demands-abilities fit among 114 heterogeneous employees.

Research demonstrates that crafting can either enhance the importance of work in our lives (Kira et al., 2013; Sturges, 2012) or reduce the meaningfulness of work to achieve a better personal balance between work and other domains (Sturges, 2012). Indeed, Tims et al., (2016) found that the relationship between job crafting as a latent factor and the work and meaningfulness scale as latent factors was mediated by demands-abilities person job fit. However, they did not find a significant path from job crafting to work and meaningfulness using these latent measures. In addition, when testing alternative models, they did not test for work meaningfulness as an antecedent of job crafting activities. Finally, a recent small study among 165 employees recent demonstrated a positive relationship between (Shin & Jung, 2019) autonomous motivation and job crafting albeit compromised by using weighted composite measures of motivation and a restricted measures of job crafting. The present study can help to expand upon these findings by examining job crafting among those with different motivation profiles which reflect both work meaningfulness (identified regulation) and meaninglessness (amotivation).

To summarize, cross-sectional research findings go far beyond the original propositions of Wrzesniewski & Dutton, (2001) to include a wide range of individual and situational covariates and outcomes, and an alternative perspective on forms of job crafting (Tims & Bakker, 2010; Tims et al., 2012). It is clear that expansive and restrictive forms of job crafting demonstrate different relationship with variables. There are a number of specific gaps in theory and research which this study seeks to fill including exploring meaning and motives in job crafting (Wrzesniewski et al., 2013) and the role of motivational orientation as an antecedent of job crafting activities, as conceptualised within the JD-R model of job crafting (Tims et al., 2012). The next sub-section presents a review of the longitudinal research in the field of job crafting to date, focussing on the role of time in job crafting, a focal concept within this study. The need for fully temporal, person-centred, longitudinal designs is highlighted to understand the nuances of how factors related to job crafting vary within subjects rather than relying on the broad sweeps of averages.

### 3.3.2. Longitudinal job crafting research

Roe (2008) describes four categories of organizational research models. The first category is timeless research, which is cross-sectional in design. It makes up the vast majority of research in the job crafting field to date and has been briefly reviewed above. The next three categories (methodologically temporal, conceptually temporal, and fully temporal) include some element of time. Methodologically temporal research is conducted over time rather than at a single point

in time but the variables are static and there is no theorizing about the role of time. Conceptually temporal models describe how a phenomenon might occur over time although do not apply temporal methodologies to test it. Finally, fully temporal models describe and test the role of time within a phenomenon or set of phenomena. This section reviews existing longitudinal job crafting research with reference to these three categories.

A search of online databases reveals more than 20 published studies described as longitudinal within the job crafting literature. For the purposes of this review these are grouped into three sub-sections as follows: *diary studies* which examine relationships between variables on a daily basis across a number of days; *two or three wave studies* conducted using longer time intervals that, for example, model the impact of an independent variable at T1 on a dependent variable at T2 and *longitudinal investigations of job crafting* which contribute, either directly or indirectly, to our understanding of change in job crafting over time. These studies are reviewed in detail below with an emphasis on the degree to which they inform the study of job crafting over time.

#### 3.3.2.1. Diary studies

A number of diary studies in the field examine within-person job crafting but do not examine change in job crafting over time. Although they measure job crafting over multiple waves, all examine the within-person stability of relationships between job crafting and other variables over these waves, rather than intra-unit change in job crafting. Examples include a three wave study by Petrou and Demerouti (2015) among 81 heterogeneous Netherlands-based employees which found that week-level promotion focus was related to week-level seeking resources and challenges, and week-level prevention focus was related to week-level reducing demands and seeking resources; a four day diary study by Cullinane et al. (2017) among 64 employees within the manufacturing division of an organisation utilising lean manufacturing (LM) which found that skill utilization was positively associated with seeking resources, and increases in seeking resources and challenges were associated with increases in engagement; a five day diary study by Tims et al. (2014a) among a convenience sample of 47 IT sector employees which found support for positive associations between self-efficacy, crafting increased resources, work enjoyment and work performance, with crafting and work enjoyment as sequential mediators in the relationship between self-efficacy and performance; and a three day diary study by Peeters et al. (2016) on the crossover of expansive job crafting activities between 55 dyads of workers from a convenience sample which found evidence of crossover between seeking challenges but that seeking resources only demonstrated crossover when the partner was high in empathy. Numerous similar study designs explore daily job crafting and engagement, performance, autonomy, need satisfaction, counterproductive work behaviours, positive affect and self-

efficacy among individuals and teams (Bakker & Oerlemans, 2018; Demerouti, Bakker, & Halbesleben, 2015; Mäkikangas, Bakker, & Schaufeli, 2017; Petrou et al., 2012).

As is clear from the descriptions above, while methodologically temporal (Roe, 2008), none of these diary studies focus on changes in job crafting over time (Ohly, Sonnentag, Niessen, & Zapf, 2010). Instead, they focus only on the relationships between transient variables (within-level), and stable variables (between-level), in a given day.

#### 3.3.2.2. Two/three wave designs

A second set of studies in the literature utilise two or three waves of data and, while described as longitudinal by authors, reveal little about change in job crafting over time. In some of these studies, job crafting is just measured once (e.g. Harju, Schaufeli, & Hakanen, 2018; Kim & Beehr, 2018; Tims, Bakker, & Derks, 2013; Tims et al., 2016, Dubbelt, Demerouti, & Rispens, 2019).

In others, the job crafting measure is repeated but the design examines interunit relationships between the variables across time, rather than intra-unit changes within variables. These include a two wave, variable-centred study of the relationship between engagement and person-job fit through relational job crafting conducted by Lu et al. (2014) among 246 Chinese technology workers with a three month time lag; a two wave, variable-centred study by Petrou et al. (2015) conducted study among 580 police officers based in the Netherlands undergoing an organizational change; a two wave, cross lagged, variable-centred study with a time interval of three years among 1640 highly educated Finnish workers by Harju et al., (2016) which measured expansive job crafting along with boredom and work engagement; a two wave, variable-centred study of 349 managers which examined the relationships between psychological capital and career success and expansive job crafting (Cenciotti, Alessandri, & Borgogni, 2017); and a two wave study by Miraglia et al. (2017) among 465 Italian workers which found evidence of a reciprocal relationships between self-efficacy and expansive job crafting and that job crafting mediates the relationship between self-efficacy and supervisory performance ratings.

Finally, Vogt et al. (2016) used a three wave, variable-centred, cross-lagged design to study the impact of expansive job crafting on psychological capital and engagement among 940 European employees. Job crafting was measured in all three waves and means at each time point were reported. An eyeballing of the means reported in job crafting reveals that the ranges of mean differences across the three time points were relatively low (0.1 for SR, 0.11 for SS and 0.05 for CD) although these differences were not tested for significance. Rather, the cross-lagged design

meant the analysis focussed on the impact of variable x at T1 on variable y at T2, and the impact of variable x at T2 on variable y at T3. While the authors argue that including three time points meets guidelines for longitudinal research by Ployhart and Vandenberg (2009), this is debatable based on the design and analysis approach. Indeed, while all of the above studies include more than one wave of data collection, and may be presented as longitudinal, none provide any significant data regarding change in job craft over time.

#### 3.3.2.3. Longitudinal investigations of change within job crafting

The final set of studies included in this review, test for and report change in job crafting in some form and warrant a more detailed description.

Kira et al. (2013) authored a longitudinal qualitative study conducted during organizational change which provided rich examples of how individuals realigned their identities at work in the wake of organizational change, by engaging in job crafting. It did not report on patterns of change in job crafting over time but rather implies this change by examining the unique nature of job crafting activities after a merger. The study reports the impact of the merger on the alignment of work and identity and subsequent job crafting efforts to address this need for alignment, resulting in either authentic work and positive individual outcomes or a failure to align and inauthenticity.

Nielsen and Abildgaard (2012) conducted a two wave variable-centred study among 284 Danish mail delivery workers as part of a validation of an adapted version of the Tims et al. (2012) job crafting scale (JCRQ) designed for blue collar workers. Here they used job crafting as the independent variable at T1 and engagement, job satisfaction and burnout as dependent variables at T2, a year later, but found that the variance in outcome variables at T2 was explained by their levels at T1. They did find some variability in job crafting over time based on an examination of correlation coefficients to verify the stability of measures between T1 and T2. Specifically, while all test-retest correlations were significant, changes to social job resources and hindering demands appeared demonstrated more variability ($r = .49$, $r = .55$) than increasing challenging demands ($r = 0.77$). However, this study was limited in having just two waves (Ployhart & MacKenzie Jr., 2015) and did not explicitly conceptualize change in job crafting over time.

In a two-study paper, a five-day diary study ($n = 164$) and a three wave study among Spanish workers with two month intervals ($n = 191$) were conducted to validate a job crafting measurement tool (Nielsen, Antino, Sanz-Vergel, & Rodríguez-Muñoz, 2017). The three wave study found acceptable test-retest reliability across the three waves suggesting stability in the measure over time at a variable level but did not go further to explicitly examine the nature of

change within or between forms of job crafting. However it can be observed that there may be different levels of stability in forms of job crafting: increasing challenged demands demonstrated higher intra-correlations (r = 0.70-0.76) than increasing social resources (r = 0.60-0.70) and decreasing hindering demands (r = 0.51-0.62). The diary study found factor loadings were lower at a within-person rather than between-person level suggesting that job crafting behaviours can fluctuate from day to day. Thus these two studies, while methodologically temporal and providing some interesting findings relating to change in job crafting, do not attempt to describe or predict change in job crafting in any detail.

Petrou, Demerouti and Schaufeli (2018) conducted a three wave variable-centred study with one year time intervals among 368 police officers undergoing organizational change. It examined the relationship between quality of change communication, job crafting and work engagement and adaptivity, as well as a moderating role for promotion/prevention focus in the relationships between quality of change communication and job crafting. All variables were measured at all three time points. Latent change scores for variables were calculated based on T1 and T2 for change communication, promotion focus and prevention focus, T2 and T3 for engagement and adaptivity and all three time points for job crafting. Change scores provide measures of the change in a variable between two time points. Hence each of the three types of job crafting (seeking challenge, seeking resources and reducing demands) had two latent change scores each. Researchers found that T1 promotion focus strengthened the relationship between quality of change communication at T1 and increases in seeking resources and challenges between T1 and T2 and that increases in seeking resources and seeking challenges between T2 and T3 were positively associated with concurrent increases in adaptivity and engagement. They also found that T2 prevention focus strengthened the relationship between low quality of change communications and increases in seeking challenges between T2 and T3. From a motivational perspective, the influence of regulatory focus is explained as reflecting different reasons for crafting: as motivating for promotion focussed employees and coping for prevention focussed employees. From a longitudinal design perspective, the study represents a step beyond others in the field by examining the impact of variables on a change in a dependent variable rather than simply that dependent variable at a different time point. However, it does not focus on the nature of change within the variable.

Van Wingerden et al. (2017) presented a three wave study examining the impact of a job crafting intervention at T1 on job crafting at T2 (9 weeks later) and T3 (1 year later). The study was useful in demonstrating that the intervention was linked to changing levels of job crafting at T2 and T3 and increased self-efficacy and job performance one year later. Interestingly, the changes were not all positive or continuous but the participant group were consistently higher

than the control group. For example, increasing challenging demands increased from T1 to T2 but did not change from T2 to T3 for the participant group; the control group demonstrated no change from T1 to T2 and a decline from T2 to T3. This suggests that job crafting can change over the medium and long term and that this may occur even where there is no deliberate intervention.

Another interesting study examined change in job crafting (Kooij, Tims, & Akkermans, 2017) used a two wave design with a one year time lag to test the relationships between change in future time perspective (FTP) and change in expansive and restrictive job crafting and engagement. They found that change in open-ended FTP was related to change in expansive job crafting but did not find a significant relationship with restrictive job crafting or between limited FTP and job crafting. They also found that change in restrictive crafting was negatively related to change in performance and engagement.

The latter three designs reported change in a job crafting variable over time and hypothesized why change might occur. Thus they meet the requirement of a conceptually temporal design (Kooij, Tims, et al., 2017; Petrou, Demerouti, & Schaufeli, 2016; van Wingerden et al., 2017). Their limitation is methodological: the use of change scores captures only the change between two adjacent time points, that is, linear change, rather than more dynamic patterns of change across more than three time points (Ployhart & MacKenzie Jr., 2015). At the same time, although limited by number of waves, these studies make a contribution towards longitudinal research by including change in job crafting as a variable.

In critically examining these studies, this review gauges their contribution to our understanding of how job crafting changes over time. It is important to note that the majority of these studies do not claim to make significant contributions to this understanding; they are focussed on other equally interesting questions. Nonetheless, it is essential that they are reviewed because, although limited, they are all we have available in the field. Roe (2008) differentiates between studies that are methodologically temporal which identify the instance of measurements (e.g. T1, T2), conceptually temporal studies that represent time as part of a theoretical model, and fully temporal studies that do both. As outlined above, the vast majority of job crafting research to date has been cross-sectional and the longitudinal studies listed above are dominated by methodologically temporal approaches without explicit elucidation on the role of time. Among those do that report change in job crafting, there is no detailed theory building around the role of time in job crafting nor any use of optimal methodologies for tracking trajectories over time. Therefore, while some studies may meet Roe's (2008) criteria for fully temporal research, some of the simplest questions about crafting job demands and resources over time remain to be

explored. For example, is job crafting truly dynamic over time? If so, in what ways does it change over time? Are there differences in the trajectories over time such that some forms of job crafting are more stable or more dynamic that others? Why might that be?

The current research seeks to make a significant contribution toward improving this situation. As a fully temporal study, it includes both a conceptual model of the impact of time on different forms of job crafting in Chapter 4 and a methodological approach that tests this model via four wave latent growth modelling comparing interunit differences in intra-unit change (Ployhart & Vandenberg, 2009) in Chapters 5 and 6.

To recap, research into covariates of job crafting has been vast and fruitful, albeit predominantly cross-sectional. From a review of the findings, a number of key points emerge that are central to the current research. Firstly, expansive and restrictive forms of job crafting demonstrate distinct relationships with covariates and outcomes. Secondly, approach temperament demonstrates significant relationships with expansive job crafting; avoidance temperament demonstrates significant relationships with restrictive job crafting. Thirdly, studies examining meaning and motives behind job crafting behaviours are limited despite calls for more research in this area (e.g. Wrzesniewski, Lobuglio, Dutton and Berg 2013); such investigations have the potential to shine a light on why relationships between forms of job crafting and individual and situational covariates might vary within and across individuals. Finally, and most importantly, within longitudinal research design, it is clear that very few studies to date contribute directly to our understanding of intra-unit change in forms of job crafting over time.

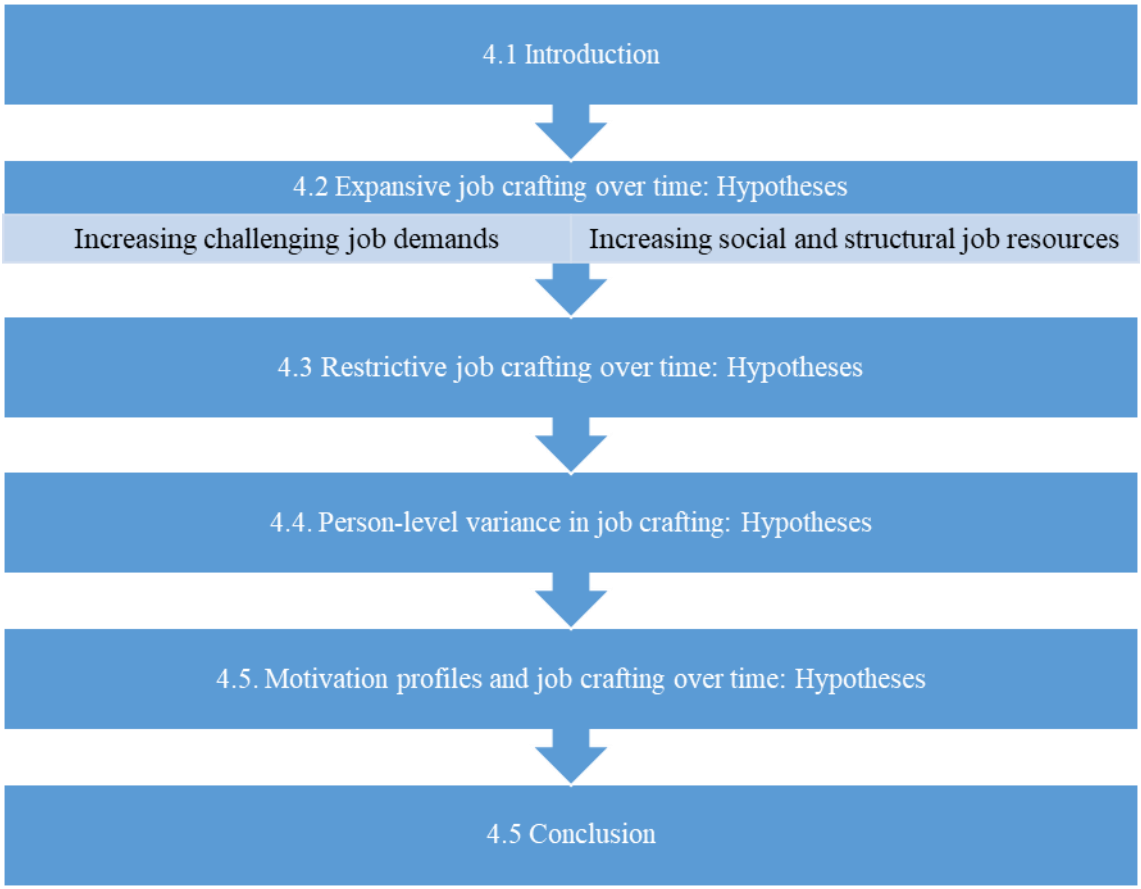
## 3.4. Conclusion

Job crafting is a deliberate, employee-driven, proactive work behaviour, which can alter the demands and resources of the job, as well as its meaning, for the incumbent. The idea that individuals engage proactively in activities to change their working environment in response to their own needs, to create their own unique meaning and identity at work, is powerful. The first section of this chapter presented the theoretical and philosophical assumptions underpinning job crafting theory and then examined and compared two alternative conceptualizations: Wrzesniewski and Dutton (2001) job crafting model and the JD-R model of job crafting (Tims & Bakker, 2010). While research in the area has been experiencing a boom in recent years, consensus has not been reached on the definition and boundaries of the construct. The second section outlined the variables that have demonstrated significant relationships with job crafting, with a particular emphasis on the limited findings relating to work motivation. The job crafting

construct may be uniquely suited to explain how work motivation is made manifest in the day to day activities of an employee, yet this review revealed that relationship between job crafting and the internal psychological experience of motivational regulation has not yet been directly explored. Finally, a detailed critical review of longitudinal research in the field was presented, highlighting a gap in the research literature with regard to fully temporal within-persons longitudinal designs. This gap is addressed by the temporal model of job crafting presented in Chapter 4 and tested in the chapters that follow.

# CHAPTER 4

# A Model of Job Crafting over Time




## 4.1. Introduction

The current research tests one of the earliest propositions of job crafting theory: that job crafting is dynamic (Wrzesniewski & Dutton, 2001). Job crafting is embedded in time: it occurs at specific time and takes time; as a proactive deliberate behaviour, it requires the decision to make an investment of time as a resource; and it is situated in the context of previous acts of job crafting, linked to future acts of job crafting, and occurs simultaneously with other acts of job crafting.

This chapter presents a new temporal model of job crafting, drawing on Self-Determination theory (SDT; Ryan & Deci, 2017), the Job Demands-Resources (JD-R) model of burnout (Demerouti et al., 2001), Conversation of Resources (COR) theory (Hobfoll, 2001) and Fredrickson's Broaden-and-Build theory of positive emotions (Fredrickson, 2001). It opens with a model of expansive job crafting over time followed by one for restrictive job crafting. A number of hypotheses about the patterns of change over time (referred to as *trajectories*) within

types of job crafting, and the interdependency of these patterns across types of job crafting are presented throughout. Finally, an extension of the model is presented explaining how levels and trajectories of job crafting vary by motivation profile along with a set of related hypotheses.

## 4.2. Expansive job crafting over time: Hypotheses

Expansive and restrictive forms of job crafting are fundamentally different but both change the nature of the job. Expansive job crafting, including increasing challenging job demands, increasing structural job resources and increasing social job resources, is proactive in that it involves actively seeking out demands and resources, whereas the restrictive form of job crafting, decreasing hindering job demands, can be somewhat reactive or adaptive to demands in the environment. This distinction reflects characteristics in these behaviours which suggest their trajectories differ over time. In addition, research has demonstrated that crafting efforts are generally effective; they change the levels resources and demands in the job (Demerouti, Bakker, & Halbesleben, 2015; Tims, Bakker, & Derks, 2013). Being able to infer changes to demands and resources as outcomes of these acts of job crafting provides further insights into the trajectory of these behaviours over time. This section reviews evidence for job crafting trajectories and presents specific hypotheses about these. It opens with an overview of some key considerations when theorizing about time; a brief introduction of the theoretical perspectives relied upon for a temporal model of job crafting; and then applies these to theory and hypotheses regarding trajectories of expansive forms first, followed by restrictive job crafting.

Tackling time can be a daunting prospect for researchers. There are complexities of data accessibility and methodological approaches. But beyond this there is the challenge of theorizing about time. It is fair to say that there is a limited theorizing about the role of time in organizational behaviour research (Ployhart & Vandenberg, 2009; Roe, 2008). Where it does appear is in studies that examine the impact of a significant event such as an organizational change (e.g. Solinger, Hofmans, Bal, & Jansen, 2016; Weick & Quinn, 1999) or joining an organization in newcomer studies (e.g. Solinger et al., 2013; Vandenberghe, Panaccio, Bentein, Mignonac, & Roussel, 2011; Werff, 2017). Significant events are useful because they provide a clear reason why the level of a psychological or behavioural phenomenon might change. In the absence of significant events, diary studies examining incremental fluctuations in the relationships between variables provide useful insights into short term experiences in relatively stable working environments (Demerouti, Bakker, & Halbesleben, 2015; Ilies, Scott, & Judge, 2006; Ohly et al., 2010). In the latter genre of studies, and others such as the present study which examine incremental change over longer periods (i.e. months), it is necessary to specify

why a phenomenon might change or be sustained over time as well as to predict what the trajectory over time might be (e.g. continuous (linear) or non-continuous (non-linear); positive or negative) and whether that predicted trajectory is evident at the variable level or person level (Ployhart & Vandenberg, 2009; Roe, 2008). Given that examinations of trajectories of job crafting over time have not appeared in the literature to date, the temporal model below starts at the beginning, in descriptive mode, with a description of job crafting over time and arguing that characteristics of the act of job crafting itself suggest inherent trajectories at variable level. It then moves to a deeper explanatory mode with a person-level approach, proposing motivation profiles as a predictor of levels and trajectories of job crafting (Ployhart & Vandenberg, 2009).

A number of theoretical perspectives applied in cross-sectional job crafting research, including the Job Demands-Resources model described earlier, can be applied to the prediction of trajectories of job crafting over time. Self-determination theory has been applied in research suggesting that expansive job crafting is related to the satisfaction of basic needs for autonomy, competence and relatedness (Bakker & Oerlemans, 2018; Tims et al., 2016) and therefore to the internalization of motivation toward autonomous forms (Van den Broeck et al., 2016). Conservations of resources theory (COR theory; Hobfoll, 1989, 2001) has been applied to job crafting research to explain why individuals engage in specific types of job crafting behaviours; for example, based on their levels of available resources to meet demands (Demerouti, Bakker, & Halbesleben, 2015; Petrou et al., 2012). In addition, the broaden-and-build theory of positive emotions (Fredrickson, 2001) has been applied in research demonstrating that the positive affect associated with expansive job crafting results in creative and proactive performance outcomes (Demerouti, Bakker, & Gevers, 2015) and work family-enrichment (Rastogi & Chaudhary, 2018). Finally, recent research in the domain of personal initiative relied on both broaden-and-build theory and COR theory to explain how levels of the resource of perceived organizational support moderates the relationship between increases in personal initiative and changes in mood (Zacher & Rudolph, 2019). These theories are relied upon throughout the remainder of this section to support the generation of specific trajectory related hypotheses for the various forms of job crafting where the working environment is relatively stable.

#### 4.2.1. The trajectory of increasing challenging job demands

Job demands vary in nature. Job Demands-Resources researchers suggest that they can be classified as job hindrances or job challenges (Crawford et al., 2010; Van den Broeck, de Cuyper, et al., 2010). Job hindrances, such as job constraints and interpersonal conflicts, drain energy and are associated with negative emotions. Conversely, job challenges, such as work pressure and cognitive demands, while still requiring the investment of energy, can be stimulating and provide opportunities for development. The differentiation is based on the

distinct between positive "eustress" and negative "distress" (Seyle, 1984) where both are activating but the former is a positive motivating force driving approach patterns of behaviour and the latter can result in avoidance and withdrawal (Van den Broeck, de Cuyper, et al., 2010). From the perspective of SDT, job challenges by their nature can provide opportunities for basic needs to be met, but job hindrances can thwart the satisfaction of basic needs. Variable-centred research has found that job challenges are positively associated engagement (e.g. Crawford et al., 2010) but often unrelated or negatively associated with job strain, burnout and exhaustion (Rudolph et al., 2017; Tims, Bakker, & Derks, 2013; Van den Broeck, de Cuyper, et al., 2010).

Thus challenging demands are enjoyable, rewarding and motivating. They are an opportunity to utilize skills and, as such, meet basic psychological needs for competence. The crafting act of increasing them is an autonomous exercise which meets basic psychological need for autonomy. Therefore, according to self-determination theory (Ryan & Deci, 2017), we can expect that the satisfaction of these needs for competence and autonomy will help to internalize motivation to increase challenging demands. Individuals with internalized motivation toward an activity are more likely to persist at it (Ryan & Deci, 2017) suggesting that this behaviour may be sustainable over time.

Taking on and meeting challenging demands increases personal resources such as skills, confidence and engagement levels (Van den Broeck, de Cuyper, et al., 2010). Such resource gains are argued to predict future resources by giving employees the capacity to engage in proactive coping over time (Hobfoll, 1989, 2001). These proactive coping behaviours including those which enhance existing resources, such as crafting for increased challenging demands. Thus the act of increasing challenging job demands can form part of a resource gain spiral over time.

The positive affect associated with challenging demands, related to vitality, engagement and autonomous motivation, stimulate an individual's capacity to identify, and motivation to engage in, future job crafting opportunities to increase challenging demands (Fredrickson, 2001). This includes approach patterns of behaviour which are outward looking and where the rewarding experience of positive affect motivates individuals to actively take on further challenging demands. It also enhances their capacity to identify these opportunities through a broadened momentary thought-action repertoire (Fredrickson, 2001). Nevertheless, while we might expect a positive gain spiral where positive affect drives increasing challenging demands over time (Fredrickson, 2001; S. K. Parker et al., 2010), there are limits. Levels of increasing challenging demands cannot continue to rise exponentially; individuals are limited by resource capacity, particularly time, to meet demands. Therefore, while, we might expect the act of increasing challenging demands to be sustained due to its impact on need satisfaction, resource levels and

its positive individual outcomes (e.g. vitality), it can be anticipated that the rate of increase may slow over time, and while still reflecting a positive upward trend, may be relatively stable. Thus, in a stable working environment, the trajectory of increasing challenging demands at a variable level is proposed to reflect a continuous trajectory over time in a positive direction.

#### 4.2.2. The trajectories of increasing job resources

Individuals naturally strive towards the protection and enhancement of resources, over time, throughout their lives (Hobfoll, 1989, 2001). One reason for this is that the value of resources decreases over time and therefore repeated striving is necessary to maintain or enhance them (Hobfoll, 1989, 2001). Another is that resources satisfy our basic needs (Ryan & Deci, 2017). The crafting act of increasing structural job resources predicts the satisfaction of needs for autonomy and competency (Bakker & Oerlemans, 2018). The crafting act of increasing social job resources predicts the satisfaction of the need for relatedness. The satisfaction of needs is associated with the internalization of motivation toward that activity and therefore increased persistence and effort direct toward it over time (De Cooman et al., 2013; Van den Broeck et al., 2016). In addition, high levels of need satisfaction put individuals in positions of resource plenty, which stimulate approach type, proactive coping patterns of behaviour as individuals have confidence to invest their resources in behaviours that acquire further resources over time, leading to resource gain spirals (Hobfoll, 1989, 2001). Furthermore, the positive affect associated with internalized forms of motivation broadens the thought-action repertoire including opportunities that individuals perceive for further increasing their resources (Fredrickson, 2001). Thus, in a stable environment, resource seeking behaviours can become self-perpetuating over time. Therefore I expect that, at a variable level, the trajectories of increasing structural job resources and increasing social job resources demands will reflect a continuous trajectory over time in a positive direction.

**Alignment across forms of expansive job crafting**

Resources are activated by the exertion of effort and the existence of high demands motivates resource seeking behaviour (Demerouti et al., 2001; Hobfoll, 1989, 2001). Therefore it is anticipated that, as indicated by previous research (Rudolph et al., 2017) levels of increasing challenging demands and increasing resources are correlated, with trajectories that are aligned over time. Related theory supports this proposition.

As outlined in the previous chapter, the Job Demands-Resource model describes job characteristics as demands or resources (Demerouti et al., 2001). As a stress model, it suggests that job demands require effort and that this effort is associated with physiological/psychological cost (Bakker & Demerouti, 2007). It proposes that job demands and

resources are interrelated such that job demands are "things that have to be done" at work (Schaufeli & Bakker, 2004, p. 296), while job resources are necessary to reduce job demands and achieve work goals by allowing things to get done. Job resources can provide a buffer for job demands by reducing stress or burnout effects and increasing engagement (Bakker & Demerouti, 2007) and when demands are high or increasing, the positive impact of job resources becomes stronger. In other words, job demands and resources interact to create personal and work outcomes and individuals are motivated to seek resources when meeting or taking on increased demands.

Just like challenge stressors, job resources can stimulate growth and development and engagement. Conversely, while job resources can lead to positive outcomes independently, the positive outcomes of challenge stressors appear to be linked to increased resources. Indeed, Tims and Bakker (2010) suggest that individuals will only increase challenging demands when they have sufficient resources to meet them. Petrou, Demerouti, Peeters, Schaufeli, and Hetland, (2012) found evidence that high levels of demands were associated with the crafting activity of seeking resources on a given day. This was subsequently supported in a recent meta-analysis which suggests that the sample size weighted correlation between CD and SR ($r = 0.521$; Rudolph et al., 2017) is by far the strongest among the job crafting dimensions, with the next highest correlation between SS and CD ($r = 0.390$). Thus we can expect that where individuals take on additional challenging demands they also seek additional resources. This supports the idea that job crafting can be a series of related behaviours jointly enacted toward a specific goal (Rudolph et al., 2017), and suggests that this is particularly the case where expansive crafting activities are considered.

Therefore, the first hypothesis in this study, regarding expansive job crafting over time, can be summarized as follows:

**Hypothesis 1:** The trajectories of all forms of expansive job crafting a) reflect a continuous positive trend over time and b) are therefore aligned with each other.

### 4.3. Restrictive job crafting over time: Hypotheses

The demonstrated correlates of restrictive job crafting indicate that it can represent a reaction to an episode of exhaustion or burnout. Decreasing hindering job demands, a restrictive job crafting behaviour, is the strongest predictor of turnover intentions and job strain among the dimensions of job crafting (Rudolph et al., 2017). This suggests that those who engage in acts of decreasing hindering job demands may be threatened with burnout or exhaustion through job strain. Burnout and exhaustion are not permanent situations but reflect a state of resource lack (Hobfoll, 2001). Individuals in situations of resource lack adopt accommodative coping

strategies (Hobfoll, 1989, 2001). These employees choose between the demands placed upon them, reducing some job demands, and selecting only the most important in which to invest limited resources (Demerouti, Bakker, & Leiter, 2014; Freund & Baltes, 1998). By its nature, this selection process involves reacting to demands in the environment rather than the more proactive act of seeking out challenges or resources. As such, during periods of burnout or exhaustion, it can occur at particular times when demands become perceived as hindering, suggesting it is episodic and non-continuous in nature.

Evidence also suggests that motivational states and more enduring behavioural tendencies may play a role in restrictive job crafting over time. The crafting act of reducing hindering job demands has demonstrated negative relationships with basic need satisfaction for autonomy, competence and relatedness (De Cooman et al., 2013). This implies that individuals engaging in hindering job demands may have lower levels of autonomous motivation. Autonomous motivation is associated with higher levels of effort and persistence (Deci & Ryan, 2008a). This suggests that on average those who engaging in high levels of reducing hindering job demands may be less able to sustain these effort over time. Similarly, decreasing hindering job demands demonstrates negative relationship with proactive personality at a variable level (Rudolph et al., 2017). For individuals low in proactive personality, engagement in proactive behaviours requires higher levels of self-regulation. The act of self-regulation reduces the capacity of individuals to sustain behaviours over time (Baumeister et al., 1998) even where these efforts are directed toward decreasing burdensome demands.

In addition, there may be varying motives for decreasing hindering job demands. Unlike expansive job crafting behaviours which reflect of the positive work experiences of resource acquisition, need satisfaction and positive affect, restrictive job crafting is not necessarily indicative of whether an individual experiences work as a positive or negative. While exhaustion and burnout do suggest negative work experiences, there are alternative scenarios for engaging in restrictive job crafting which may be evident at a person level. For instance, it is likely that some individuals may be engaged and motivated at work but occasionally reduce demands they perceive as either unnecessary or negatively impacting task completion or goal achievement in more important areas of the job, including meeting challenging demands that have themselves been crafted (Tims et al., 2012). Others may reduce hindering demands because they are amotivated at work and have no interest in meeting them (Schaufeli & Bakker, 2004). This lack of a consistent motive for action suggests that consistent or continuous trends in the trajectory of restrictive crafting over time are unlikely at a variable level and instead that non-continuous patterns are more likely in the population as a whole.

Finally, it can be argued that restrictive job crafting is inherently non-continuous. Contrary to expansive job crafting behaviours which generate their own rewards in the form of need satisfaction, resource acquisition and positive affect, and are therefore self-perpetuating, there are no such rewards linked to the ongoing reduction of hindering job demands. Once effectively reduced or removed, a demand is no longer demanding, allowing resources to be conserved. There is no incentive to continually seek out new hindering demands to reduce. Rather, when new demands present themselves, individuals must then determine their response to them based on their resource status at that time. This suggests that it is inherently non-continuous over time.

Therefore, in consideration of situational, motivational and personality based considerations as well as the inherent characteristics of the behaviour itself, it can be hypothesized that:

**Hypothesis 2**: The trajectory of the restrictive job crafting act of decreasing hindering job demands a) reflects a non-continuous trajectory over time and b) therefore, differs from trajectories of expansive job crafting.

### 4.4. Person-level variance in job crafting: Hypotheses

A number of findings relating to job demands and resources suggest that what occurs at a variable level may differ significantly from what occurs at a person level (e.g. Parker, Jimmieson, & Amiot, 2010). In this section, the variable-level model presented above is extended to person-level. Rationale and related hypotheses about person-level variance in trajectories (and starting levels) of job crafting of demands and resources are presented.

From the perspective of crafting demands, a number of researchers (Crawford et al., 2010; Schaufeli & Bakker, 2004; Tims et al., 2012; Van den Broeck, de Cuyper, et al., 2010) suggest that there may be subjective differences in how job demands are experienced, such that the same demands can be experienced as challenging or hindering depending on the employee's perspective. For example, job demands appear to be related to increased health complaints (Parker, Jimmieson, & Amiot, 2010) for those high in controlled motivation but not for those high in autonomous motivation.

Furthermore, there is variation evident in individuals' responses to job resources. Findings suggest that when individuals who experienced high autonomous motivation perceived higher levels of autonomy they had higher levels of engagement, than those high in controlled motivation (Parker et al., 2010). In another example, the resource of job control increased the relationship between job demands and a sense of accomplishment, and buffered against emotional exhaustion but only for those high in autonomous motivation (Fernet et al., 2004).

Drawing on SDT (Ryan & Deci, 2017) and COR theory (Hobfoll, 1989, 2001), it can be inferred that the level of available resources as indicated by an individuals' experienced work

motivation (via the satisfaction of basic needs) may be behind these differing responses to demands and resources. This includes whether demands are taken on and enjoyed without excessive depletion of resources, and with the potential to further enhance resources, or whether they present an unwelcome threat to resources, which must be defended against by avoiding or reducing these demands.

It can be reasonably expected that related job crafting efforts to change resource and demands will vary accordingly based on the individuals' experience of these demands and resources. For example, cross-sectional findings suggest that individuals high in autonomous motivation and therefore personal resources may benefit more from the buffering effect of resources, allowing them to take on higher levels of challenging demands and to continue to take on demands over time (Fernet et al., 2004). Conversely, those high in controlled motivation are likely to take on lower levels of challenging demands and be unable to take them on continuously due to health complaints related to burnout issues (Parker et al., 2010). Moreover, person-level research on motivation profiles confirms that there is significant variation in the experience of motivation at work among individuals and that multiple profiles arise within working populations (Howard et al., 2016), even where these populations are relatively homogenous (Graves et al., 2015). Therefore based on the joint influences of individuals' unique experienced motivation and resource status, it is hypothesized that:

**Hypothesis 3**: a) Levels and b) trajectories of all forms of job crafting vary significantly across individuals.

If the level of personal resources is known and information about experienced positive work affect among individuals is available, it is possible to extrapolate more specific predictions regarding person-level variation in levels of job crafting activities and their patterns of change over time. Motivation profiles can provide this information.

### 4.5. Motivation profiles and job crafting over time: Hypotheses

In this final subsection, motivation profiles based on the classification model presented in Chapter 2 are applied to job crafting over time. These include the following motivation profile groups: *Autonomous Dominant, Controlled Dominant, Amotivation Dominant, Balanced Moderate/High* and *Balanced Low*. These profiles imply personal resource status, via need satisfaction and related conservation of resource behaviours, experienced affect in relation to work, and resulting approach and avoidance behaviours. They therefore allow predictions about relative levels and trajectories of job crafting over time. This section open with a brief review of the application of SDT to job crafting over time. This is followed by a description of how levels and trajectories of job crafting vary as a function of motivation profile, starting with *Balanced*

*Low* and *Amotivation Dominant* profiles, and proceeding with *Controlled, Balanced (Moderate/High)* and *Autonomous Dominant*. Related hypotheses are then outlined and summarized in Table 3.1.

### 4.5.1. The application of SDT to job crafting over time

There are two primary reasons why motivation profiles predict job crafting activity. Firstly, applying SDT (Ryan & Deci, 2017) to the resource related propositions of COR Theory (Hobfoll, 1989, 2001), we can view the satisfaction of basic psychological needs for autonomy, competence and relatedness at work as evidence of resources such as perceived work based autonomy, skill utilization opportunities, confidence and mastery, and supportive work relationships (Bakker & Demerouti, 2007; Ryan & Deci, 2017). The satisfaction of basic needs predicts individual forms of motivational regulation (Van den Broeck et al., 2016) and a range of motivation profiles (Howard et al., 2016). Thus level of work resources is indicated by experienced work motivation profile. Resource level can in turn predict the way in which individuals engage in proactive work behaviours such as job crafting. Secondly, applying SDT (Ryan & Deci, 2017) to the affect related propositions of broaden-and-build theory (Fredrickson, 2001) and COR theory (Hobfoll, 1989, 2001), experienced affect related to motivation profile can influence the way individuals view their working environment and the extent to which they can identify opportunities to craft. These two drivers are explored in more detail below before the effect of specific motivation profile groups on job crafting is discussed.

With regard to the first driver, employees proactively take on job demands, secure the necessary resources to complete them, and thereby impact performance outcomes (e.g. Bakker, Tims, & Derks, 2012). From a proactive behaviour perspective, those with higher levels of internalized motivation have a bank of internal resources which allows them to take on more demands and seek more resources. Conversely, those with higher levels of externalized regulation have relatively lower levels of internal resources and therefore are more selective about demands taken on. Their selection process is based on the degree to which job demands are linked to either securing external reward or avoiding punishment. We would expect these individuals to be active in taking on certain job demands, and motivated to secure any necessary external resources to meet them, but also to be active in reducing demands that do not provide any external benefit. Individuals who are amotivated at work or experience low levels of all forms of motivation may experience low levels of resources relating to work and act to defend those resources. This may include expending less energy than their peers in taking on job demands and creatively avoiding requirements to invest resources, even where those investments might have secured additional resources. Therefore individuals direct their energy at work toward

specific proactive behaviours that reflect their work motivation profile, rather than those that necessarily reflect the objectives of the organisation.

With regard to the second driver, motivation profiles and related experienced affect at work, can be viewed as primers for behaviour leading to negative or positive bias (Cacioppo & Gardner, 1999; Fredrickson, 2001). Individuals may frame an experience with a non-conscious tendency to overweigh or underweigh negative or threatening information and to generally appraise situations more positively or negatively (Cacioppo & Gardner, 1999; Fredrickson, 2001), leading to different behavioural responses even where the environment is objectively uniform. Indeed, positive and negative motivational processes are neurologically distinct and have been shown to lead to very different outcomes (Cacioppo & Gardner, 1999; Hobfoll, 2001; Kahneman, Knetsch, & Thaler, 1991; Ryan & Deci, 2017). Positive affect and related bias appears to be related to outgoing exploratory behaviour and persistence in these behaviours (Cacioppo & Gardner, 1999). Conversely, negative affect and related bias appears to limit perceptions of opportunities in the environment and be linked to defensive actions such as avoidance or withdrawal (Cacioppo & Gardner, 1999; Fredrickson, 2001; Hobfoll, 1989, 2001). While both positive and negative biases can be experienced by individuals, it is suggested here that experienced motivation profile indicates a dominant work related affect. This affect colours the individual's appraisal of job demands, job resources, and related opportunities to craft demands and resources, and therefore influences forms, levels and patterns of job crafting behaviour over time.

Based on the above, unique relationships between motivation profile groups and forms of job crafting are specified below.

#### 4.5.2. Balanced Low and Amotivation Dominant profiles

According to SDT, those with low overall motivation or high levels of amotivation do not have their needs for autonomy, competence or relatedness met at work. Thus, they lack these personal resources at work and experience low positive affect; in the case of amotivated individuals, they may also experience negative affect related to work. These groups may experience resource loss spirals and the experiences of resource loss may be accelerated as compared to resource gains (Hobfoll, 2001). Indeed, COR theory posits that that the trajectory of change in resources for those with low resources is characterised by a lack of action to seek new resources (Hobfoll, 1989, 2001). These groups are likely to adopt a defensive position to retain the existing resources by decreasing hindering demands episodically as they arise, as described in the temporal model above. They are also likely to invest fewer resources in crafting increases to resources or demands. The negative bias of amotivation primes individuals to view their environment as more threatening (Cacioppo & Gardner, 1999). In addition, the negative

affect associated with amotivation may narrow the opportunities these individuals see to crafting their jobs over time (Fredrickson, 2001). Low levels of positive affect associated with both low motivation and amotivation may also contribute to a reduction in perceived opportunities to craft, while also reducing the rewarding effect of positive affect that crafting activities may generate for other groups, and therefore the degree to which individuals are motivated to persist in job crafting. Therefore, experiencing low motivation or amotivation, these individuals are likely to be "going through the motions" at work. They are less likely to identify opportunities for crafting or to sustain crafting behaviour over time. Relative to others, individuals in these profiles can be expected to engage in lower levels of expansive job crafting reflecting continuous downward trends (i.e. loss spirals) over time and higher levels of decreasing hindering job demands with non-continuous trajectories.

#### 4.5.3. Controlled Dominant profiles

Individuals with profiles including moderate or high controlled motivation with lower levels of autonomous motivation, while not having their needs for autonomy fully met at work, are having their needs for competence met and potentially, needs for relatedness (via introjected motivation). Therefore we can surmise that they have higher levels of resources than those who experience overall low motivation or dominant amotivation and may experience some positive affect related to receiving external material or social rewards. We can expect that these individuals will primarily take on demands for instrumental objectives to secure external rewards or boosts to ego and to avoid punishment. Similarly, they are likely to reduce demands that do not generate external rewards or ego boosts or that risk punishment. This may result in higher levels of increasing challenging job demands than *Amotivation Dominant/Balanced Low* groups and moderate levels of reducing hindering job demands. Over time we can expect that these individuals will craft to increase resources to meet the challenging demands they take on and therefore we can expect that the trajectories of expansive job crafting will be aligned over time. For individuals high in controlled motivation and low in autonomous motivation, resources such as job control can provide a useful buffer against stress (Parker et al., 2010). However, the act of controlling behaviour means that effort can be difficult to sustain over time (Baumeister et al., 1998). Considering the dominance of controlled sources of motivation in these profiles, these groups may be unable to sustain the effort of job crafting over time and as such expansive job crafting may be non-continuous. Indeed, we can anticipate that for these groups, all forms of crafting may be more opportunistic depending on when external rewards are available or when hindering demands appear. Therefore over time, all forms of job crafting are episodic and non-continuous especially when compared with individuals who experience internalized, autonomous forms of motivation.

### 4.5.4. Balanced (Moderate/High) profiles

Individuals with moderate or high overall motivation but similar levels of controlled and autonomous motivation are having their needs for autonomy, relatedness and competence met to some degree and therefore they have more personal resources than *Balanced Low, Amotivation Dominant* and *Controlled Dominant* profiles groups. They are also more likely to experience positive affect, not just through short-lived external rewards, but also through the ongoing experience of meaningful or enjoyable work. Given the buffering impact of resources against burnout related to controlled motivation, we can expect that patterns of expansive job crafting will be moderate to high and sustainable over time. Therefore trajectories should be aligned and stable within expansive job crafting, with the possibility of a slow positive gain spiral that reflects the slow process of resource acquisition for the *Balanced High* group (Hobfoll, 2001). While restrictive job crafting may occur, the variety of sources of motivation within these profile groups may mean that fewer demands are perceived as hindering as they have the potential to serve a wider range of motives from seeking external rewards, to ego boost, meaningfulness and intrinsic enjoyment. However, dependent on the nature of the demand, restrictive job crafting may be occasionally required. Therefore we can expect that levels of restrictive hindering demands will be low and non-continuous.

### 4.5.5. Autonomous Dominant profiles

Finally, individuals with profiles including moderate or high autonomous motivation with less controlled motivation should experience satisfaction of all three basic psychological needs, with higher levels of autonomy than all other profiles. Therefore they should have the most personal resources among motivation profile groups and more experiences of work-related positive affect. These profiles provide a positive priming effect (Cacioppo & Gardner, 1999) through which individuals can identify a broader range of opportunities for job crafting (Fredrickson, 2001). Individuals in these groups should feel free to invest energy in crafting behaviours such as increasing resources and taking on demands without fear of excessive resource depletion. According to COR theory (Hobfoll, 1989, 2001), these investments will be reflected in resource gain spirals characterised by action to seek new resources, albeit at a slower pace than resource loss spirals. Therefore, this group will demonstrate the highest levels of expansive job crafting of all profiles, demonstrating a slow but positive gain spiral over time which is more pronounced in direction than that of *Balanced High* groups. However, given that individuals engage in their work for enjoyment or meaningfulness, job demands that do not attend to these motives are likely to be perceived as hindering and reduced accordingly. While the protection against burnout provided by high levels of existing resources may allow for continuous investment of effort in resource gain, related findings suggest that intrinsic motivational work

orientation boosts the effect of job demands on the relationship between job resources and engagement but does not boost the effect of increased job resources on the relationship between job demands and exhaustion (van den Broeck et al., 2011). Indeed, even volitional engagement in meaningful tasks leads to depletion of resources (Baumeister et al., 1998). Therefore individuals in these groups may occasionally need to reduce hindering demands to avoid exhaustion related to high levels of challenging demands. Therefore moderate but non-continuous patterns of decreasing hindering demands over time are anticipated.

### 4.5.6. Hypotheses

Based on the above, a number of relationships between motivation profile and job crafting over time can be hypothesized. These are summarized alongside their theoretical bases in Table 3.1. With regard to the trajectories predicted, the shape of change is predicted as continuous or non-continuous. For the purposes of this study, continuous means that levels of job crafting over time are either continually stable, continually increasing (positive) or continually decreasing (negative). Thus, the direction of change is also specified where continuous trajectories are hypothesized. Non-continuous means that levels of job crafting can go up and down over time, so a particular direction of change is not specified.

For expansive job crafting, the hypotheses regarding motivation profiles are as follows:

**Hypothesis 4:** Levels (a) and trajectories (b) of expansive forms of job crafting vary by motivation profile.

More specifically, regarding the nature of variation in levels and trajectories in expansive job crafting within motivation profiles:

**Hypothesis 5:** *Amotivation Dominant/Balanced Low* profiles will demonstrate

a) the lowest starting levels of expansive crafting among all motivation profiles,

b) in a negative continuous trajectory over time.

**Hypothesis 6:** *Controlled Dominant* motivation profiles will demonstrate

a) higher starting levels of expansive crafting than *Amotivation Dominant/Balanced Low* profiles and lower levels than *Balanced (Moderate/High*) *or Autonomous Dominant* motivation profiles,

b) in a non-continuous trajectory over time.

**Hypothesis 7:** *Balanced (Moderate/High)* motivation profiles will demonstrate

a) higher levels of expansive crafting than *Amotivation Dominant/Balanced Low* and *Controlled Dominant* motivation profiles and lower levels than *Autonomous Dominant* motivation profiles,

b) in a flat/positive continuous trajectory over time.

**Hypothesis 8**: *Autonomous Dominant* motivation profiles will demonstrate

a) the highest levels of expansive crafting among all motivation profiles,

b) in a positive continuous trajectory over time.

For restrictive job crafting, the hypotheses regarding motivation profiles are listed below:

**Hypothesis 9:** Levels (a) and trajectories (b) of restrictive forms of job crafting vary by motivation profile.

Regarding the nature of variation in levels and trajectories in restrictive job crafting within motivation profiles:

**Hypothesis 10:** *Amotivation Dominant/Balanced Low* groups will demonstrate

a) the highest levels of restrictive crafting among all motivation profiles,

b) in a non-continuous trajectory over time.

**Hypothesis 11:** *Controlled Dominant* motivation profiles will demonstrate

a) lower levels of restrictive crafting than *Amotivation Dominant/Balanced Low* profiles and higher levels than *Balanced (Moderate/High*) or *Autonomous Dominant* motivation profiles,

b) in a non-continuous trajectory over time.

**Hypothesis 12:** *Balanced (Moderate/High*) motivation profiles will demonstrate

a) the lowest levels of restrictive crafting among all motivation profiles,

b) in a non-continuous trajectory over time.

**Hypothesis 13:** *Autonomous Dominant* motivation profiles will demonstrate

a) lower levels of restrictive crafting than *Amotivation Dominant/Balanced Low* and *Controlled Dominant* motivation profiles and higher levels than *Balanced (Moderate/High*) motivation profiles,

b) in a non-continuous trajectory over time.

Table 4.1 Summary of relevant theoretical propositions and related hypotheses for job crafting over time by motivation profile

| | **Relevant theoretical tenets and findings** | | | | | | **Hypotheses** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Inferred Experienced Affect and related bias** (Fredrickson, 2001; Cacioppo & Gardner, 1999) | **Inferred Resource level** (Hobfoll, 2001; Ryan & Deci, 2017) | **Inferred Behavioural patterns** (Fredrickson, 2001; Hobfoll, 2001) | **Pattern of resource change/related affect** (Fredrickson, 2001; Cacioppo & Gardner, 1999; Hobfoll, 2001) | **Motives for crafting demands and resources** (Bakker & Demerouti, 2007; Demerouti et al., 2001; Ryan & Deci, 2017; Tims et al., 2012)**)** | **Effort invested over time (Ryan & Deci, 2017)** | **Levels of crafting** | | **Levels of crafting** | |
| | | | | | | | **Expansive crafting** | **Restrictive crafting** | **Expansive crafting** | **Expansive crafting** |
| **Amotivated/ Balanced Low** | Negative | Low | Avoidance of punishment; withdrawal. | Accelerated loss spiral | Avoid demands; defend resources. | Not sustained | Low | High | Negative linear trend | Non-continuous |
| **Controlled Dominant** | Low Positive | Moderate | Selective avoidance of punishment and withdrawal; Selective approach to reward and engagement. | Combination of resource gains and losses | Secure external reward or recognition; boost ego. | Effort sustained episodically | Moderate | Moderate | Non-continuous | Non-continuous |
| **Balanced (Moderate/High)** | Moderate Positive | High | Approach to reward and engagement. | Stable/Slow gain spiral | Secure external reward or recognition; boost ego; contribute to meaningful work; complete enjoyable work. | Sustained effort | Moderate *(Balanced Moderate)* High *(Balanced High)* | Low | Stable *(Balanced Moderate)* or Positive *(Balanced High)* linear trend | Non-continuous |
| **Autonomous Dominant** | High Positive | Very High | Approach and engagement. | Gain spiral | Contribute to meaningful work; complete enjoyable work. | Sustained effort | High | Moderate | Positive linear trend | Non-continuous |

### 4.6. Conclusion

This chapter presented new theorizing on a temporal model of job crafting at variable and person-level. At the person-level, the model was extended to include a role for motivation profile in person-level variance in levels and trajectories of job crafting over time. Study hypotheses were presented in full. The following chapter outlines the research design employed to test these hypotheses, along with the propositions relating the motivation profiles presented in Chapter 2. This is followed by full details of data analyses and results in Chapter 6, and, to close, a discussion the findings of this study and their implications in Chapter 7.

# CHAPTER 5

# Research Methodology


## 5.1. Introduction

This chapter describes the research design used to test the both exploratory propositions and predictive hypotheses outlined in Chapters 2 and 4. The chapter presents relevant aspects of the research design by moving from the abstract, general design approaches underpinning this study, to the particular research characteristics and practices applied herein. As such, it opens with a high-level overview of the philosophical approach adopted within the current research. It proceeds to highlight the design characteristics of the present study. The specific research context and participants, the procedures applied and response rates are presented. The measures used, their reliability and related independence and invariance considerations are described. Data preparation and screening steps conducted in advance of data analysis are outlined. Finally, the data analysis strategy applied in this study is presented pending a more detailed description of steps taken and related results in Chapter 6.

## 5.2. Research Philosophy

This research utilises a quantitative design which is rooted in the positivist scientific tradition (Kerlinger, 1992).The principles of positivism originate from the writings of August Comte and emphasize the importance of scientific knowledge gathering through rigorous scientific method

(Benton & Craib, 2011). The positivist quantitative approach is widely used in organization studies and dominates the fields of self-determination theory (Howard et al., 2017) and job crafting research (Rudolph et al., 2017). However, it is tempered by the acknowledgment of socially constructed phenomena and a pragmatic approach to the application of research. The following section outlines the ontological, epistemological and methodological impacts of this approach on the present study.

From an ontological perspective, the positivist approach combines rationalism, the application of logic to explain and predict phenomena, and empiricism, the requirement that scientific knowledge be based on observable phenomena and measurable evidence. It suggests that we can only have knowledge of explicit phenomena and the relationships between them, and that hypothetical inferences should not be asserted (Hassard, 1993). Mill, a positivist, presented principles of induction and deduction of logic suggesting that to progress scientific knowledge, general theories can be inferred from known facts (induction) and specific predictions can be made from general laws (deduction) (Hassard, 1993). Positivists therefore apply a hypothetico-deductive model to generate theory and propose hypothesized relationships (Creswell, 2009). These theories organize knowledge through induction and good examples reduce everyday phenomena into comprehensive, explanatory and predictive models. However, extreme reductionism and empiricism can be problematic in the field of psychology as many of the phenomena of interest to psychologist, including those described within self-determination theory, are internal and unobservable (Bem & Looren de Jong, 2006; Ryan & Deci, 2017).

Therefore, in practice, psychologists often apply a less strict form of positivism. Quantitative psychological research often applies an empirical cycle, collecting available data and information about a phenomena (e.g. in a literature review), using induction, including abduction, to infer the best explanation or theory from hypothetical knowledge about causes, then deducting specific testable hypotheses and predictions, often by operationalizing the measurement of unobservable internal constructs, which can then be tested and evaluated (Bem & Looren de Jong, 2006; DeGroot, 1969). This approach applies to the present study.

Epistemology refers to the nature, limitations and evaluation of knowledge (Bem & Looren de Jong, 2006). The epistemology of the positive approach in organization studies includes gaining objective, verifiable knowledge by objectively describing observable phenomena, identifying sets of principles underlying observable phenomena, and by applying scientific methods to support test and validate that knowledge (Wicks & Freeman, 1998). Positivism includes a position of scientific realism: that knowledge corresponds to reality and that we can know what really is (Bem & Looren de Jong, 2006). Thus, psychology, as a science, strives to understand real but internal psychological phenomena. However, much of the time our work is in the

domain of socially constructed phenomena, including, for example, the concept of a job in job crafting theory. Therefore, while organizational psychology may be dominated by a positivist epistemology, it incorporates elements of constructionist viewpoints. In addition, almost all studies in the field of organizational psychology, including the current research study, incorporate an element of pragmatism, where the researcher, if not explicitly driven to gain knowledge that addresses a practical problem for organization, at least suggests practical applications of that knowledge (Martela, 2015; Wicks & Freeman, 1998). In self- determination theory and job crafting research, this approach goes beyond pragmatic applications which aim to enhance the effectiveness of organization, to focus on ethical goals such as creating opportunities for meaningfulness and human flourishing in working life (Wicks & Freeman, 1998, Ryan & Deci, 2017; Wrzesniewski & Dutton, 2001).

The selection of an appropriate methodological approach is linked to these ontological and epistemological perspectives. Quantitative methodology with its roots in objectivism, positivism and critical rationalism aims to predict behaviour with generalizable findings (Gelo, Braakmann, & Benetka, 2008). In the positivist tradition, scientific method can be described as a systematic and reductionist approach to knowledge building using well-defined methods to generate clear, objective, generalizable knowledge which is open to retesting and revision (Bem & Looren de Jong, 2006). The strictest forms of positivist methodology are evident in early strict experimental research in self-determination theory (e.g. Deci, 1975). However the majority of studies, in both self-determination theory and job crafting research employ field-based methods, utilising self-report questionnaires to gather data, reflecting the typical approach of organizational research (Mantere & Ketokivi, 2013). Self-report questionnaires are best placed to capture motivational regulation as an internal psychological experience (Gagné et al., 2015) and job crafting activities which can often go unnoticed by peers or supervisors (Tims et al., 2012).

Within job crafting research, a number of qualitative studies have been conducted which have sought to identify patterns of job crafting activities *within* participants (Berg, Wrzesniewski, et al., 2010; Kira, Eijnatten, & Balkin, 2010). However, quantitative methods can also address this need to identify patterns of behaviour within individuals or groups by using a within-persons designs. This is particularly relevant to the study of self-determination theory, which emphasizes the subjective internal nature of the experience of work (Ryan & Deci, 2017) and job crafting which suggests that that jobs are a social construct (Wrzesniewski & Dutton, 2001). From this perspective, for example, the objective assessment of autonomy in the environment is less predictive of individual outcomes than the reported subjective experience of autonomy need satisfaction. Furthermore, the relationship between the average subjective experience of

autonomy need satisfaction and average outcomes is less predictive than the within-person relationship between these two.

In conclusion, the current research design is based on the ontological and epistemological principles of a positivist philosophical perspective, tempered by the recognition of jobs as a social construct, the subjective experience of working life reflected in experience motivation, and the goal of pragmatic applicable findings which enhance working life. The methodological implications of these principles include a quantitative research design utilising self-report measures and a within-persons approach. The next section explains the application of these principles by presenting an overview of the current research design characteristics (longitudinal, within-persons, repeated self-report measures), along with a description of participants and procedures.

## 5.3. Research Design

This study can be characterised as a longitudinal, repeated measures, within-person design. It includes 4 waves of data collection from 992 workers across a 9 month period (3 month intervals) within a field setting. This section opens by describing each of these design characteristics and the reason for their selection in relation to the aims of the study, and then proceeds describe the participants. Finally, the research procedures are outlined including a how a number of key operational issues raised by the design (e.g. the risk of attrition) were addressed.

### 5.3.1. Design characteristics

Repeated measures designs bring clarity to the relationship between variables by asking '"what happens" rather than "what is"' (Roe, 2008, p.37). This study applies a repeated measures design to examine the theorized relationship between work motivation and job crafting by asking not only if these two constructs are correlated or associated but also by asking if a particular motivational orientation toward work affects how an individual crafts their job over the course of 9 months. The repeated measurement of job crafting within the design means that the relationship between motivation profile and levels of job crafting is examined at four time points rather than one and, most significantly, that the impact of motivation profile on the trajectory of job crafting can be tested, and the stability or dynamism of that trajectory can be measured.

A longitudinal research design, and more particularly a repeated measures design, is appropriate where the variables being repeatedly measured are expected to change over the timeframe of the study (Ployhart & Vandenberg, 2009). The relevant dynamic variables in the present study are acts of crafting job demands or resources. The proposed dynamism of these variables supported by two theoretical tenets: first, that the job is a fluid, dynamic social construct (Wrzesniewski &

Dutton, 2001) and second, that the nature of, and interaction between, job demands and resources results in an inherently dynamic system. With regard to the latter, job demands can be motivational but can create burnout over time, as a result job demands are proactively decreased and/or resources are proactively sought to provide a buffer against burnout; those resources lose value over time and related demands may be met or removed over time, prompting more demands to be proactively sought, along with more buffering resources and so on (Demerouti et al., 2001; Hobfoll, 2001; Schaufeli & Bakker, 2004). A longitudinal, repeated measures design is best way to capture this dynamism.

The selection of appropriate time intervals in longitudinal research is critical for the detection of change over time (Roe, 2008). Evidence suggests that job crafting occurs daily at a micro level (e.g. Demerouti, Bakker, & Halbesleben, 2015; Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012; Tims, B. Bakker, & Derks, 2014). However qualitative research suggests that job crafting efforts can take time to enact and can occur over the course of weeks or months and even over the course of a working year due to the dynamic nature of job demands and job resources and the dynamic nature of working life over a year (e.g. changes in customers, products, technologies/equipment, team structure, managers/colleagues, work-life priorities etc.; Berg et al., 2010; Kira, Balkin, & San, 2013; Sturges, 2012). The selected 3 month intervals in the present study allow sufficient time for these meso-level job crafting efforts to be captured, and for the effects of crafting efforts to be experienced.

Finally, person-centred designs provide researchers with the opportunity to examine within-person variance in a sample, to explore possible subpopulations, and examine their characteristics and interactions with related variables (Morin, Bujacz, & Gagné, 2018). There have been recent calls for person-centred research within the field of job crafting (Vogt et al., 2016). Cross-sectional variable-centred research suggests that levels of increasing challenging job demands and increasing structural resources are consistently higher than those of increasing social resources and decreasing hindering job demands. Person-centred approaches can shed light on these findings by examining the relationships between these various forms of job crafting and their co-occurrence within individuals as well as how levels and trajectories of different forms job crafting vary across individuals. In practice, person-centred research helps to identify individuals who are likely to engage in high levels of expansive job crafting which is generally link to higher performance and to identify individuals who are more likely to engage in job crafting consistently over time as opposed to episodically. The present study utilizes both latent profile analysis and latent growth modelling to explore these issues.

### 5.3.2. Research participants

This field-based research was based on a sample of 992 UK-based blue collar employees from across 39 locations within a single multinational services organisation (mean age = 38.4 years, females = 12.9%). Participants were engage in low skilled work with 72.6% of participants engaged in manual work, and a smaller proportion engaged in related low-skilled clerical work (20.1%) or low-level supervisory roles (7.3%). Participants' average length of time in role was 6.6 years.

The nature of the work was of particular interest in this study, given that the limited research field is dominated by white collar samples. While the low-skilled work context reduces generalizability across the wider working population, it increases our understanding of similar working environments and of workers involves in similar work who make up over 80% of the global working population (International Labour Organisation, 2018). Given the nature of the work, a number of participants had limited access to computers in their daily work so a paper survey option was provided to ensure full opportunity to participate. In addition, as the work itself did not require strong literacy skills, the wording of survey items was reviewed in advance of the study by a number of non-participating employees to check it was clear and comprehensible for all participants. An annual online employee survey programme is run by the organization, therefore all participants had some experience of completing a computer-based survey in the past.

### 5.3.3. Research procedures

The research was conducted as part of a wider project regarding performance management practices within the organisation. The survey was piloted among a small convenience sample of employed adults within and outside the focal organisation. Based on feedback received, minor adjustments were made to items to reduce reported ambiguity in wording (e.g. "I try to develop my capabilities" changed to "I try to develop my abilities"). Data was gathered in four waves at 3 month intervals from September 2014 to June 2015 using self-report surveys. Participation was voluntary and confidentiality was assured. Employee were asked to provide their unique employee number to link responses across waves. The survey required participants to complete a range of questions related to the wider organizational performance management process including responding to items used in the present study measuring job crafting and work motivation. Demographic and control measures included age, gender, job type, length of time in role and use of paper or online survey. All items, excluding the demographic and control measures, were randomised across waves in the paper and online versions of the survey to minimize method bias.

Individuals who chose to complete the online version were invited to do so from a privately located computer within their workplace to allow them to complete the survey confidentially. Those who chose to complete the paper version were provided with a sealable preaddressed envelope to allow them to seal and submit their responses confidentially.

Table 5.1 Demographic Variables - Numerical

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| **Age** | 990 | 17 | 75 | 38.43 | 12.40 |
| **Years in Job** | 974 | 0 | 30 | 6.62 | 6.15 |

*Note.* n = sample size

Table 5.2 Demographic Variables - Categorical

| | | Frequency | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| **Gender** | Male | 783 | 87.1 | 87.1 |
| | Female | 116 | 12.9 | 100.0 |
| **Job Type** | Manual | 461 | 46.5 | 46.5 |
| | Manual Driver | 260 | 26.2 | 72.7 |
| | Clerical | 199 | 20.1 | 92.7 |
| | Supervisory | 72 | 7.3 | 100.0 |

With regard to responses, research should be designed and data collection managed to avoid any missing data (Allison, 2001). In reality, this is challenging to achieve especially in longitudinal research. Missing data can occur at item-level, where boredom increases towards the end of the survey and items are skipped or where a particular item is unclear or causes embarrassment. In longitudinal research, this is compounded by missing data at wave level where a participant is unavailable to complete a specific wave of the study or where survey fatigue sets in after multiple waves.

The present study adopted a number of procedural strategies to minimize attrition and related missing data. Firstly, as participants were based in multiple locations, written communications between the researcher and participants were utilised as much as possible. Advanced notice of the surveys was provided along with regular follow up reminders and updates on response rates after each wave. Questions were encouraged and a range of contacts were provided including the researcher, the company HR team, the local manager and the research organisation (Dublin City University). In addition, anonymity was assured and a summary of the results was distributed to those who participated at the end of the study. To maximise the collection of observed data, participants were invited to participate at all waves, regardless of whether they had participated in the previous wave (Newman, 2014).

A key section of the online survey required participants to complete it in full. Specifically, the survey was split into three sections: a series of questions about the participant demographic

characteristics, a series of items relating to the constructs being studied, and a final section containing open text fields for any further comments. In the online version of the survey, participants were required to complete the middle section in full before proceeding to the next section. If participants chose not to complete all items, any demographic information provided in the first section was retained. The primary aim of this approach was to gather as complete a data set as possible at each wave to off-set expected attrition over the course of the four wave study. A number of contextual and design factors contributed to this decision. The company's annual employee feedback survey requires participants to complete all items in the questionnaire and therefore this approach was expected by participants. The requirement to complete the survey in full was explained in the introduction to the survey, along with the option to stop participating at any time, and an expected time to complete was provided. Anonymity was assured. In addition, the pilot of the survey verified that it did not included items that were difficult to understand, highly sensitive or embarrassing.

The approach of requiring respondents to complete all items in a section before proceeding has been criticised (Newman, 2014). It has been argued that requiring individuals to complete all items before proceeding may cause them to abandon the survey rather than complete it (Poynter, 2010) and that a reactance effect may influence the quality of responses (Stieger, Reips, & Voracek, 2007). However, findings have been mixed. One study among over 4000 graduates found no impact of forced response on the drop-out rate or quality of responses in the attitudinal nature of responses with the exception of questions requesting sensitive personal financial information (Leach, 2013). Stieger, Reips, & Voracek, (2007) demonstrated a reactance effect in a survey on the emotive issues of jealousy/sexuality and higher drop-out rate among males in a study of over 3000 university students. Response rates from the present study show that less than 10% of those who responded online abandoned the survey. In addition, as the focal areas of the study were not highly sensitive or emotive, the research to date suggests that a reactance effect may be less likely (Leach, 2013). In support of this, an analysis of standardized residuals in a cross tabulation of survey format and missing data revealed that the online survey (with forced response) did not have a higher than expected rate of missing data when compared with the paper version (no forced response).

In the present study, the average survey level response rate across the waves was 46%. This is relatively aligned to reported average response rates in organizational sciences of 52% (Anseel, Lievens, Schollaert, & Choragwicka, 2010). 1118 individuals were contacted to participate in the study. 992 participants completed the survey correctly in at least one wave of the four wave study resulting in a person-level response rate of 89%. This person-level response rate is comprised of 8% full respondents and 92% partial respondents. The partial respondents

completed between one and three waves of the four wave study. This resulted in 1818 time specific ratings (*M* = 1.83 time-specific ratings per person). The pattern of wave-level missingness by person in the present study is available in Table 4.3 based on a format in Graham (2009).

Table 5.3 Wave level missingness

| Wave(s) Completed | # of participants | % participants | Cumulative Percent |
|---|---|---|---|
| **1 only** | 138 | 13.9 | 13.9 |
| **2 only** | 142 | 14.3 | 28.2 |
| **3 only** | 117 | 11.8 | 40.0 |
| **4 only** | 91 | 9.2 | 49.2 |
| **1 and 2** | 69 | 7.0 | 56.1 |
| **1 and 3** | 26 | 2.6 | 58.8 |
| **1 and 4** | 17 | 1.7 | 60.5 |
| **2 and 3** | 69 | 7.0 | 67.4 |
| **2 and 4** | 29 | 2.9 | 70.4 |
| **3 and 4** | 47 | 4.7 | 75.1 |
| **1, 2 and 3** | 48 | 4.8 | 79.9 |
| **1, 2 and 4** | 21 | 2.1 | 82.1 |
| **1, 3 and 4** | 34 | 3.4 | 85.5 |
| **2, 3 and 4** | 69 | 7.0 | 92.4 |
| **1, 2, 3, and 4** | 75 | 7.6 | 100.0 |
| **Total** | 992 | 100.0 | |

## 5.4. Measures and related considerations

This research utilised measures within a series of self-report surveys. This section outlines the measures and control variables utilized, taking each in turn and closes with a description of how related issues such as measurement independence and invariance were addressed.

### 5.4.1. Work motivation measures

The research utilised the Multidimensional Work Motivation Scale (MWMS; Gagné et al., 2015) to identify the motivation profiles among participants. In a work-setting, it is the most complete and widely validated measure of motivational regulation. It is a 19 item measure which has demonstrated factorial validity among 3435 workers in seven languages and nine countries. It has been cited almost 60 times in published research[3] despite being a relatively recent measure. It includes individual measures of intrinsic motivation, identified regulation, introjected regulation, external regulation social, external regulation material and amotivation and as such is closely aligned to self-determination theory. It demonstrates theoretically predicted relationships to basic needs for autonomy, competence and relatedness, autonomy supportive management and leadership styles, enriched job design and work outcomes (commitment, well-being, performance and turnover intention). It improves on earlier versions of the scale (Gagne et al., 2010, Blais 1993) with the addition of amotivation and validated subcategories of external regulation. It has well-established validity compared to other recent

[3] Citation search on Web of Science dated 2nd May 2018 (www.webofknowledge.com)

measures designed for use in identifying motivation profiles in a work setting (e.g. Moran et al., 2012) and allows for the measurement of individual forms of motivation, as well as composite scores for controlled and autonomous motivation (e.g. Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009), which can provide greater insight into the interaction of varying forms of motivational regulation.

The present study uses all six subscales of motivational regulation within MWMS, individually and in full; this approach is relatively unusual in the research to date. The majority of studies have applied the scales in part or by using composite measures from across the six subscales (e.g. Bidee, Vantilborgh, Pepermans, Griep, & Hofmans, 2016; Gillet, Fouquereau, Lafrenière, & Huyghebaert, 2016; Olafsen, Deci, & Halvari, 2018; Yam, Klotz, He, & Reynolds, 2017). All of the above examples, and others (e.g. Strauss, Parker, & O'Shea, 2017) while providing interesting insights, use some form of composite measures from MWMS and exclude amotivation. To the best of the author's knowledge, only one study to date has used all measures of motivational regulation from the scale. Howard and collagues (2016) applied all measures in the scale to identify motivation profiles among a heterogeneous group of employees and to test their relationships to cross-sectional work outcomes including performance, job satisfaction, engagement and burnout. The present study mirrors this comprehensive approach.

Respondents were asked to indicate the degree to which each statement was true for them on a 5 point Likert scale from 1 (not at all true) to 5 (very true). The 19 items in the scale represent six individual motivation measures: intrinsic motivation (3 items, e.g. I put efforts into my job because the work I do is interesting; $\alpha = 0.84$); identified regulation (3 items, e.g. I put efforts into my job because putting efforts into this job aligns with my personal values; $\alpha = 0.78$); introjected motivation (4 items, e.g. I put efforts into my job because it makes me feel proud of myself; $\alpha = 0.73$); external regulation – material (3 items, e.g. I put efforts into my job because I risk losing my job if I don't put enough effort in it; $\alpha = 0.604$); external regulation – social (3 items, e.g. I put efforts into my job because others will respect me more (e.g. supervisor, colleagues, family); $\alpha = 0.75$); amotivation (3 items, e.g. I do little because I don't think this work is worth putting efforts into; $\alpha = 0.76$). While the external regulation-material scale was below the widely accepted rule of thumb of 0.70 (Nunally, 1978), alpha values above 0.6 are acceptable where the factor has a small number of items (Hair, Black, Babin, Anderson, & Tatham, 2006).

### 5.4.2. Job crafting measures

The Job Crafting Scale (JCS; Tims, Bakker, & Derks, 2012) was used to measure four types of job crafting behaviours at each of the four waves of data collection. It is the most widely used and well-validated within quantitative job crafting research. It has been widely applied in

studies from Finland (Harju et al., 2016) to Japan (Eguchi et al., 2016). It has also been adapted for use in teams (Tims, Bakker, Derks, et al., 2013) and for diary study design (Petrou et al., 2012).

Respondents were asked to indicate the degree to which each statement was true for them over the past 3 months on a 5 point Likert scale from 1 (not at all true) to 5 (very true). The scale included 14 items measuring three types of expansive job crafting. Increasing challenging demands is a 5 item measure which includes items like "When an interesting task comes along, I offer myself proactively as a task co-worker"" (range of α's T1-T4 = $0.75 \leq \alpha \leq 0.77$). Increasing structural job resources is also a 5 item measure but one item ("I decide on my own how I do things") demonstrated low factor loadings at every time point during initial CFA. Reliability analysis showed consistent improvement across waves without this item so it was removed. The 4 item measure demonstrated good reliability (range of α's T1-T4 = $0.80 \leq \alpha \leq 0.84$). The final expansive job crafting measure was increasing social job resources (e.g. I ask others for feedback on my job performance; range of α's T1-T4 = $0.75 \leq \alpha \leq 0.82$). The scale also included 5 items measuring a restrictive type of job crafting: Decreasing hindering job demands (e.g. I organize my work so as to minimize contact with people whose expectations are unrealistic). One item from this 6 item measure was omitted in error from the first wave of data collection so the 5 item version was used for all waves in data analysis (range of α's T1-T4 = $0.71 \leq \alpha \leq 0.80$).

#### 5.4.3. Controls

Control variables were limited to demographic information to ensure maximum power for statistical analysis (Meade, Behrend, & Lance, 2009). Age, gender, job type and length of time in role have demonstrated relationships with forms of job crafting and motivation profiles in previous research (Ratelle et al., 2007; Rudolph et al., 2017; Van den Broeck et al., 2013). While capturing demographic variables, this research does not explicitly control for situational variables. However, being conducted among a relatively homogenous group of low skilled workers in a single, stable, structured organization provides a degree of control of situational variables such as autonomy, rank and organizational uncertainty. In addition, motivational regulation, the antecedent variable in the present study, has been found to mediate the effects of situational variables on work outcomes (Fernet et al., 2012; Trépanier et al., 2013).

#### 5.4.4. The use of self-report measures

The decision to use quantitative self-report measures was based on a number of considerations. Self-report measures are best placed to accurately measure variables that are experienced internally or not always observable by non-self-report methods (Chan, 2009). Therefore they are appropriate for use in the present study. Motivation is an internal unobservable psychological

experience can only be described by the individual (Gagné et al., 2015); job crafting is in a proactive work behaviour which, while partially observable by peers and managers, includes invisible or unobserved acts and therefore can only be fully known and reported by the individual (Tims et al., 2012). This research aims to quantify and compare levels and trajectories in job crafting over time, and empirically identify naturally occurring motivation profile groups. Quantitative measures allow these aims to be met as they allow for complex modelling of latent classes and growth trajectories over time.

By using self-report surveys which include quantitative measurement scales comprised of a number of items, this study makes a number of assumptions. Firstly, it assumes that the survey method and measures are independent such that results would be replicated regardless of the researcher. Secondly, it assumes that participants in research have a shared, stable understanding of relevant measured phenomena. In longitudinal research, these assumptions can be tested by determining if the same scale items measure the same construct at each time wave (i.e. configural invariance) and if the strength of the relationship between each item and that construct remains stable at each time wave (i.e. metric invariance). Thirdly, it assumes that these phenomena can be measured (quantified) accurately in a survey, without significant bias, using an appropriate scale. A number of strategies were employed in the design to ensure each of these assumptions held.

Firstly, to protect the independence of the research, a standardized survey format was used with validated unambiguous measures and consistent language and instructions throughout. In addition, a five-point Likert scale was used for scale measures with a distinct midpoint and clear descriptors of each point. Participants were unknown to the researcher, were independently recruited, and participation was voluntary.

Secondly, measurement invariance was tested and demonstrated to metric level for all variables with the exception of a single small instance of differential item functioning in the increasing social resources measure in T1. This partial invariance was subsequently controlled for in latent growth modelling.

The third assumption raises wider issues around the use of self-report surveys. As psychologists, we require insight into individual perceptions and unobserved/unobservable behaviours that no other method can provide and yet, this method may be biased by factors influencing the construct validity of the measure such as social desirability and by use of a common method negatively impacting the validity of relationships between variable (Chan, 2009; Podsakoff, MacKenzie, & Podsakoff, 2012). With regard to social desirability issues, findings by Lyons (2008) suggest that individuals may be more reluctant to report job crafting activities that do not positively impact the organization (Tims et al., 2012). However, findings in organizational

research have yet to support the occurrence of significant levels of faking responses or social desirability bias even if surveys are not anonymous (Chan, 2009). This is the particularly the case where there are no significant outcomes at stake (as there may be in, for example, recruitment settings) and where there no transparently desirable norm to reach (Chan, 2009). The present study does not include any significant outcomes for participants. Risk of bias is further mitigated by the fact that the items within both MWMS and JCS have been well validated, unambiguous and are not value-laden (Gagné et al., 2015; Podsakoff et al., 2012; Tims et al., 2012), and because the working environment in the present study is not one that explicitly rewards proactive behaviours like job crafting, which can indicate an organizational norm; rather it is highly controlled, rule-based and structured.

The issue of common method variance is argued to inflate the correlations between self-reported measures (Chan, 2009). It is, of course, important that any variance in the data is based on the relationship between relevant co-variates (in this case, motivation profile and job crafting) rather than a function of the survey method itself. In this study, a number of design characteristics mitigate this risk. Motivation profile information was gathered at the time of the participants first response to questions about job crafting but the remainder of the job crafting data was gathered at later waves. This provides a buffer against method bias affecting the relationship between motivation profile and trajectory of job crafting over time (Podsakoff et al., 2012). The order of the items in the survey was randomised across participants and between time points to reduce any priming effect of items measured earlier in the survey (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The measurement occasions in this study were also separated by 3 month intervals. Although the selection of these intervals were determined based on theoretical considerations of the degree of change in job crafting over time, the time lags provide the added benefit of minimizing method bias which might occur in a cross-sectional study (Ployhart & MacKenzie Jr., 2015). Finally, there was limited evidence of inflated correlations across all variables in the study: correlations varied as a function of the construct being measured and as predicted by theory. For example, at T1 expansive forms of job crafting demonstrate high intercorrelations ($r$ = 0.37–0.42) and low correlations with restrictive job crafting ($r$ = 0.05 – 0.25).

### 5.5. Data Preparation

Data were prepared for the analysis phase by assessing missing data, screening for errors, outliers and multicollinearity, and reviewing the distribution of the data via checks for skewness and kurtosis.

### 5.5.1. Handling missing data

Whatever the level and rate of missing data, the researcher must decide how this missing data should be handled (Newman, 2014). Recent literature on the area of missing data emphasizes the need for social and behavioural science researchers to carefully consider their choice of methods to address missing data (Graham, 2009; Newman, 2014; Schafer & Graham, 2002). The first consideration is to identify, where possible, the nature of the missing data. Statisticians classify missing data in three ways:

- missing completely at random (MCAR) is rarely the case in practice;
- missing at random (MAR) is missingness of the data related to missing data values which is no longer the case when other observed values are controlled;
- and missing not at random (MNAR) is missingness related to the missing data values which cannot be demonstrated as the data are missing.

It is not intended that researchers classify their data as one or the other above; to do so may not even be possible. We can instead assume that missingness exists on a scale somewhere between MAR and MNAR (Graham, 2009). This assumption is useful in determining the best approach to handle missing data.

A number of approaches to handling missing data are summarized in Newman (2009, 2014) and include list wise deletion, pairwise deletion, single imputation, multiple imputation (MI) and maximum likelihood estimation (ML). While the latter two approaches, MI and ML, are the most sophisticated and least biased methods available (Graham, 2003, 2009) social scientists have been slow to adopt these (Jelicić, Phelps, & Lerner, 2009; Newman, 2014) resulting in the selection of methods such as list wise or pairwise deletion or single imputation. In a review of 57 studies in top tier journals in the field of development psychology, 82% of studies used either list wise or pairwise deletion as their missing data technique (Jelicić et al., 2009). Just eight studies (12%) used the recommended ML or MI approaches when missing data exceeds 5-10% (Graham, 2009; Newman, 2014). This trend appears to be replicated in some longitudinal research in the job crafting research field which utilise list wise deletion (e.g. Lu, Wang, Lu, Du, & Bakker, 2014; Nielsen & Abildgaard, 2012; Tims, Bakker, & Derks, 2013, 2014; Vogt et al., 2016).

However, a handful of recently published papers in the fields of self-determination theory and job crafting adopt either MI or ML suggesting that researchers are beginning to tune into the benefits of these approaches (Bipp & Demerouti, 2014; Howard et al., 2016; Valero & Hirschi, 2016) such as reducing the risk of inaccuracy and bias. Newman recommends using ML or MI when more than 10% of the sample is made up of *partial respondents* where there is missing

data for one or more constructs. Given the profile of missingness in the current dataset, this recommendation has been followed by the utilisation of the full information maximum likelihood (FIML) default in *Mplus* in both latent profile analyses and the majority of latent growth analyses in this study.

### 5.5.2. Data screening

The raw data, frequencies and descriptive statistics were examined for evidence of errors including duplicates, missing identifier across waves, outliers and invalid responses.

High correlations between study variables is indicative of multicollinearity, suggesting that gathering separate data for the two variables is redundant and highlighting potential constructive validity or method bias issues. A rule of thumb provided by Ashford and Tsui (1991) suggests that correlations below 0.75 indicate that multicollinearity will not influence the validity of data analysis. Correlations between variables in the present study did not exceed 0.75 and therefore the requirement for the absence of multicollinearity was met.

Traditional tests of normality are overly sensitive in large samples and are likely to be significant even where the data are relatively normal (Field, 2009). In such cases it is advised to review the skewness and kurtosis statistics as well as the histograms. In the current sample all variables (with the exception of Amotivation) had skewness and kurtosis within a range of -1 to +1 and the relevant histograms for these variables displayed curves approximating normal distribution. Amotivation was positively skewed, although normality and skewness were within a range of -2 to 2 which is acceptable in larger samples (George & Mallery, 2010). However, skew may impact the latent profile analysis (LPA) to identify motivation profiles, specifically the statistical test that indicate the optimal number of profiles (Bauer & Curran, 2003b, 2003a; Nylund, Asparouhov, & Muthén, 2007). Therefore a log transformation was applied to the Amotivation variable which brought the skewness and kurtosis within the acceptable range of -1 to +1 (Field, 2009). As log transformation has been argued to impact results (Feng et al., 2014), latent profile analysis was run in *Mplus* using both the original variable data and transformed variable data and results compared on the relevant statistics, statistical indicators and tests. No differences were detected and therefore results presented in Chapter 6 are based on the original variable data.

## 5.6. Data Analysis Strategy

This section outlines the data analysis approach and key considerations therein. As the analyses in this study are substantial and complex, this section begins with a high level introduction of the six phases of the analysis. It proceeds to present the key considerations around statistical power relevant to all phases of the analysis, followed by a description of the general approach taken to the estimation of models and model fit. It then presents further detail on each of the six

analysis phases in turn: Confirmatory factor analysis (CFA), latent profile analysis (LPA), univariate second order factor latent growth modelling (SOF LGM), multi-group first-order factor latent growth modelling (FOF LGM), 3 step LPA with auxiliary variables, and growth parameter analysis from FOF LGM (Multi-group and BCH). As required, additional detail is included in relevant sections such as latent class enumeration guidelines in LPA and specific considerations around the available approaches for using latent classes in subsequent longitudinal analyses (i.e. FOF LGM).

### 5.6.1. Phases of analysis

The data analysis strategy involved six phases. First, the measurement model was tested by applying confirmatory factor analysis to determine how well the scale items measured each construct, at each wave as applicable. Second, latent profile analysis was used to identify naturally occurring motivation profiles within the sample and multinomial logistic regression was used to examine relationships with demographic covariates (age, gender, length of time in role and job type). Third, second-order factor latent growth modelling (SOF LGM) was completed to test hypotheses relating to changes in job crafting over time in three steps: measurement invariance testing, second-order factor growth trajectory modelling, and the addition of demographic variables. Fourth, first-order factor latent growth modelling (FOF LGM) was completed to test hypotheses relating to variation in starting point and trajectories in job crafting as a function of motivation profile group. The fifth step included an analysis of all job crafting variables as distal outcomes of latent profile analysis for motivation profiles (Asparouhov & Muthen, 2014) to test how levels of job crafting vary as a function of motivation profile. Finally, a review of growth parameters and means plots was complete based on multi-group FOF LGM and the application of the BCH approach to latent profile analysis with an arbitrary secondary model; in this case, FOF LGM (Asparouhov & Muthen, 2018). This is referred to as BCH approach with LGM for the remainder of this document. *Mplus* 7.3 was utilised to complete the above analyses, applying the maximum likelihood estimator and, as outlined above, utilising full information maximum likelihood (FIML) to handle missing data in all analyses with the exception of the BCH approach with LGM which required list wise deletion (Muthén & Muthén, 1998-2017). The implications of the analysis approach for statistical power, and the model estimation method and fit statistics utilised, are described in the next two subsections.

### 5.6.2. Statistical power

The question of statistical power is an important consideration when determining the appropriateness of a data analysis strategy. A lack of statistical power can lead to Type II errors where the null hypothesis is accepted incorrectly and where relationships that exist in the

sample are not detected (Murphy, 2008). Statistical power is influenced by the sample size, the effect size and the statistical threshold selected for a relationship to be determined as significant. This threshold is usually set at 0.05 or more stringently at 0.01 in the organizational sciences (Aguinis & Harden, 2009); both thresholds are reported in the present study. Sample size impacts statistical power because it impacts the number of data points; for the same reason, missing data can also negatively impact power (Newman, 2009). Conversely, in longitudinal data analysis, the number of waves can increase the number of data points and therefore increase statistical power (Wänström, 2009).

In order to determine statistical power, an analysis can be completed. A number of guidelines and rules of thumb exist in relation to this analysis (Aguinis & Vandenberg, 2013; Murphy, 2008). Davey and Savla (2009) present a series of power analysis steps designed specifically for situations involving the application of advanced missing data techniques such as maximum likelihood which is applied in the present study. They apply these to longitudinal data analysis such as latent growth modelling. Their analysis suggests that with missingness of 50%, samples sizes of approximately 250 are required to allow statistical power to meet the widely accepted threshold of 0.80 (Cohen, 1992) to detect variance and covariances when data is MAR. The sample of 992 in the current sample for latent profile analysis. Therefore univariate latent growth modelling easily meets the power requirement, despite missingness of 54%. However, in the final set of analyses, sample sizes for multi-group LGM and the BCH approach with LGM are determined by the motivation profile groups that emerge from latent profile analysis. It was anticipated based on previous findings (e.g. Howard et al., 2016) that at least 4 profiles may emerge and therefore at least some of these groups would have a sample size less than 250. Further analyses of sample sizes required to achieve 0.8 statistical power in multi-group latent growth modelling suggests that, where reliability of measures is greater than 0.7, group samples greater than 300 are required to detect effect sizes of 0.2 (Wänström, 2009). Therefore the results for smaller groups are likely to suffer from Type II errors: a failure to detect effects that exist. Two analysis strategies were adopted to address this issue. Firstly, the additional analysis of latent profile analysis repeated with the addition of all job crafting variables at each time point as distal outcomes allows means plots of trajectories to be generated. These were reviewed for each motivation profile group to observe visible change, and means differences tests were completed to compare levels of job crafting across motivation profile groups. Secondly, the results of LGM (multi-group and BCH) were cross-validated, to offset the impact of reduced power due to list wise deletion required in the BCH approach. Both results were reviewed against standard error rates of 0.01 and 0.05 but also against a higher a priori Type I error rate of 0.1 for groups with $n < 300$ (Aguinis & Harden, 2009). The decision to increase the risk of making a Type I error by adjusting this threshold was weighed against the expected likelihood

of Type II errors (Marsh et al., 2004) described above, and the additional information provided by supporting analyses, and determined to be appropriate in this instance.

### 5.6.3.Model estimation and fit

In predictive statistical modelling tools, including confirmatory factor analysis, measurement invariance testing and latent growth modelling, researchers must identify the best predictive model from a number of alternative models. In the present study, maximum likelihood (ML) estimation was used to estimate model parameters that maximize probability (Field, 2009). It is well established and widely used (Beauducel & Herzberg, 2006) and the default estimation tool in most statistical software including *Mplus* 7 which was employed in the present study. In order to assess the extent to which models estimated fit the data, fit indices are reviewed. The current research utilises four absolute and incremental fit indices. Comparative Fit Index (CFI; Hu & Bentler, 1999) is a goodness of fit incremental index which assesses the fit of a model compared to the null model by indicating a fit on a range between 0 and 1, with 0 indicating lack of fit and 1 indicating perfect fit (Fan, Thompson, & Wang, 1999). CFI greater than 0.90 indicates an acceptable level of fit (Kline, 2005). Three well established absolute indices with thresholds which indicate the size of levels of badness of fit were utilised. These were root mean square error of approximation less than 0.06 (RMSEA; (Steiger and Lind, 1980; Hu & Bentler, 1999; West, Taylor, & Wu, 2012); standardized root mean squared residual (SRMR) less than 0.08 (Marsh, Hau, & Wen, 2004; West, Taylor, & Wu, 2012); and chi-square degrees of freedom ratio ($\chi^2/df$) less that 5 (West et al., 2012). Chi-square test of exact fit was not included in the present study (n = 992) as it is susceptible to Type 1 error with larger sample sizes approaching 1000 (Marsh et al., 2004). These statistics were applied as appropriate in the phases of the analysis described below.

### 5.6.4.Phase 1: Confirmatory factor analysis

Factor analysis involves testing the extent to which individual scale items relate to the relevant latent factor with sufficient strength (factor loading), and in a consistent structure (model fit). Confirmatory factor analysis is based on a priori hypotheses about the relationship between items and latent factors. These hypotheses can be based on previous findings about these relationships. Ensuring the items accurately and consistently reflect the latent factor structure is a foundational step in quantitative social science to allow accurate hypothesis testing (Jackson, Gillaspy, & Purc-Stephenson, 2009). In the present study, confirmatory factor analysis is used to validate the applicability of well-established measurement scales within the research to allow latent profile analysis and hypothesis testing to proceed.

### 5.6.5. Phase 2: Latent profile analysis

Latent profile analysis is a person-centred classification based analysis that classifies individuals to a profile group based on their responses on a set of continuous variables, while also generating probabilities for that classification (Marsh, Lüdtke, Trautwein, & Morin, 2009; Vermunt & Magidson, 2002). Therefore it "identifies groups of people who are similar to each other and different from other groups" (p193, Marsh et al., 2009). The fact that it is model-based brings a number of advantages over cluster analysis techniques including the ability to compare different models during class enumeration, providing useful data to inform the final decision on the appropriate number of classes. The procedure also allows for covariates to be added to the model and tested via multinomial logistic regression. The present study uses latent profile analysis to identify group individuals based on their responses to measures of various forms of work motivation, thereby identifying motivation profiles that naturally occur within the population.

To identify the optimal number of profiles in latent profile analysis (i.e. the best model), a multifaceted approach is necessary (Jung & Wickrama, 2008; Nylund et al., 2007). In the present study, models were reviewed for theoretical congruency, statistical integrity (e.g. means, variances, probabilities, group sizes, entropy, log likelihood value plots) and relevant statistical tests and information criteria (Nylund et al., 2007) were employed to determine the optimal number of profiles. The available statistical tests and information criteria vary in performance based on the characteristics of the data set (e.g. sample size, number of items, entropy). Research suggests that LMR, BLRT and ABIC will be the best indicators based on the large sample size (n = 992), and relatively small number of latent indicators (6) in our latent profile analysis (Nylund et al., 2007) and therefore these have been emphasized in deciding on the final number of profiles. However, it was anticipated that, due to the large sample size, some statistical indicators (specifically AIC, CAIC, BIC and ABIC) may to fail reach a minimum as in previous similar research (Howard et al., 2016; Marsh et al., 2009). In addition LMR has demonstrated inconsistent results in clearly indicating the best number of groups in previous similar research and were therefore interpreted with caution and with reference to the theoretical basis of the models (Howard et al., 2016; Marsh et al., 2009; Nylund et al., 2007). Finally, where possible, models with fewer classes should be preferred to avoid local likelihood maxima (Geiser, 2013). Based on these considerations, the above indicators were critically assessed alongside considerations of theoretical congruency and an analysis of graphical representations of the class enumeration statistics when determining the optimal number of profiles.

In the present study, multinomial logistic regression was used to compare differences in age, gender, job type and length of time in role between pairs of motivation profiles. Multinomial

logistic regression completes pairwise comparisons of profiles, and tests if levels of the covariate are significantly different within each pair (Field, 2009). For each unit of increase in the predictor or covariate, it generates a regression coefficient that indicates increase or decrease likelihood of membership in one profile from the pair. As it generates the output in a log metric the output is converted to create an odds ratio which provides the odds of membership in a profile based on the predictor variable (e.g. gender, age etc.)

### 5.6.6. Phase 3: Second-order factor latent growth modelling

The third phase involved the analysis of longitudinal job crafting data using latent growth modelling. In longitudinal research, it is important that the same construct is being measured at each time point to allow for meaningful comparisons across time and related modelling of trajectories (Kim & Willson, 2014; Ployhart & Vandenberg, 2009; Vandenberg & Lance, 2000). Measurement invariance testing allows the researcher to ensure this requirement is met before hypothesis testing begins. There are a number of steps in testing measurement invariance, each with increasingly restrictive requirements. It is expected that measurement equivalence will be demonstrated such that the same items load to the same latent factors over time (configural invariance), that the factor loadings of these items is consistent over time (metric invariance) and, finally, that item intercepts are consistent over time (scalar invariance; Vandenberg & Lance, 2000). Where invariance to the scalar level is not demonstrated, results can be examined to identify specific items which might impact invariance tests and in some cases constraint can be relaxed, to confirm that partial invariance. Where partial invariance arises, the extent of differential item functioning can be reviewed and a decision made on how to proceed (Kim & Willson, 2014). In the current research the use of second-order factor latent growth modelling means that where a decision is made to proceed, partial invariance can be controlled for within the subsequent latent growth model. The present study includes the above steps to meet the requirement for scalar invariance along with additional tests for full invariance by fixing item variances and intra-item correlations.

In order to model change over time, latent growth modelling (LGM), a form of structural equation modelling (Jackson, 2010) was utilised to test the study hypotheses. LGM generates starting levels and slope factors for a variable over time and allows for controls, covariates and outcomes to be added to the model (Lance, Vandenberg, & Self, 2000). A number of models can be run and compared to identify the best fitting. Models vary by factors such as homoscedasticity and change trajectories (linear, optimal and quadratic). In selecting LGM over alternatives such as longitudinal multi-level modelling (MLM), a number of factors were considered. Firstly, the study only includes two levels (e.g. time nested within individuals) so

does not necessitate the use of MLM (Jackson, 2010). Secondly, the LGM allows for the incorporation of the measurement model and therefore reduces measurement error.

In the present study, univariate second-order factor latent growth modelling was used to test hypotheses regarding levels and trajectories of job crafting over time. Second-order factor modelling includes the full measurement model for the relevant variables (Lance et al., 2000). Control variables (age, gender, length of time in role, job type) were added to the final models.

### 5.6.7.Phases 4-6: The application of latent classes in longitudinal analysis

The final set of hypotheses in this study suggests that levels and trajectories of job crafting vary as a function of motivation profile. To test the hypotheses that levels and trajectories of job crafting change over time as a function of class membership, three interdependent phases of analyses were completed: multi-group first-order factor latent growth modelling (Lance et al., 2000; L.K. Muthén & Muthén, 2017) to test if levels and trajectories of job crafting vary by motivation profile; 3 step latent profile analysis (LPA) with auxiliary variables (Asparouhov & Muthen, 2014) to test how levels vary;  and growth parameter analysis of first-order factor latent growth modelling (FOF LGM; Lance et al., 2000; L.K. Muthén & Muthén, 2017) from the multi- group approach and the BCH approach to latent profile analysis with a secondary latent growth model (Asparouhov & Muthen, 2018) to test how trajectories vary. The rationale for the use of three sets of analyses is based on the fact that no ideal solution applies to the application of latent class profiles in subsequent complex models. The key characteristics of each approach are presented in Table 4.4. An outline of each phase, along with the benefits and disadvantages of each, and how they each support cross validation of results, is presented below.

Phase four of the analysis involved running multi-group latent growth modelling (LGM) treating latent classes as known groups. First-order factor LGM was used (as opposed to second-order factor) to ensure sufficient power for within group levels and trajectories to be mapped given the design constraint of 4 waves. The multi-group method allows trajectories to be modelled, the best fitting trajectory to be identified and a test of the hypotheses that levels and trajectories of vary as a function of motivation profile to be completed. However, motivation profiles that emerge from LPA are not absolute or known groups. Rather class membership is based on probabilities less than 100%; there is an error term associated with the classification of each observation. The higher the level of entropy in class enumeration, the lower the level of error. This approach is viable only where entropy is high (i.e. > 0.8) to ensure that error levels are as low as possible. The benefit of this approach is that it applies FIML to estimate missing data so that all available data points are utilised. This approach minimizes bias and increases statistical power (Newman, 2009) to improve the chances of meaningful group

analyses. Results can also be validated with an analysis that does account for this error: the BCH approach with LGM, as in the final phase of analysis described below. This allows related growth parameters within each group to be tested for significance, and thereby testing hypotheses regarding patterns of change.

Phase five involved adding all job crafting variables at all time points individually as distal outcomes to latent profile analysis in the second phase of the analyses by applying a 3 step approach for auxiliary variables (Asparouhov & Muthen, 2014). Means difference tests which compared group means within T1 were run thus testing hypotheses about how levels of job crafting vary by motivation profile. This approach has a number of advantages beyond the fact that it effectively tests the hypotheses that there are significant differences in the levels of job crafting across groups at T1. The approach generates means scores for each group at each time point which allows trajectories to be plotted and notable trends over time to be observed. It is also relatively successful in preserving the integrity of classes with the addition of distal outcome variables (Asparouhov & Muthen, 2018). Finally, the approach allows for missing data to be estimated using FIML, meaning that all available data is utilised (Newman, 2014).

The final sixth phase involved a review of the significance of growth parameters from FOF LGM so it could be determined if hypothesized patterns have occurred. It compared the growth parameters from the multi-group FOF LGM in phase four with those of a second similar analysis: the BCH (Bolck, Croon, & Hagenaars, 2004) manual method with an arbitrary secondary model from latent profile analysis. In this case, the arbitrary secondary models were the final latent growth models from multi-group LGM (Asparouhov & Muthen, 2018). The reason for this duplication was to validate the results of multi-group FOF LGM which used the motivation profiles that emerge from LPA are not absolute or known groups and therefore introduced error.

The BCH method accounts for the measurement errors in the latent class variables by using weights. However, the method has limitations. In certain circumstances, BCH weightings can be negative, which can, although not always, result in inadmissible estimates such as negative variance. Solutions for this issue concerning models that go beyond a basic distal outcome model are not yet available. The BCH approach also uses list wise deletion for missing data; FIML estimation is not possible. In the present study, as in all longitudinal datasets, attrition occurred over all waves. In such a situation, list wise deletion can lead to the removal of significant amounts of participant data. This deletion of data can lead to biased results (Newman, 2009). In addition, with regard to group analysis, the loss of participant data points can reduce group sizes to the point where there is not sufficient statistical power to test hypotheses (Newman, 2009). However, because they account for error in classification, results

from the BCH approach with LGM are usefully applied in the current study to validate the direction of significant growth parameters identified in the multi-group LGM.

Table 5.4 Comparison of approaches for using latent profile classes in subsequent analyses

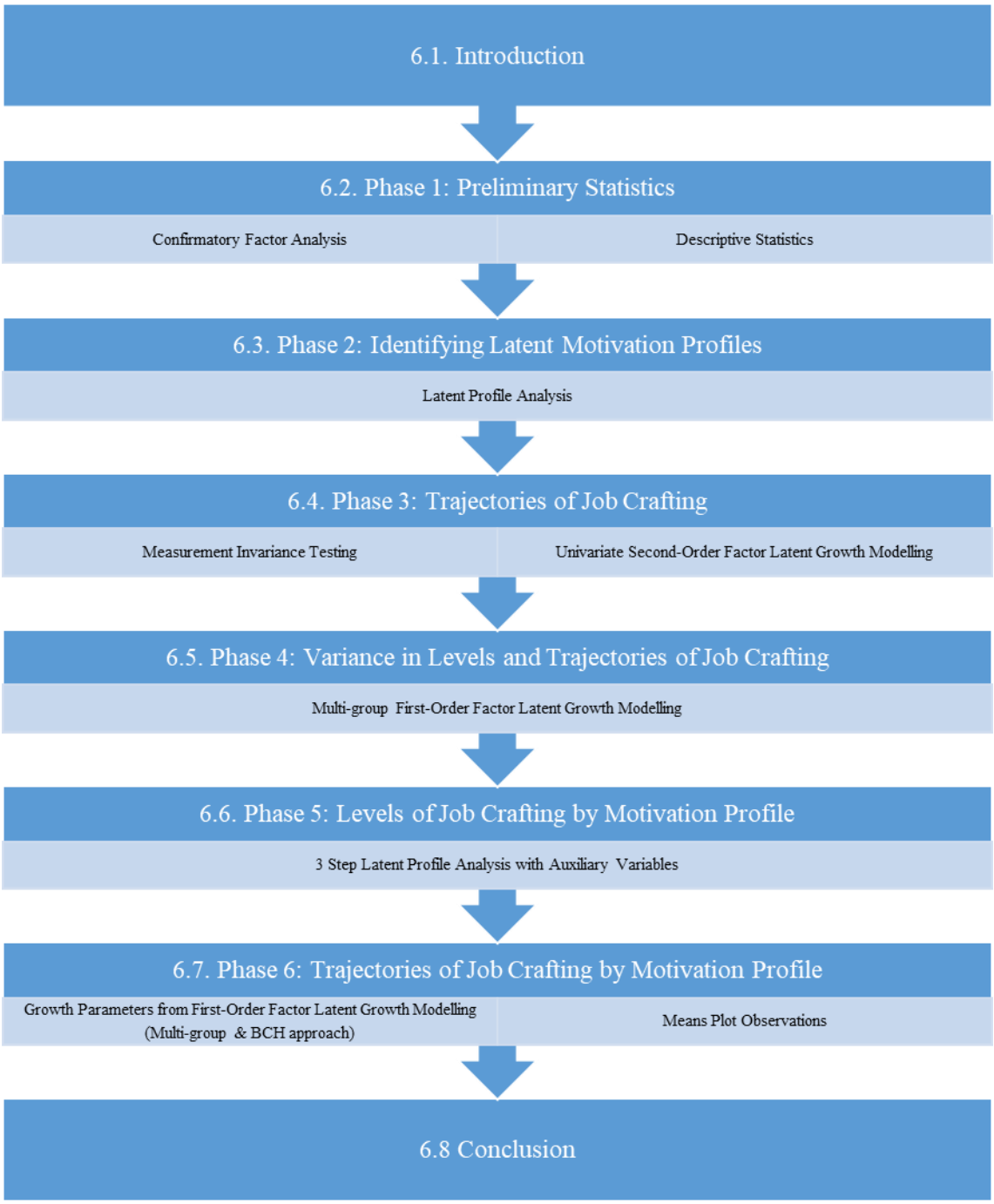
| | **Handling missing data** | **Handling variance** | **Handling measurement error** | **Statistical power considerations** | **Comparing levels of outcome variable** | **Comparing trajectories of outcome variable** |
|---|---|---|---|---|---|---|
| **Latent profile analysis with distal outcomes (Asparouhov & Muthen, 2014)** | Utilises full information maximum likelihood estimation as default reducing likelihood of bias (Newman, 2009) | Variances are not held equal across groups as default (recommended) | Classification probabilities are estimated | Utilises all available data to keep group size high increasing power<br><br>Incorporating missing data reduces power | Generates means difference tests to test for significant differences between groups at each time point | Generates means plots across time points by classification group |
| **Multi-group latent growth modelling (L.K. Muthén & Muthén, 2017)** | Utilises full information maximum likelihood as default estimation reducing likelihood of bias (Newman, 2009) | Low variances can be fixed at zero to prevent negative variance issues during modelling<br><br>Homoscedastic and heteroscedastic models can be run and compared | Does not account for measurement error associated with group classification<br><br>High entropy will reduce size of error | Utilises all available data to keep group size high increasing power<br><br>Incorporating missing data reduces power | Generates mode fit statistics and identifies best fitting change model.<br><br>Generates and tests significance of variance in levels (i.e. intercepts) across groups<br><br>Generates intercept parameters (slopes) and tests if within- group slopes differ significantly from zero | Generates model fit statistics and identifies best fitting change model.<br>Generates and tests significance of variance in change parameters (i.e. slopes) across groups<br><br>Generates change parameters (slopes) and tests if within-group slopes differ significantly from zero |
| **BCH approach to latent profile analysis with arbitrary secondary model (in this case, a latent growth model) (Asparouhov & Muthen, 2018)** | Utilises list wise deletion increasing likelihood of bias (Newman, 2009 | Low entropy can lead to negative variance<br><br>Variance in growth parameters is fixed as equal across groups | Accounts for measurement error associated with group classification by the application of weightings | Utilises list wise deletion reduces group size and, therefore, power<br><br>No missing data increases power | Generates intercept parameters (slopes) and tests if within- group slopes differ significantly from zero | Generates change parameters (slopes) and tests if within - group slopes differ significantly from zero |

### 5.7. Conclusion

This chapter outlined the philosophical and methodological principles underpinning this research as a longitudinal, person-centred quantitative study rooted in the positivist tradition. The design of the study including design selection, participants, procedures and measures utilised were discussed. The data preparation steps and data analysis strategy were presented in some detail. The following chapter describes the data analysis steps taken and presents the results found.

# CHAPTER 6

## Data Analysis and Result




### 6.1. Introduction

This chapter expands on the data analysis strategy outlined in Chapter 5 by presenting a detailed description of the application and results of data analysis tools used in the present study. This study involved an extensive range of analyses. For clarity, these are grouped in six overarching phases but it is important to note that each phase can include a series of analyses. The phases are

presented in sections 6.2-6.7 of the chapter with each section structured in a consistent format using the following generic headings:

> *Analysis:* a description of the data analysis steps applied,
> *Propositions/Hypotheses:* a recap of any relevant propositions/hypotheses, as appropriate,
> *Results:* a presentation of the results of the analysis,
> *Outcomes:* relevant outcomes for propositions or hypothesis testing, as appropriate.

The first of these sections, Section 6.2, does not include hypothesis testing as it describes the confirmatory factor analysis and results. This tool examines the factor structure of the measurement model. In the present study, this involves testing a six factor structure of work motivation (Gagné et al., 2015) and a four factor structure of job crafting (Tims et al., 2012). Once the factor structure has been validated, the section proceeds to present the descriptive statistics and correlational analyses of the variables in this study. Section 6.3 presents a series of latent profile analyses based on the cross-sectional variable of work motivation to identify the optimal number of naturally occurring profiles among the low-skilled blue-collar population in this study and applies the proposed a posteriori classification model outlined in Chapter 2 to label these. This section includes propositions related to expected emergent profiles outlined in Chapter 2. Section 6.4 presents a longitudinal analysis utilising latent growth modelling to test hypotheses relating to levels and trajectories of job crafting over time. It opens with the analysis and results of measurement invariance testing within the job crafting variables and then describes univariate first-order factor latent growth modelling analysis and related hypotheses. It proceeds to present the results and outcomes for hypotheses testing in a series of subsections for each form of job crafting. Section 6.5 applies multi-group second-order factor latent growth modelling (SOF LGM) to test hypotheses relating to whether levels and trajectories of each form of job crafting vary as a function of motivation profile. Section 6.6 applies 3 step latent profile analysis with auxiliary variables to test how levels of job crafting vary as a function of motivation profile. Finally, Section 6.7 includes an analysis and comparison of means plots along with growth parameters from both multi-group FOF LGM and the BCH approach to latent profile analysis with a FOF LGM model to test hypotheses regarding how trajectories of job crafting vary as function of motivation profile.

## 6.2. Phase 1: Preliminary Statistics

### 6.2.1. Analysis: Confirmatory factor analysis

Confirmatory factor analysis (CFA) was used to validate how well the scale items measured each construct within the measurement models used in this study. The measures utilised in this study to test for work motivation and job crafting are well established and have been widely validated (Gagné et al., 2015; Rudolph et al., 2017) and therefore confirmatory, rather than exploratory, factor analysis was appropriate to validate the structure for the purposes of this study. The measurement models tested included a model of the structure of the work motivation for the purposes of the latent profile analysis in the second phase of the analysis, and measurement models for each time point (T1-T4) for subsequent analyses which included both work motivation and job crafting items (See Figure 6-A). The analysis was completed in *Mplus* 7 using the default maximum likelihood estimator (MLR) with FIML estimation. To determine model fit, a number of indices were employed using the following thresholds: $\chi^2/df$ <5 (West et al., 2012); comparative fit index >.90 (CFI; (Hu & Bentler, 1999); root mean square error of approximation <.06 (RMSEA; Steiger, 2016) and standardized root mean squared residual (SRMR; Marsh et al., 2004) <.08. The standardized regression coefficients (factor loadings) were reviewed to ensure loadings above 0.4. Where model fit indices are acceptable and factor loadings are above 0.4, it indicates that the measurement model is a good fit to the data (Field, 2009). In specific circumstances, where sample sizes are larger as in the present study, a threshold of 0.350 is acceptable (Hair, Black, Babin, Anderson, & Tatham, 2006).

The initial CFA tested the MWMS (Gagné et al., 2015) used in the latent profile analysis. Four additional CFA models were run, one for each wave of data, to test the structure of the MWMS and the job crafting scale (Tims et al., 2012) which were used first order-factor LGM (multi-group and BCH approach) and in LPA with distal continuous outcomes. This was completed in addition to measurement invariance testing for univariate latent growth modelling described in section 5.4 of this chapter. Factors loadings for all items exceeded 0.38 except the third item in the Increasing Structural Job Resources measure of the Job Crafting scale which was below 0.3 at T1 and T2 (range of factor loadings T1-T4 = $0.103 \leq \alpha \leq 0.343$). The item was deleted from the measure without any negative impact on reliability or measurement model fit.

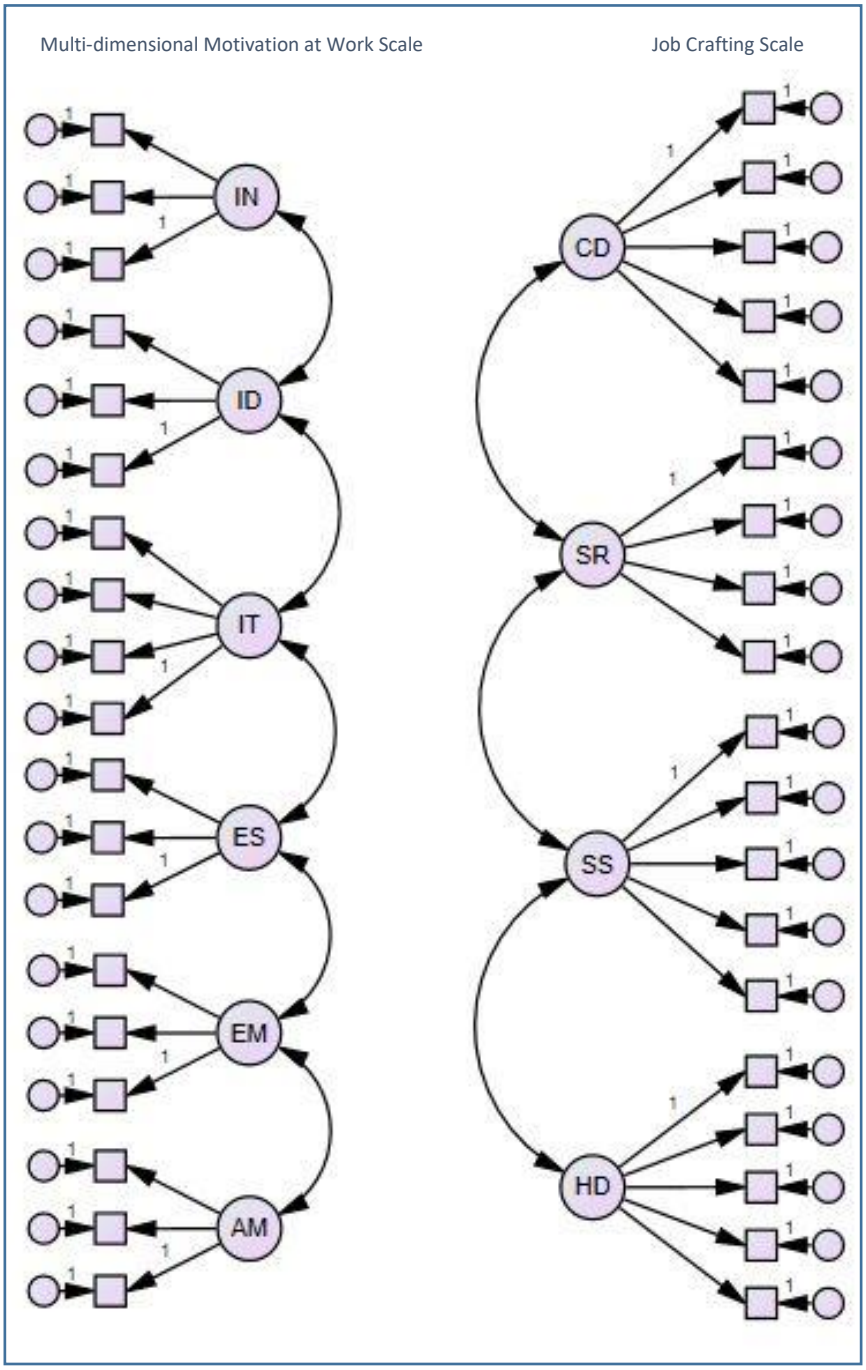



*Figure 6-A Confirmatory Factor Analysis Models 2-5 (T1-T4)*

*Notes.* IN = intrinsic motivation; ID = identified regulation; IT = introjected regulation; ES = external regulation – social; EM = external regulation – material; AM = amotivation; CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands. For clarity, covariance paths between latent factors within each scale are not represented

### 6.2.2.Results: Confirmatory factor analysis

Overall, the models were an acceptable fit based on most indicators: $\chi^2$/df ratio was less than 5 for all models except model 1 where it was 5.6. However, in this case it was most likely related

to the combined effect of the inflation of the chi-squared value due to the larger sample size (n = 992) and the simplicity of the model resulting in lower degrees of freedom (Hinkin, 1995). RMSEA was considerably less than or close to 0.06 for all models (0.038-0.068); SRMR was below 0.08 for all models (0.053-0.061). CFI was at or above 0.90 and therefore an appropriate fit the data (Marsh et al., 2004). A very slight dip below 0.9 in TLI for Models 1 and 2 (0.89) may be due to the fact the null RMSEA for the remaining models is very low (0.091-0.148). As highlighted by Kenny (2015), when the null model RMSEA is less than 0.158, incremental fit indices such as TLI can dip below 0.9. (See Table 6.1). Based on an assessment of the remaining indices and factor loadings, the measurement model fit was determined acceptable.

Table 6.1 Measurement Models CFA for MWMS with job crafting scale (T1-T4)

| Measurement Model | N | $\chi^2$ | df | p value | $\chi^2$/df | CFI | TLI | NULL RMSEA | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. MWMS only** | 992 | 769 | 137 | <0.0001 | 5.61 | 0.91 | 0.89 | 0.21 | 0.07 | 0.06 - 0.07 | 0.06 |
| **2. MWMS and T1 JCS** | 992 | 1671.42 | 620 | <0.0001 | 2.70 | 0.90 | 0.89 | 0.12 | 0.04 | 0.04 - 0.04 | 0.06 |
| **3. MWMS and T2 JCS** | 992 | 1645.11 | 620 | <0.0001 | 2.65 | 0.91 | 0.90 | 0.13 | 0.04 | 0.04 - 0.04 | 0.05 |
| **4. MWMS and T3 JCS** | 992 | 1621.11 | 620 | <0.0001 | 2.62 | 0.91 | 0.90 | 0.13 | 0.04 | 0.04 - 0.04 | 0.05 |
| **5. MWMS and T4 JCS** | 992 | 1499.40 | 620 | <0.0001 | 2.42 | 0.92 | 0.90 | 0.12 | 0.04 | 0.04 - 0.04 | 0.05 |

*Notes.* JCS = Job Crafting Scale (Tims et al., 2012); MWMS = Multi-dimensional Work Motivation Scale (Gagné et al., 2015) N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

### 6.2.3. Descriptive statistics and correlations

Means, reliabilities and correlations are presented in Table 6.2.

Cronbach's alpha reliability statistics for the measures in this study were reported in Chapter 5. Mean levels of job crafting in this study mirrored levels reported in a recent meta-analysis (Rudolph et al., 2017). Increasing structural job resources (SR) demonstrated the highest levels, followed by increasing challenging job demands (CD), then increasing social job resources (SS) and finally decreasing hindering job demands (HD). Of the work motivation measures, identified regulation levels were highest followed by introjected regulation, intrinsic motivation, external social regulation, external material regulation and amotivation. Job crafting and work motivation measures were generally positively correlated with the exception of amotivation with job crafting and decreasing hindering job demands with identified regulation. Amotivation was negatively correlated with all other forms of motivational regulation. Decreasing hindering job demands demonstrated inconsistent correlations with other forms of job crafting. All forms of job crafting demonstrated significant intra-correlations across the four time points suggesting stability in the measure over time at a variable level.

Table 6.2 Descriptive Statistics, Reliabilities and Correlations

| | n | α | μ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Age** | 990 | | 38.43 | | | | | | | | | | | | | | | | | | | | | | | |
| **2. Years in Job** | 974 | | 6.62 | .50** | | | | | | | | | | | | | | | | | | | | | | |
| **3. Intrinsic Motivation** | 992 | .84 | 3.37 | -.02 | -.03 | | | | | | | | | | | | | | | | | | | | | |
| **4. Identified Regulation** | 991 | .78 | 3.98 | .09** | .01 | .55** | | | | | | | | | | | | | | | | | | | | |
| **5. Introjected Regulation** | 992 | .73 | 3.65 | -.02 | -.08* | .46** | .61** | | | | | | | | | | | | | | | | | | | |
| **6. External Social Regulation** | 992 | .75 | 3.32 | -.13** | -.11** | .47** | .39** | .57** | | | | | | | | | | | | | | | | | | |
| **7. External Material Regulation** | 991 | .60 | 2.91 | -.08** | -.06 | .34** | .28** | .43** | .57** | | | | | | | | | | | | | | | | | |
| **8. Amotivation** | 992 | .77 | 1.49 | .001 | .01 | -.28** | -.41** | -.22** | -.12** | -.01 | | | | | | | | | | | | | | | | |
| **9. SR T1** | 428 | .80 | 3.90 | -.12* | -.06 | .50** | .65** | .49** | .36** | .22** | -.34** | | | | | | | | | | | | | | | |
| **10.SR T2** | 522 | .82 | 3.90 | -.06 | -.08 | .49** | .52** | .42** | .38** | .23** | -.28** | .50** | | | | | | | | | | | | | | |
| **11.SR T3** | 485 | .84 | 3.90 | -.15** | -.09 | .43** | .43** | .42** | .33** | .17** | -.25** | .42** | .48** | | | | | | | | | | | | | |
| **12.SR T4** | 383 | .84 | 3.97 | -.13** | -.20** | .42** | .45** | .34** | .25** | .18** | -.33** | .46** | .52** | .62** | | | | | | | | | | | | |
| **13.SS T1** | 428 | .75 | 3.03 | -.09 | -.14** | .49** | .35** | .39** | .47** | .33** | -.12* | .40** | .24** | .27** | .21* | | | | | | | | | | | |
| **14.SS T2** | 522 | .82 | 3.08 | -.10* | -.12** | .52** | .37** | .37** | .51** | .37** | -.16** | .30** | .42** | .26** | .37** | .67** | | | | | | | | | | |
| **15.SS T3** | 485 | .81 | 3.15 | -.18** | -.18** | .39** | .23** | .26** | .37** | .28** | -.05 | .24** | .29** | .41** | .36** | .54** | .69** | | | | | | | | | |
| **16.SS T4** | 383 | .80 | 3.23 | -.08 | -.20** | .46** | .31** | .29** | .40** | .33** | -.18** | .26** | .29** | .35** | .40** | .52** | .61** | .66** | | | | | | | | |
| **17.CD T1** | 428 | .76 | 3.45 | -.06 | -.01 | .52** | .53** | .45** | .38** | .19** | -.21** | .67** | .42** | .36** | .45** | .48** | .36** | .28** | .39** | | | | | | | |
| **18.CD T2** | 522 | .75 | 3.45 | -.09* | -.09* | .55** | .49** | .43** | .44** | .28** | -.21** | .47** | .63** | .44** | .46** | .42** | .55** | .40** | .44** | .60** | | | | | | |
| **19.CD T3** | 485 | .76 | 3.51 | -.22** | -.13** | .48** | .48** | .40** | .38** | .19** | -.17** | .46** | .44** | .66** | .56** | .39** | .37** | .53** | .50** | .52** | .64** | | | | | |
| **20.CD T4** | 383 | .77 | 3.53 | -.10 | -.19** | .50** | .45** | .35** | .29** | .23** | -.28** | .46** | .40** | .56** | .68** | .29** | .42** | .41** | .54** | .53** | .59** | .69** | | | | |
| **21.HD T1** | 428 | .71 | 2.79 | -.02 | -.01 | .13** | .04 | .28** | .31** | .38** | .16** | .12* | .09 | .07 | -.05 | .25** | .20** | .16* | .11 | .05 | .07 | .13 | .04 | | | |
| **22.HD T2** | 522 | .75 | 3.01 | -.06 | .00 | .25** | .11* | .26** | .35** | .41** | .08 | .09 | .22** | .20** | .04 | .15* | .30** | .26** | .18* | .06 | .24** | .10 | .09 | .56** | | |
| **23.HD T3** | 485 | .80 | 3.01 | -.09* | -.08 | .29** | .15** | .27** | .36** | .36** | .05 | .03 | .13* | .32** | .16* | .08 | .20** | .34** | .27** | -.04 | .12 | .30** | .19** | .53** | .69** | |
| **24.HD T4** | 383 | .80 | 2.93 | -.14** | -.16** | .21** | .07 | .20** | .34** | .36** | .12* | -.03 | .17* | .19** | .15** | .11 | .22** | .19** | .29** | -.09 | .19** | .20** | .20** | .50** | .57** | .59** |

*Notes.* n = sample size; α = Cronbach's alpha statistic; μ = mean; *p < 0.05; ** p < 0.01; SR = increasing structural job resources; SS = increasing social job resources; CD = increasing challenging job demands; HD = decreasing hindering job demands.

## 6.3. Phase 2: Identifying Latent Motivation Profiles

### 6.3.1. Analysis: Latent profile analysis

The Maximum Likelihood Estimator in *Mplus* 7 was used to identify latent classes representing motivation profiles based on participant responses to the six motivation dimensions within the MWMS (Gagné et al., 2015). This approach replicates a recent analysis by Howard et al. (2016). Based on the enumerated motivation profiles from that study, and those of similar studies (Graves et al., 2015), it was anticipated that at least 4 motivation profiles would be identified in the current sample (Howard et al., 2016). However, given the unique occupational profile of the sample in this study (low-skilled from a single organisation), it was possible that profiles would differ or indeed more profiles could appear. Indeed, as outlined in Chapter 2, it was anticipated that profiles may reflect low autonomy need satisfaction levels due to the manual, repetitive nature of job tasks for participants and highly controlled nature of the working environment. Therefore, models with 1-8 profiles were estimated. To avoid local likelihood maxima, *Mplus* defaults were adjusted to 2000 random sets of start values, 300 iterations for each random start and 200 solutions (Geiser, 2013; L.K. Muthén & Muthén, 2017). Best log likelihood values were replicated for all models. In addition, adjusted Lo-Mendell-Rubin test (TECH 11 OUTPUT) and the bootstrapped likelihood test (TECH 14 OUTPUT) were utilised in *Mplus* to identify the optimal class number along with the OPTSEED command to check that the selected model represented a global solution (Asparouhov & Muthén, 2012; Wickrama, Lee, Walker O'Neal, & Lorenz, 2016).

Emergent profiles were classified a posteriori using the model outlined in Chapter 2 (see Figure 6-B) and applying principles adopted in Howard et al. (2016). Profiles were first identified as either *Balanced, Autonomous, Controlled* or *Amotivation Dominant* based on a review of standardized means. A *Balanced* profile can be said to exist when all types of motivation are at similar levels as suggested in Howard et al. (2016). An *Autonomous Dominant* profile can be said to exist when average levels of autonomous forms of motivation (intrinsic, identified) exceed those of controlled forms (external Regulation – material/social, introjected). *Controlled Dominant* profiles can be said to exist when average levels of controlled forms of motivation exceed those of autonomous forms of motivation. *Amotivation Dominant* profiles can be said to exist when Amotivation is above average and all other types of motivation are at or below average as described in (Howard et al., 2016).

Once the general classification was identified, this was reviewed to determine the relative strength of autonomous and controlled motivation in the profile. Indicative relative levels in the present study were determined based on the following guidelines extrapolated from Howard et al., (2016):

*Low:* estimated as standardised mean at or below of -0.5

*Moderate:* estimated as standardised mean above -0.5 but below 0.5

*High:* estimated as standardised mean at or above of 0.5.

This review resulted in a refinement of the general classification; for example from *Balanced* to *Balanced Low*.

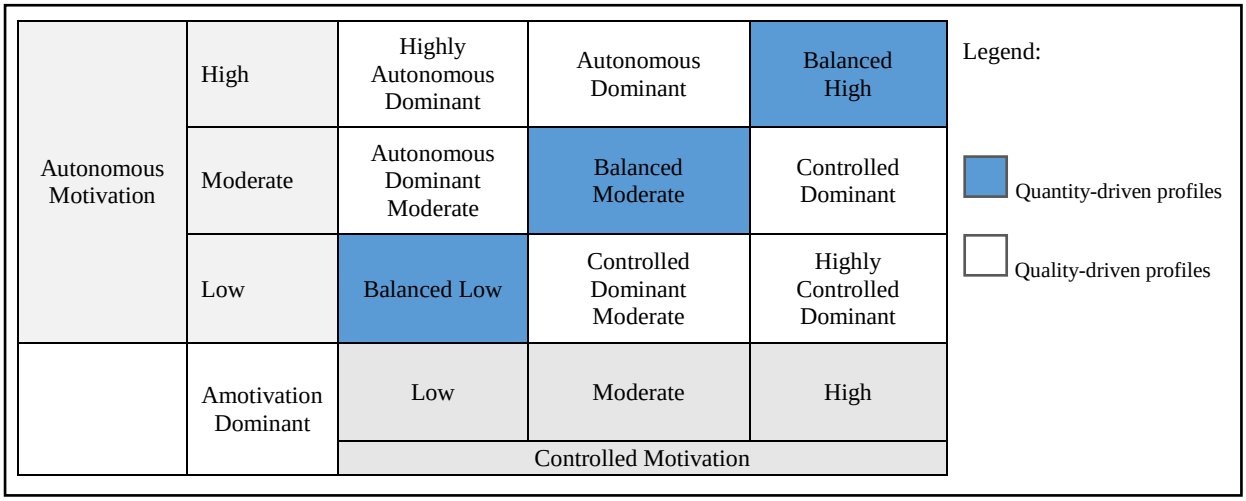



*Figure 6-B Proposed classification model for quantity-driven and quality-driven motivation profiles*

### 6.3.2. Propositions: Latent profile analysis

Due to the exploratory nature of latent profile analyses, explicit hypotheses were not made. However, the following propositions were outlined in Chapter 2:

- It is proposed that two 'core' profiles will emerge: *Amotivation Dominant* and *Balanced High*
- It is proposed that one or more *Controlled Dominant* motivation profiles may be present in the study population.

### 6.3.3. Results: Latent profile analysis

Table 6.3 Latent class analysis – class enumeration

| N = 992 | Log likelihood | fp | scaling | AIC | CAIC | BIC | ABIC | Entropy | VLMR | LMR | BLRT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1 profile** | -7913.88 | 12 | 1.02 | 15851.77 | 15922.56 | 15910.56 | 15872.45 | n/a | | | |
| **2 profiles** | -7323.34 | 19 | 1.22 | 14684.68 | 14796.78 | 14777.78 | 14717.43 | 0.78 | 0 | 0 | 0 |
| **3 profiles** | -7093.11 | 26 | 1.36 | 14238.22 | 14391.62 | 14365.62 | 14283.04 | 0.84 | 0 | 0 | 0 |
| **4 profiles** | -6950.33 | 33 | 1.48 | 13966.66 | 14161.35 | 14128.35 | 14023.54 | 0.86 | 0.04 | 0.05 | 0 |
| **5 profiles** | -6823.18 | 40 | 1.56 | 13726.37 | 13962.36 | 13922.36 | 13795.31 | 0.83 | 0.08 | 0.09 | 0 |
| **6 profiles** | -6704.08 | 47 | 1.65 | 13502.15 | 13779.44 | 13732.44 | 13583.17 | 0.91 | 0.40 | 0.40 | 0 |
| **7 profiles** | -6574.50 | 54 | 1.57 | 13256.99 | 13575.58 | 13521.58 | 13350.07 | 0.92 | 0.26 | 0.26 | 0 |
| **8 profiles** | -6498.49 | 61 | 1.97 | 13118.97 | 13478.85 | 13417.85 | 13224.11 | 0.88 | 0.67 | 0.67 | 0 |

*Notes.* fp = free parameters; AIC = Akaike Information Criteria; CAIC = Constant AIC; BIC = Bayesian Information Criteria; ABIC = Adjusted BIC; LMR = p value associated with Lo-Mendell-Rubin likelihood ratio test; BLRT = p value associated with bootstrap likelihood ratio test.

When the models were run, class sizes for those with 1-5 profiles were well above 5% of the sample each. Classes started to collapse at 6 profiles with a class size below 2%, and below 1% for models with 7 and 8 profiles. *Mplus* warned that models with 7 or 8 profiles may not be well-identified. Entropy was high for all models (from 0.782 to 0.92). BLRT was significant for all models at $p<0.01$. LMR was significant at $p < 0.05$ for the 3 and 4 profile models. AIC, CAIC, BIC and ABIC continued to improve with each additional profile and, as expected, did not reach a minimum level by 8 profiles (See Table 6.3).

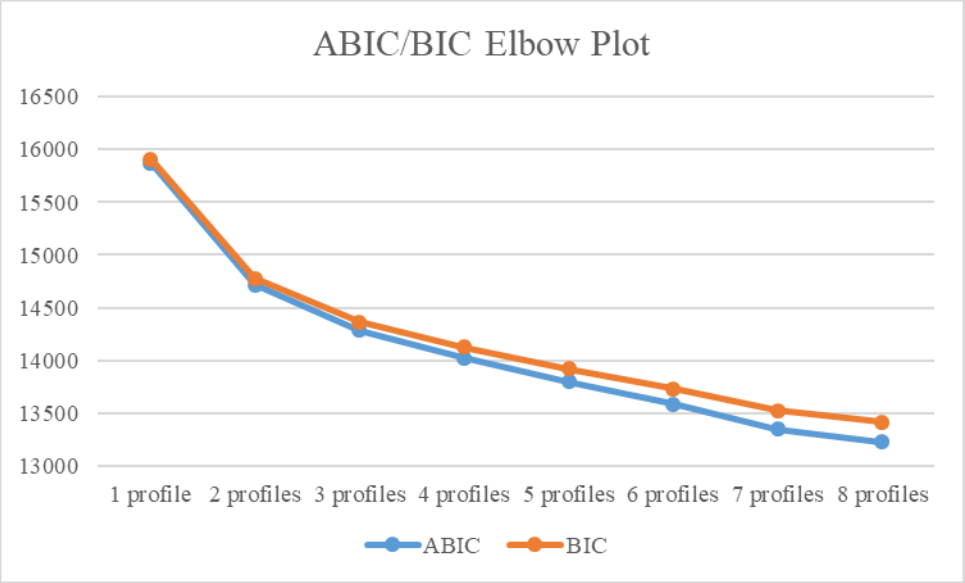



*Figure 6-C ABIC/BIC Elbow Plot during class enumeration*

*Notes.* BIC = Bayesian Information Criteria; ABIC = Adjusted BIC;

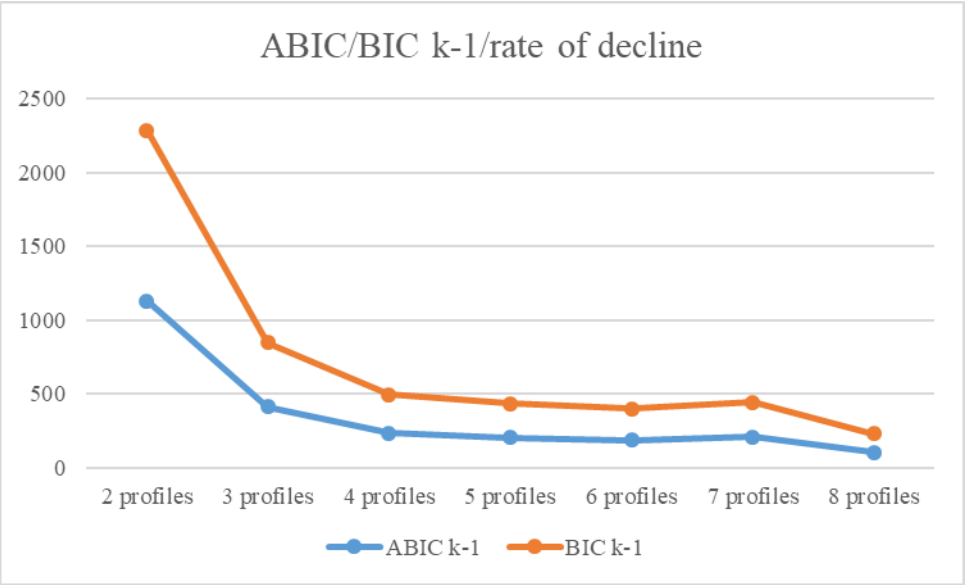



*Figure 6-D BIC k-1/rate of decline during class enumeration*

*Notes.* BIC = Bayesian Information Criteria; ABIC = Adjusted BIC;

Two elbow plots, representing BIC and ABIC (Figure 6-C), and drop off in marginal gain in BIC/ABIC as classes are added (See Figure 6-D), demonstrated a levelling off at 4-5 profiles with Figure 6-D suggesting the rate of decrease in BIC/ABIC lessens dramatically from 4 profiles onward. Average posterior probabilities exceeded the threshold of >.70 for the 3, 4 and 5 profile models (Nagin, 2005). Across those three models, classification probabilities for the most likely latent class membership in the dominant profile ranged from 0.861-0.956 with low cross-probabilities ranging from 0 to .101.

Table 6.4 Classification probabilities for latent 4 profile model

| | Amotivated | Balanced High | Balanced Low | Controlled Dominant |
|---|---|---|---|---|
| **Amotivated** | 0.93 | 0 | 0.04 | 0.04 |
| **Balanced Low** | 0.01 | 0.10 | 0.89 | 0.003 |
| **Controlled Dominant** | 0.07 | 0.05 | 0.02 | 0.86 |
| **Balanced High** | 0 | 0.94 | 0.05 | 0.006 |

The three best class models (3, 4, and 5 classes respectively) were compared using the Lo-Mendell-Rubin test. The likelihood ratio chi-square test is not appropriate "as 2 times the loglikelihood difference is not chi-square distributed in this situation" (Asparouhov & Muthén, 2012, p. 3). Instead to test 3 versus 4 classes, the TECH 11 LMR test is appropriate. It generates a p-value based on comparison of k class (in this case, 4 classes) versus k-1 class model (in this case, 3 classes). A low p-value rejects the k-1 class model in favour of the k class model. In the 4 class model in the present study, the LMR adjusted test (3 vs 4 classes) generated a significant

p-value of p >0.05 (0.045) suggesting that the 3 class model should be rejected in favour of the 4 class model. However, the p-value from the LMR adjusted test of 4 vs 5 classes was not significant at 0.085 therefore the 4 class model was not rejected. Thus, the LMR adjusted test indicates that the 4 class model is best. As a final check, the OPTSEED option can be used with the LMR adjusted. Once the best loglikelihood value has been replicated in the 5 class model, the OPTSEED value 49221 from that model is used in a 5 class model that uses START = 0: as we have the best loglikelihood there is no need to include random perturbation of the starting values. The TECH 11 output shows the $H_0$ loglikelihood value is the 4 class model: -6950.33. The p-value generated was still not significant 0.086 suggesting that the 4 class model should not be rejected (Asparouhov & Muthén, 2012).

The bootstrapped likelihood test uses both real and generated data to test the k-1 class model against the k model by calculating 2 times the loglikelihood difference for both models repeatedly resulting in the bootstrap distribution of two times the long likelihood difference which is then used to compare the models and generate a p-value (Asparouhov & Muthén, 2012). Again, rejection of the k-1 model is indicated by a low p-value. The p-values for BLRT were zero throughout, including with the OPTSEED TECH 14 output on the 5 class model, meaning that it is of limited use in determining the optimal number of classes in this study. This may be related to the high levels of entropy for the 4 and 5 class models (>0.800; Diallo, Morin, & Lu, 2017).

Thus, the 4 profile model was retained based on the significant LMR indicator, high entropy (0.857), a review of elbow charts, and the consideration that it was the simplest theoretically congruent model. (See Table 6.5 and Figure 6-E for class sizes and standardized means).

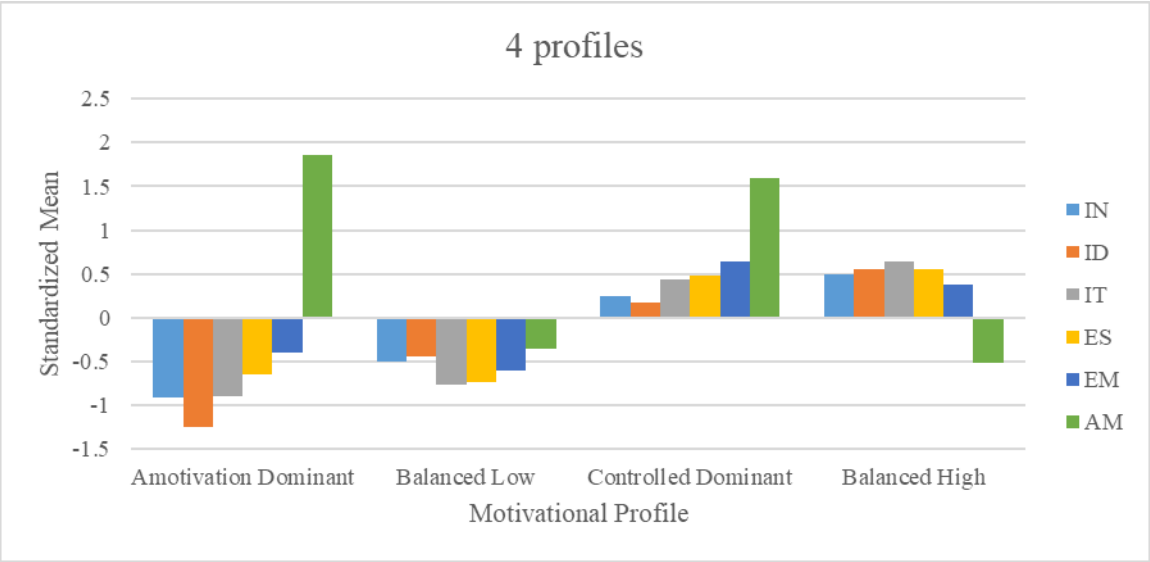



*Figure 6-E Standardized Means of Final Four Profile Model*

*Notes.* IN = intrinsic motivation; ID = identified regulation; IT = introjected regulation; ES = external regulation – social; EM = external regulation – material; AM = amotivation.

### 6.3.4. Outcomes: Latent profile analysis

The final 4 class model contained two motivation profiles (*Amotivation Dominant, Balanced High*) that were consistent with "core profiles" from a previous study of participants from mixed occupational backgrounds (e.g. *Amotivated, Highly Motivated* profiles in Howard et al. (2016). The *Balanced High* profile was the closest to an autonomously regulated profile. A review of standardized means in this profile suggested that the composite level of autonomous motivation (IN, ID; 0.53) was marginally higher than the composite of controlled motivation (IT, ES, EM; 0.52) (See Table 6.5). However, introjected motivation was higher than all forms of autonomous motivation, and external-social regulation exceeded intrinsic motivation. Thus it was concluded that this was a balanced profile and that an *Autonomous Dominant* profile did not emerge in this population.

The third profile had below average levels of all forms of motivation and amotivation (*Balanced Low*). Although not previously identified as a "core profile", as discussed in Chapter 2, this may reflect the limited need satisfaction related job characteristics of the sample in this study.

Table 6.5 Estimated class counts and standardized means for forms of motivation by job profile (4 profile model)

| | Final class counts | IN | ID | IT | ES | EM | Average Autonomous | Average Controlled | Average Overall Motivation | Amotivation |
|---|---|---|---|---|---|---|---|---|---|---|
| **Amotivation Dominant** | 119 | -0.91 | -1.25 | -0.9 | -0.65 | -0.39 | -1.08 | -0.65 | -0.82 | 1.85 |
| **Balanced Low** | 305 | -0.49 | -0.44 | -0.77 | -0.73 | -0.61 | -0.47 | -0.70 | -0.61 | -0.35 |
| **Controlled Dominant** | 82 | 0.25 | 0.17 | 0.44 | 0.48 | 0.64 | 0.21 | 0.52 | 0.40 | 1.60 |
| **Balanced High** | 486 | 0.5 | 0.56 | 0.64 | 0.55 | 0.37 | 0.53 | 0.52 | 0.52 | -0.52 |

*Notes.* Final class counts for classes are based on their most likely latent class membership. IN = intrinsic motivation; ID = identified regulation; IT = introjected regulation; ES = external regulation – social; EM = external regulation – material.

The final profile reflected average levels of autonomous regulation, with identified motivation scoring lowest of all motivation types, and higher levels of controlled regulation and amotivation. This reflects the SDT continuum of self-determination within forms of motivation within a profile: from lower levels of autonomous regulation to higher levels of controlled and external regulation. It also validates the idea that amotivation exists at the end of a continuum of behavioural regulation and can be experienced simultaneously with other forms of motivation (Howard, Gagné, Morin, & Forest, 2018).

It is noteworthy that 5 class model had included a small profile group (86) which appeared to split the *Balanced High* group into those reporting average levels of all external and autonomous forms of motivation with low amotivation to create a *Balanced Moderate* profile. Although not supported by class enumeration guidelines in the present study, this latter profile was similar to the *Balanced* profile reported in Howard, Gagné, Morin and Van den Broeck (2016).

All of the profiles in the final 4 class model were consistent with Self-Determination Theory (SDT) which posits that multiple types of motivation, including amotivation, can be experienced simultaneously. An examination of the standardized means (see Table 6.5) shows the profiles reflected patterns of experienced motivation, reflecting the SDT contention that motivation types exists on a continuum of increasing self-regulation (Ryan & Deci, 2017). Finally the SDT distinction between autonomous and controlled forms of motivation was reflected in the profiles. Autonomous forms of motivation like intrinsic and identified motivation often stood apart from the controlled forms of motivation. Trends of increasing or decreasing experiences of self-regulation were reflected in increasingly lower or higher levels of internal forms of motivation from introjected motivation to intrinsic motivation within profiles. Similarly, all motivation profiles displayed either increasingly higher or lower levels of controlled forms of regulation, trending up or down from introjected motivation to external regulation material.

### 6.3.5. Analysis: Multinomial logistic regression with demographic covariates

Applying the 3 step approach in *Mplus* (Asparouhov & Muthen, 2014), multinomial logistic regression was used to test if levels of demographic covariates differed significantly within each pair of motivation profiles (Field, 2009). The following covariates were added to the retained profile model using the *R3STEP* function in *Mplus*: age, length of time in role, gender and job type. To capture the 4 job types, three dummy variables were created with the supervisor job type as the comparison group, to represent membership in the manual, semi-skilled manual and clerical job types versus all other job types. The relationship between these covariates and motivation profile was then tested using multinomial logistic regression. A significant relationship, represented by a p value below 0.05, indicates that individuals with the relevant demographic characteristic are more likely to be in one group over another.

### 6.3.6. Results: Multinomial logistic regression with demographic covariates

The results from multinomial logistic regression analyses suggested demographics variables of gender, length of time in role and job type did not have a significant impact on profile membership with one exception. Age has a small but significant effect on motivation profile group such that older participants were more likely to be in the *Amotivation Dominant* profile than either the *Balanced Low* or *Controlled Dominant* profiles (See Table 6.6).

Table 6.6 Multinomial logistic regression for demographic covariates – significant differences in age related to group membership

| | Covariate | Estimate | SE | p value | OR lower CI | OR upper CI | Odds Ratio |
|---|---|---|---|---|---|---|---|
| **Amotivation Dominant vs Balanced Low** | Age | 0.027 | 0.012 | 0.025 | 1.003 | 1.051 | 1.027 |
| **Amotivation Dominant vs Controlled Dominant** | Age | 0.033 | 0.015 | 0.03 | 1.003 | 1.064 | 1.034 |

*Notes.* SE = standard error; OR = Odds ratio; CI = confidence interval.

## 6.4. Phase 3: Trajectories of Job Crafting

The univariate latent growth modelling process was completed in three stages: a) measurement invariance testing was completed for each of form of job crafting, b) second-order factor growth trajectories were modelled for each form of job crafting, and c) control variables were added to the final univariate LGM models.

### 6.4.1. Analysis: Measurement invariance

Measurement invariance testing followed the forward LR test model for longitudinal data (Kim & Willson, 2014; Lance et al., 2000). For the configural invariance model in *Mplus*, factor loadings, intercepts, residual variance and correlations are freed to vary across time. Model fit indices are reviewed to ensure acceptable fit is achieved. For metric invariance, factor and item loadings are fixed incrementally and the model is run again and tested to see if fit is impacted using a chi-squared difference test. If the model is not worse, this tells us that the factor loadings of the same items on the same factor are not different enough at each time for fixing them to have a negative impact on the model fit and therefore metric invariance is demonstrated. Scalar invariance is then tested by fixing the intercepts and running the model again to check it is not significantly worse than the metric model, again using chi-squared difference test. Scalar invariance is generally accepted as a sufficient level of measurement invariance for longitudinal analyses (Cheung & Lau, 2012). Item variances and intra-item correlations can also be fixed in turn to test for strict and full measurement invariance respectively. Measurement invariance testing was completed for each form of job crafting following the CFA completed for data collected at each time point as outlined earlier in this chapter.

### 6.4.2. Results: Measurement invariance

Full measurement invariance was confirmed for the increasing challenging job demands and increasing structural job resources scales. (See Tables 5.7 and 5.8).

Table 6.7 Measurement invariance for increasing challenging demands

| Step | Model | n | $\chi^2$ | df | $\chi^2$/df | $\Delta\chi^2$ | $\Delta$df | $\Delta$ p value | CFI | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Configural Invariance | 992 | 198.34 | 134 | 1.48 | n/a | n/a | n/a | 0.98 | 0.02 | 0.015 - 0.028 | 0.05 |
| **2** | Metric Invariance | 992 | 214.39 | 146 | 1.49 | 16.05 | 12 | 0.19 | 0.97 | 0.02 | 0.015 - 0.028 | 0.05 |
| **3** | Scalar Invariance | 992 | 230.15 | 158 | 1.46 | 15.76 | 12 | 0.20 | 0.97 | 0.02 | 0.015 - 0.027 | 0.05 |
| **4** | Strict Invariance | 992 | 246.46 | 173 | 1.42 | 16.31 | 15 | 0.36 | 0.97 | 0.02 | 0.014 - 0.026 | 0.06 |
| **5** | Full Invariance | 992 | 265.75 | 188 | 1.41 | 19.30 | 15 | 0.20 | 0.97 | 0.02 | 0.014 - 0.026 | 0.06 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

Table 6.8 Measurement invariance for increasing structural resources

| Step | Model | n | $\chi^2$ | df | $\chi^2$/df | $\Delta\chi^2$ | Δdf | Δ p value | CFI | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Configural Invariance | 992 | 139.90 | 74 | 1.89 | n/a | n/a | n/a | 0.98 | 0.3 | 0.022 - 0.038 | 0.04 |
| **2** | Metric Invariance | 992 | 154.93 | 83 | 1.87 | 15.03 | 9 | 0.09 | 0.98 | 0.03 | 0.022 - 0.037 | 0.06 |
| **3** | Scalar Invariance | 992 | 163.18 | 92 | 1.77 | 8.25 | 9 | 0.51 | 0.98 | 0.03 | 0.021 - 0.035 | 0.06 |
| **4** | Strict Invariance | 992 | 183.07 | 104 | 1.76 | 19.89 | 12 | 0.07 | 0.98 | 0.03 | 0.021 - 0.034 | 0.07 |
| **5** | Full Invariance | 992 | 201.43 | 116 | 1.74 | 18.35 | 12 | 0.11 | 0.97 | 0.03 | 0.021 - 0.033 | 0.07 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

For the increasing social job resources scale, the configural model was a good fit to the data. Measurement invariance testing showed small but significant differences in chi-squared difference tests comparing the metric, scalar and strict models. Further analysis revealed just four instances of differential item functioning during all modelling stages contributed to the model fit differences. The factor loadings of item 3 at T1 (metric model) showed a 0.19 difference which can be classified as small (Kim & Willson, 2014). The intercepts of item 4 at T1 and item 5 at T4 (scalar model) demonstrating a difference of 0.18 and 0.26 respectively, both of which can also be classified as small (Kim & Willson, 2014). The residual variance of item 3 at T1 (strict) demonstrated a difference of 0.33. To test for partial invariance these items were freed at the relevant step. There were no significant differences in model fit, therefore partial measurement invariance was confirmed (See Table 6.9). The adjusted full variance model was used at the basis for SOF LGM for SS which allowed these parameters to be controlled.

Table 6.9 Measurement Invariance for Increasing Social Resources

| Step | Model | n | $\chi^2$ | df | $\chi^2$/df | $\Delta\chi^2$ | Δdf | Δ p value | CFI | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Configural Invariance | 992 | 234.32 | 134 | 1.75 | n/a | n/a | n/a | 0.97 | 0.03 | 0.022 - 0.033 | 0.05 |
| **2** | Metric Invariance (Partial) | 992 | 247.64 | 145 | 1.71 | 13.37 | 11 | 0.27 | 0.97 | 0.03 | 0.021 - 0.032 | 0.05 |
| **3** | Scalar Invariance (Partial) | 992 | 256.72 | 155 | 1.66 | 9.08 | 10 | 0.52 | 0.97 | 0.03 | 0.020 - 0.031 | 0.05 |
| **4** | Strict Invariance (Partial) | 992 | 272.33 | 169 | 1.61 | 15.61 | 14 | 0.34 | 0.97 | 0.03 | 0.019 - 0.030 | 0.05 |
| **5** | Full Invariance | 992 | 294.63 | 184 | 1.60 | 22.30 | 15 | 0.10 | 0.97 | 0.03 | 0.019 - 0.030 | 0.05 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

For the decreasing hindering job demands model, the configural and metric models were a good fit to the data without significant differences between them. Measurement invariance testing showed small but significant differences in the scalar, strict and full invariance models. Further analysis revealed four parameters impacting the model fit: intercept of item 1 at T1 (scalar)

demonstrated a 0.334 difference, which can be classified as small (Kim & Willson, 2014); residual variance of item 1 at T3 and T4 (strict) showed a difference of 0.32 and 0.21 respectively and the correlation between item 1 at T1 and T2 (full) showed a difference of 0.26. To confirm partial invariance these items were freed at the relevant step. There were no significant differences in model fit, therefore partial measurement invariance was confirmed (See Table 6.10). The adjusted model was used at the basis for LGM for HD.

Table 6.10 Measurement Invariance for Decreasing Hindering Job Demands

| Step | Model | n | $\chi^2$ | df | $\chi^2$/df | $\Delta\chi^2$ | $\Delta$df | $\Delta$ p value | CFI | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Configural Invariance | 992 | 233.69 | 134 | 1.74 | n/a | n/a | n/a | 0.96 | 0.03 | 0.021 - 0.033 | 0.05 |
| **2** | Metric Invariance | 992 | 243.74 | 146 | 1.67 | 10.05 | 12 | 0.61 | 0.96 | 0.03 | 0.020 - 0.032 | 0.05 |
| **3** | Scalar Invariance (Partial) | 992 | 258.30 | 157 | 1.65 | 14.55 | 11 | 0.20 | 0.96 | 0.02 | 0.020 - 0.031 | 0.05 |
| **4** | Strict Invariance (Partial) | 992 | 276.58 | 171 | 1.62 | 18.28 | 14 | 0.19 | 0.96 | 0.03 | 0.019 - 0.030 | 0.05 |
| **5** | Full Invariance (Partial) | 992 | 293.75 | 186 | 1.58 | 17.17 | 15 | 0.31 | 0.96 | 0.02 | 0.019 - 0.029 | 0.05 |

*Notes.* n = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

### 6.4.3. Analysis: Univariate second-order factor latent growth modelling to examine trajectories of job crafting

Variance in starting points and levels of change in job crafting over the medium term (four waves within 9 months), along with trajectories, were tested using second-order factor latent growth modelling (SOF LGM). Second-order factor latent growth modelling of longitudinal change allows for full or partial invariance to be incorporated into the modelling of a variable trajectory so inequivalences can be controlled (Lance et al., 2000). Starting with the final measurement model, with the latent variable intercepts freed to vary, the process of modelling change takes account of various scenarios: firstly, whether the variance of observed variables is homoscedastic (HOM; i.e. that it is equal over time) or heteroscedastic (HET; i.e. that it varies over time) and secondly, the pattern of longitudinal change. With these options incorporated, trajectories can therefore be modelled as: a) no change over time (NHET/NHOM), b) an optimal change trajectory which allows the trajectory to be freely estimated by *Mplus* at the fourth time point (OHET/OHOM) c) a strictly linear change trajectory (LHET/LHOM), d) a strictly quadratic change trajectory (QHET/QHOM). Including a model constraint for homoscedasticity may seem redundant in a no-change model but it results in slight differences in outputs in *Mplus*. Modelling both homoscedastic and heteroscedastic no-change models allows the change models to be compared with their counterpart when it comes to homoscedasticity. Therefore, the researcher can be assured that significant p-values in chi-squared difference tests reflect the trajectories rather than small variations due to the addition of constraints of homoscedasticity. All scenarios (a-d) were modelled, running the homoscedastic and heteroscedastic model for each, resulting in up to 8 models per type of job crafting.

The best fitting model was then determined by comparing models via a chi-squared difference test in three stages as outlined in Lance et al., (2000). First the homoscedastic and heteroscedastic models for each change trajectory are compared. If there are no differences, the homoscedastic model is selected for the next stage as the most parsimonious model. Second, to test for change over time, the relevant no-change model is compared to the preferred model from each of the change trajectories. If the no-change model is not significantly worse then there is no change over time. Finally, if the no-change model is worse, the optimal, linear and quadratic trajectory models are compared. The best model reflects the best fitting trajectory. If there is no difference between two or more models, the strictest model with acceptable fit indices is selected as the most parsimonious (i.e. in order: quadratic, linear, optimal). The fit indices are review based on the following thresholds: $\chi 2/df < 5$; CFI: >0.90; RMSEA <0.06; SRMR <0.08. The pattern and significance of change can then be confirmed by examining the means plot and final model growth factors (e.g. intercept mean, slope means). As LGM allows for within-person analysis, the variance of growth factors can also be examined to determine if individuals vary significantly in both the starting point and trajectory of change. Residual variances/R-squared output can be examined to determine how much of the variance in the focal variable is accounted for by the model. In a final step, control variables were added to the final model. During the analysis, *Mplus* occasionally generated negative variance warnings where variance approached or dipped below zero. In these instances, the relevant variance parameter was fixed at zero (Muthén & Muthén, 1998-2017).

### 6.4.4. Hypotheses: Trajectories of job crafting

The following three hypotheses regarding trajectories in job crafting over time at the variable level, and variance in levels and trajectories among individuals, were tested using second-order factor latent growth models. These included models for each form of job crafting, specifically expansive forms: increasing challenging job demands (CD), increasing structural job resources (SR) and increasing social job resources (SS); and the restrictive form of decreasing hindering job demands (HD).

- H1: The trajectories of all forms of expansive job crafting a) reflect a continuous positive trend over time and b) are therefore aligned with each other.
- H2: The trajectory of the restrictive job crafting act of decreasing hindering job demands a) reflects a non-continuous trajectory over time and b) therefore, differs from trajectories of expansive job crafting.
- H3: a) Levels and b) trajectories of all forms of job crafting vary significantly among employees.

### 6.4.5.Results and Outcomes: Trajectories of job crafting

The preliminary means plot observations (See Figure 6-F) show that SR is the most frequently reported type of job crafting followed by CD, SS and HD. SS and HD show similar levels of job crafting. SR and CD appear to be relatively flat over course of 9 months suggesting their trajectories may be continuous and stable. However, SS shows an overall increase over the year. While levels differ, the trajectories of CD and SS can be observed to be relatively aligned. HD also shows an increase over the year with a peak at T2 and the trajectory does not appear to be aligned those with expansive forms of job crafting.

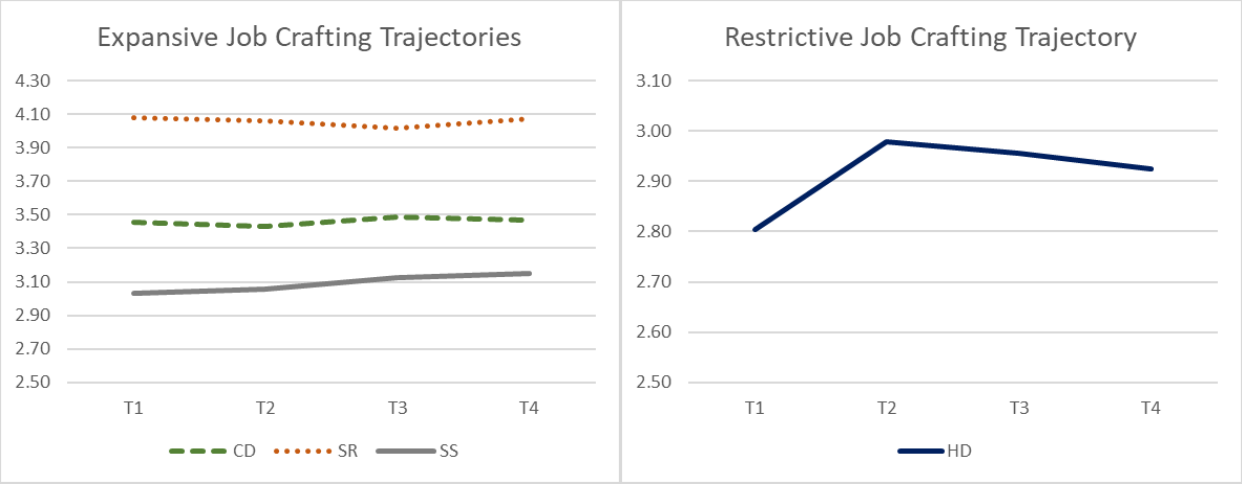



*Figure 6-F Mean Latent Growth Curves for Expansive and Restrictive Job Crafting*

*Notes*. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands

To test the hypotheses, latent growth models with second-order factors were modelled individually for each form of job crafting (CD, SR, SS and HD). Therefore the results and related outcomes of hypothesis testing are extensive. In the interests of clarity they are presented in five sub-sections:

*Results and Outcomes: Increasing challenging job demands*
*Results and Outcomes: Increasing structural job resources*
*Results and Outcomes: Increasing social job resources*
*Results and Outcomes: Decreasing hindering job demands*
*Outcomes: Alignment between trajectories of job crafting.*

There is one sub-section for each form of job crafting beginning with expansive job crafting (CD, SR, SS) and ending with restrictive job crafting (HD). In these four sections, results of model fit tests are presented along with outcomes for hypotheses regarding the patterns of change within each form of crafting (H1a for expansive job crafting and H2a for restrictive job crafting) and the variance in level and trajectory for each form of job crafting (H3a, H3b). The

fifth sub-section presents the outcomes for hypotheses testing based on the trajectories identified within each form of crafting to determine the extent to which the trajectories are aligned within expansive job crafting (H1b) and differ between expansive and restrictive job crafting (H2b). A summary of the hypotheses and related results is presented in Table 6.11.

Table 6.11 Summary of Results for Hypotheses 1-3

| | | **Hypotheses** | | | | |
|---|---|---|---|---|---|---|
| | | *H1a The trajectories of all forms of expansive job crafting reflect a continuous positive trend over time*<br><br>*H2a The trajectory of the restrictive job crafting act of decreasing hindering job demands reflects a non-continuous trajectory over time* | | *H1b The trajectories of expansive forms of job crafting are aligned with each other*<br><br>*H2b The trajectory of the restrictive job crafting act of decreasing hindering job demands differs from trajectories of expansive job crafting* | | *H3: a) Levels and b) trajectories of all forms of job crafting vary significantly among employees* |
| **Categories of job crafting** | **Forms of job crafting** | **Trajectory of change identified** | **Result** | **Alignment of trajectory across forms of job crafting** | **Results** | **Results** |
| Expansive | CD | Continuous trajectory, no change. | H1a partially supported | Aligned with SR and SS | H1b supported | H3a Supported<br><br>H3b Supported |
| | SR | Continuous trajectory, no change. | H1a partially supported | Aligned with CD and SS | H1b supported | H3a Supported<br><br>H3b supported |
| | SS | Continuous trajectory, no change. | H1a partially supported | Aligned with CD and SR | H1b supported | H3a Supported<br><br>H3b Supported |
| Restrictive | HD | Non-continuous change (positive linear, negative quadratic) | H2a Non-continuous change supported | Not Aligned to expansive job crafting | H2b supported | H3a Supported<br><br>H3b Supported |

#### 6.4.5.1. Increasing challenging job demands

For increasing challenging demands over time (CD), there were no significant differences between the heteroscedastic and homoscedastic models for the optimal and linear trajectories so the homoscedastic models were preferred for these two trajectories (Models 4 & 6). The homoscedastic quadratic model was significantly better than the heteroscedastic model so this was preferred (Model 8). However, chi squared tests revealed that the change models were not significantly better than the relevant no-change models (see Table 6.12) so the final preferred model was the no-change homoscedastic model (NHOM; Model 1). The fit indices for this model were acceptable: CFI = 0.969, RMSEA = 0.021, SRMR = 0.063. The final model

accounted for 73.7% of the variance in CD. The fact that that NHOM model was the best fitting suggests that there is no change in CD over time. However, the optimal change homoscedastic model (OHOM; Model 4) which did not significantly differ from the NHOM model, was reviewed to explicitly test change related hypotheses by an examination of growth parameters. This model demonstrated acceptable fit indices (CFI = 0.969; RMSEA = 0.021; SRMR = 0.061). Intercept variance was significant ($\sigma^2$ = 0.427, p<0.01). This suggests that intercept levels vary across employees: H3a is supported for CD. Slope mean was positive and not significant ($\mu$ = 0.02; p < 0.31) therefore the trajectory is continuous but flat. H1a is partially supported. Slope variance was significant ($\sigma^2$ = 0.036, p<0.05). Therefore there is variation among employees in trajectories of increasing challenging demands and H3b is supported. Thus, individuals within the sample vary in their starting level and slope of change in CD. These results provided a good basis to investigate how these variances are related to motivation profile group. Intercept slope covariance was not significant (*cov* = -0.036, *p* =0.102) suggesting that there is no relationship between starting levels of CD and its rate of change over time and therefore no ceiling or floor effects in the data.

Table 6.12 Increasing challenging demands SOF LGM including comparison with relevant no change model

| Model | N | χ2 | df | χ2/df | Δ χ2 | Δ DF | Δ p value | CFI | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. No Change, Heteroscedastic Model** | 992 | 278.53 | 196 | 1.42 | | | | 0.97 | 0.02 | 0.015 - 0.026 | 0.06 |
| **2. No Change, Homoscedastic Model (FINAL)** | 992 | 284.36 | 199 | 1.43 | Change vs No-Change | | | 0.97 | 0.02 | 0.015 - 0.026 | 0.06 |
| **3. Optimal Change Heteroscedastic Model** | 992 | 269.25 | 192 | 1.40 | 9.27 | 4 | 0.06 | 0.97 | 0.02 | 0.014 - 0.026 | 0.06 |
| **4. Optimal Change Homoscedastic Model** | 992 | 276.81 | 195 | 1.42 | 7.55 | 4 | 0.11 | 0.97 | 0.02 | 0.015 - 0.026 | 0.06 |
| **5. Linear Change Heteroscedastic Model** | 992 | 273.17 | 193 | 1.42 | 5.35 | 3 | 0.15 | 0.97 | 0.02 | 0.015 - 0.026 | 0.06 |
| **6. Linear Change Homoscedastic Model** | 992 | 280.36 | 196 | 1.43 | 4.00 | 3 | 0.26 | 0.97 | 0.02 | 0.015 - 0.026 | 0.06 |
| **7. Quadratic Change Heteroscedastic Model** | 992 | 286.23 | 190 | 1.51 | 7.70 | 6 | 0.26 | 0.97 | 0.02 | 0.014 - 0.026 | 0.06 |
| **8. Quadratic Change Homoscedastic Model** | 992 | 273.74 | 192 | 1.43 | 10.61 | 7 | 0.16 | 0.97 | 0.02 | 0.015 - 0.026 | 0.06 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

#### 6.4.5.2. Increasing structural job resources

Model fit results from latent growth modelling of second order factors for increasing structural job resources (SR) are presented in Table 6.13. SR demonstrated full measurement invariance and these constraints were included in all models.

Table 6.13 Increasing structural job resources SOF LGM including comparison with relevant no change model

| Model | N | χ2 | df | χ2/ df | Δ χ2 | Δ DF | Δ p value | CFI | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. No Change, Heteroscedastic Model** | 992 | 215.80 | 124 | 1.74 | | | | 0.97 | 0.03 | 0.021 - 0.033 | 0.08 |
| **2. No Change, Homoscedastic Model** | 992 | 219.00 | 127 | 1.72 | Change vs No-Change | | | 0.97 | 0.03 | 0.021 - 0.033 | 0.09 |
| **3. Optimal Change Heteroscedastic Model** | 992 | 203.78 | 120 | 1.70 | 12.02 | 4 | 0.02 | 0.97 | 0.03 | 0.020 - 0.033 | 0.07 |
| **4. Optimal Change Homoscedastic Model FINAL** | 992 | 207.76 | 123 | 1.69 | 11.24 | 4 | 0.02 | 0.97 | 0.03 | 0.020 - 0.032 | 0.08 |
| **5. Linear Change Heteroscedastic Model** | 992 | 206.59 | 121 | 1.71 | 9.20 | 3 | 0.03 | 0.97 | 0.03 | 0.020 - 0.033 | 0.07 |
| **6. Linear Change Homoscedastic Model** | 992 | 216.78 | 124 | 1.75 | 2.22 | 3 | 0.53 | 0.97 | 0.03 | 0.021 - 0.033 | 0.09 |
| **7. Quadratic Change Heteroscedastic Model** | 992 | 202.93 | 118 | 1.72 | 12.87 | 6 | 0.045 | 0.97 | 0.03 | 0.021 - 0.033 | 0.07 |
| **8. Quadratic Change Homoscedastic Model** | 992 | 215.76 | 123 | 1.75 | 3.24 | 4 | 0.52 | 0.97 | 0.03 | 0.021 - 0.034 | 0.09 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

The optimal change models (Models 3 & 4) along with the heteroscedastic linear and quadratic models (Models 5 & 7) were significantly better fit that the change model. Comparison of these four models revealed no significant differences so the optimal homoscedastic model was selected as the most parsimonious model (OHOM; See Table 6.13). The fit indices for this model were acceptable: CFI = 0.97, RMSEA = 0.03, SRMR = 0.08. The final model accounted for 73.3% - 76.9% of the variance in SR. The intercept variance in this model was significant ($\sigma^2 = 0.41$, $p < 0.01$) suggesting that the levels of SR vary significantly among respondents. H3a is supported for SR. Unsurprisingly, based on the means plot observation, the slope, was negative and not significant ($\mu = -0.02$, p = 0.29), confirming no change was detected. The trajectory of SR is continuous and flat. H1a is partially supported for SR. However, slope varies significantly across individuals ($\sigma^2 = 0.05$, p <0.01), thus H3b is supported for SR. As with other forms of job crafting, some of this variance may be explained by examining motivation profile groups. Intercept slope covariance was analysed but no evidence of ceiling effects was detected (-0.03, p=0.23).

Table 6.14 Comparison of change models for increasing structural job resources SOF LGM

| Comparison of Change Models | Δ $\chi^2$ | Δ DF | Δ p value | Comparison of Change Models | Δ $\chi^2$ | Δ DF | Δ p value |
|---|---|---|---|---|---|---|---|
| **3 vs 4** | 3.99 | 3 | 0.26 | 4 vs 5 | 1.17 | 2 | 0.56 |
| **3 vs 5** | 2.82 | 1 | 0.09 | 4 vs 7 | 4.83 | 5 | 0.44 |
| **3 vs 7** | 0.85 | 2 | 0.65 | 5 vs 7 | 3.66 | 3 | 0.30 |

*Notes.* $\chi^2$ = chi-squared statistic; df = degrees of freedom.

#### 6.4.5.3. Increasing social job resources

Model fit results from latent growth curve modelling of second order factors for increasing social job resources (SS) are presented in Table 6.15. SS demonstrated partial measurement invariance and four parameters which demonstrated differential item functioning were freed while all remaining invariance parameters were constrained (i.e. factor loadings, intercepts, residual variances and correlations) and included in all models.

Table 6.15 Increasing social job resources SOF LGM including comparison with relevant no change model

| Model | N | χ2 | df | χ2/ df | Δ χ2 | Δ DF | Δ p value | CFI | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. No Change, Heteroscedastic Model** | 992 | 322.86 | 192 | 1.68 | Change vs No-Change | | | 0.96 | 0.03 | 0.021 -0.031 | 0.06 |
| **2. No Change, Homoscedastic Model** | 992 | 324.64 | 195 | 1.66 | | | | 0.96 | 0.03 | 0.021 -0.031 | 0.06 |
| **3. Optimal Change Heteroscedastic Model** | 992 | 302.44 | 188 | 1.61 | 20.42 | 4 | 0.00 | 0.97 | 0.03 | 0.019 - 0.030 | 0.06 |
| **4. Optimal Change Homoscedastic Model** | 992 | 304.36 | 191 | 1.59 | 20.28 | 4 | 0.00 | 0.97 | 0.02 | 0.019 - 0.030 | 0.06 |
| **5. Linear Change Heteroscedastic Model** | 992 | 305.74 | 189 | 1.62 | 17.12 | 3 | 0.00 | 0.97 | 0.03 | 0.020 - 0.030 | 0.06 |
| **6. Linear Change Homoscedastic Model** | 992 | 306.75 | 192 | 1.60 | 17.89 | 3 | 0.00 | 0.97 | 0.03 | 0.019 - 0.030 | 0.06 |
| **7. Quadratic Change Heteroscedastic Model** | 992 | 294.99 | 186 | 1.59 | 27.87 | 6 | 0.00 | 0.97 | 0.02 | 0.019 - 0.029 | 0.05 |
| **8. Quadratic Change Homoscedastic Model (FINAL)** | 992 | 296.95 | 188 | 1.58 | 27.68 | 7 | 0.00 | 0.97 | 0.02 | 0.019 - 0.029 | 0.05 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

Change models (Models 3-8) were significantly better than no change models suggesting change may occur in SS over time. Both quadratic models optimal were significantly better than the optimal or linear heteroscedastic models and the quadratic homoscedastic model was significantly better than the linear homoscedastic model. There were no other significant differences between the models (See Table 6.16). Therefore in the interests of parsimony, the homoscedastic quadratic trajectory model (QHOM; Model 8) was selected as the final model. It demonstrated a good fit to the data (CFI = 0.97; RMSEA = 0.02; SRMR = 0.05). The final model explained 79.7% - 81.4% of the variance in SS across the four time points. The intercept variance was significant ($\sigma^2$ = 0.73, p<0.01) suggesting that the levels of SS vary significantly among respondents. Thus H3a is supported for SS. The linear slope mean was positive but not significant at p < 0.05 but significant at a threshold of p <0.1 ($\mu$ = 0.10, p = 0.095); linear slope variance was significant ($\sigma^2$ = 0.37, p <0.05). The quadratic slope means was negative and not significant ($\mu$ = -0.01, p = 0.53) but again variance was significant ($\sigma^2$= 0.03, p < 0.05). As the slopes were not significant at p < 0.05, H1a is rejected for SS as no change was detected. However, as both linear and quadratic slopes vary among individuals H3b is supported for SS and this provides a good basis for investigating the impact of motivation profile group on this variance. Intercept slope covariance was analysed but no evidence of ceiling effects was detected (cov = -0.10, p=0.21).

Table 6.16 Comparison of change models in increasing social job resources SOF LGM

| Comparison of Change Models | Δ $\chi^2$ | Δ DF | Δ p value | Comparison of Change Models | Δ $\chi^2$ | Δ DF | Δ p value |
|---|---|---|---|---|---|---|---|
| **3 vs 4** | 1.91 | 3 | 0.59 | 4 vs 8 | 7.40 | 3 | 0.06 |
| **3 vs 5** | 3.30 | 1 | 0.07 | 5 vs 6 | 1.01 | 3 | 0.80 |
| **3 vs 6** | 4.31 | 4 | 0.37 | 5 vs 7 | 10.75 | 3 | 0.01 |
| **3 vs 7** | 7.45 | 2 | 0.02 | 5 vs 8 | 8.79 | 1 | 0.00 |
| **3 vs 8** | 5.49 | 1 | 0.02 | 6 vs 7 | 11.76 | 6 | 0.07 |
| **4 vs 5** | 1.39 | 2 | 0.50 | 6 vs 8 | 9.80 | 4 | 0.04 |
| **4 vs 6** | 2.40 | 1 | 0.12 | 7 vs 8 | 1.96 | 2 | 0.38 |
| **4 vs 7** | 9.36 | 5 | 0.10 | | | | |

*Notes.* $\chi^2$ = chi-squared statistic; df = degrees of freedom.

#### 6.4.5.4. Decreasing hindering job demands

Model fit results from latent growth modelling of second-order factors for decreasing hindering job demands (HD) are presented in Table 6.17. HD demonstrated partial measurement invariance and four parameters which showed differential item functioning were freed while all remaining invariance parameters were constrained and included in all models.

Table 6.17 Decreasing hindering job demands SOF LGM including comparison with relevant no change model

| Model | N | χ2 | df | χ2/df | Δ χ2 | Δ DF | Δ p value | CFI | RMSEA | CI | SRMR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. No Change, Heteroscedastic Model** | 992 | 327.83 | 194 | 1.69 | Change vs No-Change | | | 0.95 | 0.03 | 0.021 - 0.031 | 0.07 |
| **2. No Change, Homoscedastic Model** | 992 | 330.39 | 197 | 1.68 | | | | 0.95 | 0.03 | 0.021 - 0.031 | 0.07 |
| **3. Optimal Change Heteroscedastic Model** | 992 | 303.11 | 191 | 1.59 | 24.72 | 3 | 0.00 | 0.96 | 0.02 | 0.019 - 0.029 | 0.06 |
| **4. Optimal Change Homoscedastic Model** | 992 | 323.86 | 195 | 1.66 | 6.53 | 2 | 0.04 | 0.95 | 0.03 | 0.021 - 0.031 | 0.07 |
| **5. Linear Change Heteroscedastic Model** | 992 | 323.84 | 191 | 1.70 | 3.98 | 3 | 0.26 | 0.95 | 0.03 | 0.021 - 0.031 | 0.07 |
| **6. Linear Change Homoscedastic Model** | 992 | 324.63 | 194 | 1.67 | 5.76 | 3 | 0.12 | 0.95 | 0.03 | 0.021 - 0.031 | 0.07 |
| **7. Quadratic Change Heteroscedastic Model** | 992 | 296.04 | 187 | 1.58 | 31.79 | 7 | 0.00 | 0.96 | 0.02 | 0.021 - 0.029 | 0.06 |
| **8. Quadratic Change Homoscedastic Model (FINAL)** | 992 | 297.29 | 190 | 1.57 | 33.10 | 7 | 0.00 | 0.96 | 0.02 | 0.018 - 0.029 | 0.06 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual.

The optimal change models (Models 3 & 4) and quadratic models (Models 7 & 8) were significantly better fit that the change model. Comparison of these four models revealed that Model 4 was significantly worse than Models 3, 7 and Model 8 and Model 3 was significantly worse than Model 8 (Table 6.18).

Table 6.18 Comparison of change models in decreasing hindering job demands SOF LGM

| Comparison of Change Models | Δ $\chi^2$ | Δ DF | Δ p value | Comparison of Change Models | Δ $\chi^2$ | Δ DF | Δ p value |
|---|---|---|---|---|---|---|---|
| **3 vs 4** | 20.75 | 4 | 0.00 | 4 vs 7 | 27.82 | 8 | 0.00 |
| **3 vs 7** | 7.07 | 4 | 0.13 | 4 vs 8 | 26.57 | 5 | 0.00 |
| **3 vs 8** | 5.82 | 1 | 0.02 | 7 vs 8 | 1.25 | 3 | 0.74 |

*Notes.* $\chi^2$ = chi-squared statistic; df = degrees of freedom.

As there were no significant differences between Models 3 and 7, or Models 7 and 8, the latter quadratic homoscedastic model was selected as the most parsimonious model (QHOM). The fit indices for this model were acceptable: CFI = 0.959, RMSEA = 0.024, SRMR = 0.061. The final model accounted for 82.2% - 86.9% of the variance in HD. The intercept variance in this model was significant ($\sigma^2$ = 0.330, p<0.01): levels of HD vary significantly among respondents. H3a is supported for HD. The linear slope mean was positive and significant ($\mu$ = 0.142, p<0.01). The quadratic slope was negative and significant reflecting the inverse curve visible on the means plot ($\mu$ = -0.042, p < 0.01). HD demonstrates non-continuous change over time therefore H2a is supported. Linear and quadratic slopes vary significantly across individuals ($\sigma^2$ = 0.266, p < 0.01; $\sigma^2$ = 0.027, p < 0.01) thus H3b is also supported for HD.

#### 6.4.5.5. Alignment between trajectories of job crafting

HD demonstrated non-continuous change over time; no significant variable level change was found among any forms expansive job crafting. Thus trajectories are aligned within expansive job crafting and are distinct from trajectories within restrictive job crafting. H1b and H2b are supported.

#### 6.4.5.6. Demographic control variables

Controls included demographic variables of age, gender, time in role and type. Demographic covariates were added to the final best fitting models for each form of job crafting with the exception of CD where the OHOM model was used to allow slopes to be estimated and tested (See Table 6.19). Years in job and membership of the manual job category predicted lower levels of CD, explaining 5.6% of the variance in levels. Age and membership of semi-skilled job category explained 3.6% of variance in trajectories of CD with both predicting decline over time. For SR, years in job predicted lower levels and 8.8% of variance in levels (p < 0.01). For SS, age predicted decline in SS and non-continuous change over time. Years in job predict lower levels of SS. Clerical job types have higher levels of SS, greater decline and more non-continuous change over time than others. However, the control variables did not predict significant amounts of variance in either levels, linear change or quadratic change in SS. Finally for HD, while age predicted lower levels of HD, none of the control variables explained significant levels of variance.

Table 6.19 Standardized regression coefficient for growth factors of job crafting forms on control variables

| | | Age | Gender | Years in Job | Manual Jobs | Semi-skilled Jobs | Clerical Jobs |
|---|---|---|---|---|---|---|---|
| **CD** | Intercept | - 0.04 | 0.003 | ***-0.15**** | ***-0.29**** | -0.21 | -0.07 |
| | Linear Slope | ***-0.65**** | 0.12 | 0.61 | -0.32 | ***-1.03**** | -0.68 |
| **SR** | Intercept | -0.08 | 0.04 | ***-0.21**** | -0.22 | -0.17 | -0.008 |
| | Linear Slope | -0.002 | 0.03 | 0.07 | -0.08 | -0.18 | -0.20 |
| **SS** | Intercept | 0.06 | 0.03 | **-0.17*** | -0.04 | -0.03 | 0.15 |
| | Linear Slope | **-0.25*** | -0.04 | 0.10 | -0.31 | -0.32 | **-0.52*** |
| | Quadratic Slope | **0.27*** | - 0.03 | -0.14 | 0.40 | 0.43 | **0.56*** |
| **HD** | Intercept | **-0.15*** | 0.12 | 0.08 | 0.18 | 0.24 | 0.11 |
| | Linear Slope | 0.05 | -0.11 | -0.16 | 0.05 | 0.16 | -0.11 |
| | Quadratic Slope | -0.07 | 0.05 | 0.09 | -0.03 | -0.14 | 0.11 |

*Notes.* Reported regression coefficients in bold indicates significant path, italics indicate where significant paths also predict significant levels of variance * p <0.05; ** p <0.01; SR = increasing structural job resources; SS = increasing social job resources; CD = increasing challenging job demands; HD = decreasing hindering job demands.

## 6.5. Phase 4: Variance in Levels and Trajectories of Job Crafting as a function of Motivation Profile

This section outlines the process of multi-group first-order factor latent growth modelling. It presents the hypotheses around whether levels and trajectories of job crafting vary as a function of motivation profile. Results and outcomes are presented within sub-sections in the following order: expansive forms of job crafting first (CD, SS, SR) followed by restrictive job crafting (HD). The sections that follow (Sections 6.6 & 6.7) test hypotheses which predict the way in which these level and trajectories might vary by motivation profile. A summary of hypotheses and outcomes covered in Sections 6.5-6.7 is presented in Table 6.20 for expansive job crafting, and Table 6.21 for restrictive job crafting.

Table 6.20 Hypotheses and outcomes for expansive job crafting (H4, H5, H6, H7)

| **Hypotheses** | | | | |
|---|---|---|---|---|
| H4a Levels of expansive job crafting vary based on motivation profile<br><br>H4b Trajectories of expansive job crafting vary based on motivation profile | | | Starting levels of expansive job crafting differ such that:<br><br>H5a Amotivation Dominant/Balanced Low are lowest,<br><br>H6a followed by Controlled Dominant groups,<br><br>H7a followed by Balanced Moderate/High groups. | Trajectories of expansive job crafting differ such that:<br><br>H5b Amotivation Dominant/Balanced Low will demonstrate a negative continuous trajectory,<br><br>H6b Controlled Dominant groups will demonstrate a non-continuous trajectory,<br><br>H7b Balanced Moderate/High groups will demonstrate a flat/positive continuous trajectory. |
| **Forms of job crafting** | **Results** | **Motivation Profiles** | **Results** | |
| **CD** | H4a Supported<br><br>H4b Supported | **Amotivation Dominant/Balanced Low** | H5a supported for all types of job crafting | H5b Unsupported for Amotivation Dominant as non-continuous trajectory.* Partially supported for Balanced Low with regard to pattern but not direction of change where positive continuous trajectory found. |
| **SR** | H4a Supported<br><br>H4b supported | **Controlled Dominant** | H6a partially supported. No significant difference in SS and CD between Controlled Dominant and Balanced High profiles, although latter profile higher in both forms. | H6b Partially supported. Non-continuous trajectory in CD and SS. No change in SR* |
| **SS** | H4a Supported<br><br>H4b supported | **Balanced High** | H7a partially supported. No significant difference in SS and CD between Controlled Dominant and Balanced High profiles, although latter profile higher in both forms. | H7b Partially supported. Negative Continuous trajectory in CD, SR. No change in SS. |

Notes: **Based on observation of means plot*

Table 6.21 Hypotheses for restrictive job crafting (H9, H10, H11, H12)

| **Hypotheses** | | | | |
|---|---|---|---|---|
| H9a Levels of restrictive job crafting vary based on motivation profile<br>H9b Trajectories of restrictive job crafting vary based on motivation profile | | | Starting levels of restrictive job crafting differ such that:<br>H10a Amotivation Dominant/Balanced Low are highest,<br>H11a followed by Controlled dominant groups,<br>H12a followed by Balanced Moderate/High groups. | Trajectories of restrictive job crafting differ such that:<br>H10b Amotivation Dominant/Balanced Low groups demonstrate a non-continuous trajectory over time,<br>H11b Controlled dominant motivation groups demonstrate a non-continuous trajectory over time,<br>H12b Balanced Moderate/High groups demonstrate a non-continuous trajectory over time. |
| **Form of job crafting** | **Results** | **Motivation Profiles** | **Results** | **Results** |
| HD | H9a Supported<br>H9b Supported | **Amotivation Dominant/Balanced Low** | H10a Unsupported. Balanced Low demonstrated significantly lower levels than all other forms. No significant differences between Amotivation Dominant, Controlled Dominant and Balanced High. | H10b Supported. Non-continuous trajectory demonstrated for Amotivation Dominant* and Balanced Low |
| | | **Controlled Dominant** | H11a Unsupported. See results for H10a see above. | H11b Supported. Non-continuous trajectory demonstrated* |
| | | **Balanced High** | H12a Unsupported. See results for H10a see above. | H11c Supported. Non-continuous trajectory demonstrated |

Notes: **Based on observation of means plot*

### 6.5.1. Analysis: Multi-group first-order factor latent growth modelling of change in job crafting as a function of motivation profile

To test for variation in starting point and trajectory of change across each of the four motivation profile groups, multi-group first-order factor latent growth models were run for each type of job crafting using the VARIABLE: GROUPING command in *Mplus* (Muthén & Muthén, 2017). The grouping variable was *Motivation Profile*, which incorporated 4 profile groups (*Amotivation Dominant, Balanced High, Balanced Low, Controlled Dominant*). Individuals were allocated to groups based on the output from the LPA on motivation at work in Section 6.3. Although error terms relating to potentially inaccurate group classification could not be included in this analysis, LPA results for the 4 profile groups showed the entropy was high (0.86) and classification probabilities for the most likely latent class membership ranged from (86.1% to 94.1%). This analysis applies model fit indices (CFI, RMSEA) criteria to test hypotheses regarding whether levels and trajectories of expansive job crafting vary as a function of motivation profile (H4a, H4b). Here, SRMR was not relied upon due to its sensitivity to residual variances discrepancies related to the constraint of identifying differing growth trajectories using just one best available trajectory model in multi-group analyses (West et al., 2012) . Furthermore, even where a model explains a significant amount of variance in outcome

variables, higher residual variances can arise due to the relatively simple model designed in the present study. The decision to apply a relatively simple model was based on a requirement to minimize covariates to ensure sufficient statistical power to test the focal relationship between motivation profile and both intercept and growth parameters of job crafting (Meade et al., 2009); this is particularly relevant in multi-group analyses where the sample size is reduced by being split into groups and where the number of waves is limited from an LGM perspective (Kim, Mun, & Smith, 2014; Marsh et al., 2004).

As with the SOF LGM in Section 6.4, optimal, linear and quadratic trajectory models were run for each type job crafting including testing for homoscedasticity. This time the models included only the consolidated variable factor rather than individual item scores, and measurement invariance constraints were excluded to maximise statistical power. Initial attempts at SOF models led to convergence and model identification issues. The best fit model was selected by reviewing CFI and RMSEA and the final model was then tested for significant differences in intercept and slope across motivational groups (H4a, H4b, H9a, H9b).

Testing was done incrementally as follows. An initial model is run in which growth factors (intercept/slopes) were fixed across groups. A second model allows the intercept to vary across groups and was compared with the first model using a chi-squared difference test. If the model significantly improves, this demonstrates that the starting level of the variable varies as a function of motivation profile. A third model is then run in which the linear slope is freed, which is compared to the second model. If the model significantly improves, this demonstrates that linear slope varies across motivation profile groups. Finally, if applicable, a fourth model is run to free quadratic slopes to vary across groups and again compared to the third model to test if it significantly improves, demonstrating that groups vary in quadratic slope.

### 6.5.2. Hypotheses: Job crafting over time as a function of motivation profile

The following hypotheses were tested using this approach:

- H4: Levels (a) and trajectories (b) of expansive forms of job crafting (CD, SR and SS) vary by motivation profile.
- H9: Levels (a) and trajectories (b) of a restrictive form of job crafting (HD) vary by motivation profile.

### 6.5.3. Results: Increasing challenging job demands by motivation profile

For increasing challenging job demands (CD), the optimal heteroscedastic model was significantly better than the optimal homoscedastic model (See Table 6.22). There was no significant chi-squared difference between the optimal and either the linear or quadratic heteroscedastic models but both CFI and RMSEA were better in the optimal model. The fit

indices for this model (OHET) were acceptable: $\chi^2/df$ was less than 5 (2.095); CFI was greater than 0.9 (0.928); and RMSEA was close to 0.06 (0.066). Across all motivation profile groups, $r^2$ parameters indicated that the model explained between 41.4% and 72% of variance in time points of job crafting all of which were significant at $p < 0.01$ or $p < 0.001$. Chi squared difference tests were used to identify significant differences in CD starting points and change factors across the four motivation profile groups, by comparing three OHET models: the first fixed the initial status and linear slopes as equal across profile groups; the second freed the initial status to vary across groups; and the final model freed both growth factors to vary across groups. The model fit indices for each model are in the Table 6.23 below.

Table 6.22 Model fit statistics for multi-group LGM for increasing challenging job demands

| Model | N | $\chi^2$ | df | $\chi^2$/df | Δ $\chi^2$ | Δ DF | Δ p value | CFI | RMSEA | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Optimal Change Homoscedastic Model** | 992 | 71.00 | 34 | 2.09 | n/a | n/a | n/a | 0.90 | 0.07 | 0.04 - 0.09 |
| **2. Optimal Change Heteroscedastic Model (Final)** | 992 | 50.28 | 24 | 2.10 | 20.71 | 10 | 0.02 | 0.93 | 0.07 | 0.04 - 0.09 |
| **3. Linear Change Homoscedastic Model** | 992 | 72.23 | 35 | 2.06 | n/a | n/a | n/a | 0.90 | 0.07 | 0.04 - 0.09 |
| **4. Linear Change Heteroscedastic Model** | 992 | 49.80 | 20 | 2.49 | 22.44 | 15 | 0.10 | 0.92 | 0.08 | 0.05 - 0.11 |
| **5. Quadratic Change Homoscedastic Model** | 992 | 63.21 | 28 | 2.26 | n/a | n/a | n/a | 0.90 | 0.07 | 0.05 - 0.10 |
| **6. Quadratic Change Heteroscedastic Model** | 992 | 49.13 | 38 | 1.29 | 14.08 | 10 | 0.17 | 0.92 | 0.08 | 0.06 - 0.11 |
| **Comparison of Model 2 & 4** | | | | | 0.49 | 4 | 0.97 | | | |
| **Comparison of Model 2 & 6** | | | | | 1.16 | 14 | 1.00 | | | |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval

### 6.5.4. Outcomes: Increasing challenging job demands by motivation profile

Using chi-squared difference tests, the model significantly improved when intercepts were allowed to vary across motivation profiles (Model 2) providing support for H4a for CD, and again when linear slopes were allowed to vary across motivation profiles thus the trajectory of CD varies based on motivation profile, providing support for H4b for CD.

Table 6.23 Model comparisons for multi-group LGM for increasing challenging job demands

| Model | N | $\chi^2$ | df | $\chi^2$/df | Δ $\chi^2$ | Δ DF | Δ p value | CFI | RMSEA | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Fixed growth factors equal across groups** | 992 | 308.71 | 30 | 10.29 | n/a | n/a | n/a | 0.24 | 0.19 | 0.17 - 0.21 |
| **2. Free intercept across groups** | 992 | 57.24 | 25 | 2.29 | 251.47 | 5 | 0.00 | 0.91 | 0.07 | 0.05 - 0.10 |
| **3. Free All Growth Factors (Intercept, Linear Slopes) across groups** | 992 | 50.28 | 24 | 2.10 | 6.96 | 1 | 0.01 | 0.93 | 0.07 | 0.04 - 0.09 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval.

### 6.5.5. Results: Increasing structural job resources by motivation profile

When the multi-group latent growth models were run for increasing structural job resources (SR), the quadratic homoscedastic model did not converge and therefore it was excluded from the model comparisons. Heteroscedastic models were consistently better than homoscedastic models (See Table 6.24). Of the remaining models, the quadratic heteroscedastic model (QHET)

was significantly better than the optimal or linear models. The fit indices for this model were acceptable: $\chi^2/df$ was less than 5 (1.429); CFI was 0.967 and RMSEA was 0.042. Across all motivation profile groups, the $r^2$ parameters indicated that the model explained between 31.8% and 77.1% of variance in time points of job crafting, all but one of which (SR at T2 in Controlled Motivation Group) were significant at $p < 0.05$ or below. As with CD, to test for significant differences in starting points and change factors across groups, four QHET models were run: fixed intercept and slope, random intercept, random linear slope, random quadratic slope. The model fit indices for each model are in the Table 6.25 below. Again, chi squared difference tests were used to compare the differences between the models as each growth parameter was freed.

Table 6.24 Model fit statistics for multi-group LGM for increasing structural job demands (SR)

| Model | N | $\chi^2$ | df | $\chi^2$/df | Δ $\chi^2$ | Δ DF | Δ p value | CFI | RMSEA | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Optimal Change Homoscedastic Model** | 992 | 88.25 | 36 | 2.45 | | | | 0.77 | 0.08 | 0.06 - 0.10 |
| **2. Optimal Change Heteroscedastic Model** | 992 | 43.81 | 23 | 1.91 | 44.45 | 13 | 0.00 | 0.91 | 0.06 | 0.03 - 0.09 |
| **3. Linear Change Homoscedastic Model** | 992 | 96.29 | 37 | 2.60 | | | | 0.74 | 0.08 | 0.06 - 0.10 |
| **4. Linear Change Heteroscedastic Model** | 992 | 43.92 | 24 | 1.83 | 52.31 | 13 | 0.00 | 0.91 | 0.06 | 0.03 - 0.09 |
| **5. Quadratic Change Heteroscedastic Model (FINAL)** | 992 | 24.29 | 17 | 1.43 | | | | 0.97 | 0.04 | 0.00 - 0.08 |
| **Comparison of Model 2 and 4** | | | | | 0.18 | 1 | 0.67 | | | |
| **Comparison of Model 2 and 5** | | | | | 19.52 | 6 | 0.00 | | | |
| **Comparison of Model 4 and 5** | | | | | 19.70 | 7 | 0.01 | | | |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval.

### 6.5.6. Outcomes: Increasing structural job resources by motivation profile

The model significantly improved when intercepts were allowed to vary across motivation profiles (Model 2) thus H4a is supported for SR. Again, the model significantly improved when linear slopes were allowed to vary across motivation profiles (Model 3) thus H4b is supported suggesting that the trajectory varies based on motivation profile. However freeing quadratic parameters did not contribute significantly to the model fit. As described in Section 6.7 below, the LHET model was used to validate growth parameters and test H5-H8 due to model specification issues for QHET in the BCH approach with LGM.

Table 6.25 Model comparisons for multi-group LGM for structural job resources

| | N | $\chi^2$ | df | $\chi^2$/df | Δ $\chi^2$ | Δ DF | Δ p value | CFI | RMSEA | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Fixed growth factors equal across groups** | 992 | 310.65 | 26 | 11.95 | n/a | n/a | n/a | 0.00 | 0.21 | 0.19 - 0.23 |
| **2. Free intercept across groups** | 992 | 43.14 | 23 | 1.88 | 267.51 | 3 | 0.00 | 0.91 | 0.06 | 0.03 - 0.09 |
| **3. Free Intercept and Linear Slope across groups** | 992 | 28.43 | 20 | 1.42 | 14.71 | 3 | 0.00 | 0.96 | 0.04 | 0.00 - 0.07 |
| **4. Free All Growth Factors** | 992 | 24.29 | 17 | 1.43 | 4.14 | 3 | 0.25 | 0.97 | 0.04 | 0.00 - 0.08 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval.

### 6.5.7. Results: Increasing social job resources by motivation profile

Among the increasing social job resources (SS) multi-group models, there were no significant differences between the heteroscedastic and homoscedastic models for both linear and quadratic models. The heteroscedastic optimal trajectory model (OHET) was significantly better than the homoscedastic optimal, linear or quadratic models (See Table 6.26). Therefore it was selected as the final model. The fit indices for OHET were good: $\chi^2$/df was less than 5 (1.689), CFI was greater than 0.9 (0.962) and RMSEA was below the threshold of 0.06 (0.053). Across all motivation profile groups, $r^2$ parameters indicated that the model explained between 33.9% and 71.2% of variance in time points of SS, all of which were significant at $p < 0.01$ or below. Once more, chi squared difference tests were used to identify significant differences in SS starting points and change factors across groups, by comparing three OHET models: fixed intercept and slope, random intercept, random slope. The model fit indices for each model are in the Table 6.27 below.

Table 6.26 Model fit statistics for multi-group LGM for increasing social job demands

| Model | N | $\chi^2$ | df | $\chi^2$/df | Δ $\chi^2$ | Δ DF | Δ p value | CFI | RMSEA | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Optimal Change Homoscedastic Model** | 992 | 62.31 | 34 | 1.83 | | | | 0.93 | 0.06 | 0.03 - 0.08 |
| **2. Optimal Change Heteroscedastic Model (FINAL)** | 992 | 38.86 | 23 | 1.69 | 23.46 | 11 | 0.02 | 0.96 | 0.05 | 0.02 - 0.08 |
| **3. Linear Change Homoscedastic Model** | 992 | 69.15 | 35 | 1.98 | | | | 0.92 | 0.06 | 0.04 - 0.08 |
| **4. Linear Change Heteroscedastic Model** | 992 | 47.81 | 20 | 2.39 | 21.34 | 15 | 0.13 | 0.93 | 0.07 | 0.05 - 0.10 |
| **5. Quadratic Change Homoscedastic Model** | 992 | 59.20 | 25 | 2.37 | | | | 0.92 | 0.07 | 0.05 - 0.10 |
| **6. Quadratic Change Heteroscedastic Model** | 992 | 43.51 | 16 | 2.72 | 15.69 | 9 | 0.07 | 0.93 | 0.08 | 0.05 - 0.11 |
| **Comparison of Model 2 and 4** | | | | | 30.30 | 12 | 0.00 | | | |
| **Comparison of Model 2 and 6** | | | | | 20.34 | 2 | 0.00 | | | |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval.

### 6.5.8. Outcomes: Increasing social job resources by motivation profile

The model significantly improved when intercepts were allowed to vary across motivation profiles (Model 2) thus H4a is supported for SS. Similarly, the model significantly improved when linear slopes were allowed to vary across motivation profiles (Model 3) thus H4b is supported for SS suggesting that the linear trajectory varies based on motivation profile.

Table 6.27 Model comparisons for multi-group LGM for increasing social job resources

| | N | $\chi^2$ | df | $\chi^2$/df | Δ $\chi^2$ | Δ DF | Δ p value | CFI | RMSEA | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Fixed growth factors equal across groups** | 992 | 266.19 | 26 | 10.24 | | | | 0.42 | 0.19 | 0.17 - 0.21 |
| **2. Free intercept across groups** | 992 | 50.50 | 26 | 1.94 | 215.69 | 0 | 0.00[a] | 0.94 | 0.06 | 0.04 - 0.09 |
| **3. Free All Growth Factors across groups** | 992 | 38.86 | 23 | 1.69 | 11.64 | 3 | 0.01 | 0.96 | 0.05 | 0.02 - 0.08 |

*Notes.* [a]*DF fixed at 1 for chi-squared difference test.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval.

### 6.5.9. Results: Decreasing hindering job demands by motivation profile

For decreasing hindering job demands (HD), all multi-group latent growth models (optimal, linear and quadratic) replicated normally. Heteroscedastic models were consistently better than homoscedastic models (See Table 6.28). Of the remaining models (Models 2, 4 & 6), the optimal and quadratic models were a significantly better fit than the linear model. There were no significant differences in model fit between the optimal and quadratic models and therefore in the interests of parsimony, the quadratic heteroscedastic model was selected as the final model. The fit indices for this model were acceptable: $\chi^2$/df was less than 5 (1.699); CFI was 0.96, RMSEA was 0.059. Across all motivation profile groups, $r^2$ parameters indicated that the model explained between 31.9% and 89.9% of variance in time points of job crafting, all but one (HD at T4 in the Controlled Motivation group) of which were significant at $p < 0.01$ or $p < 0.001$. Again, to test for significant differences in HD starting points and change factors across groups, four QHET models were run (fixed intercept and slope, random intercept, random linear slope, random quadratic slope) and compared using chi-squared difference tests. The model fit indices for each model are in the Table 6.29 below.

Table 6.28 Model fit statistics for multi-group LGM for decreasing hindering job demands

| Model | N | $\chi^2$ | df | $\chi^2$/df | $\Delta\chi^2$ | $\Delta$ DF | $\Delta$ p value | CFI | RMSEA | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Optimal Change Homoscedastic Model** | 992 | 152.20 | 43 | 3.54 | | | | 0.73 | 0.10 | 0.08 - 0.12 |
| **2. Optimal Change Heteroscedastic Model** | 992 | 40.28 | 25 | 1.61 | 111.92 | 25 | 0.00 | 0.96 | 0.05 | 0.02 - 0.08 |
| **3. Linear Change Homoscedastic Model** | 992 | 157.57 | 40 | 3.94 | | | | 0.71 | 0.11 | 0.09 - 0.13 |
| **4. Linear Change Heteroscedastic Model** | 992 | 66.00 | 23 | 2.87 | 91.56 | 23 | 0.00 | 0.89 | 0.09 | 0.06 - 0.11 |
| **5. Quadratic Change Homoscedastic Model** | 992 | 73.26 | 27 | 2.71 | | | | 0.89 | 0.08 | 0.06 - 0.11 |
| **6. Quadratic Change Heteroscedastic Model (FINAL)** | 992 | 29.74 | 16 | 1.86 | 43.52 | 16 | 0.00 | 0.97 | 0.06 | 0.02 - 0.08 |
| **Comparison of Model 2 and 4** | | | | | 25.72 | 2 | 0.00 | | | |
| **Comparison of Model 2 and 6** | | | | | 10.54 | 9 | 0.31 | | | |
| **Comparison of Model 4 and 6** | | | | | 36.26 | 7 | 0.00 | | | |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval.

### 6.5.10. Outcomes: Decreasing hindering job demands by motivation profile

The model significantly improved when intercepts were allowed to vary across motivation profiles (Model 2) thus H9a is supported. The model significantly improved when linear slopes were allowed to vary across motivation profiles (Model 3) and when quadratic slopes were allowed to vary (Model 4). Thus H9b is supported suggesting that the change trajectory varies based on motivation profile.

Table 6.29 Model comparisons for multi-group LGM for decreasing hindering job demands

| | N | $\chi^2$ | df | $\chi^2$/ df | $\Delta\chi^2$ | $\Delta$ DF | $\Delta$ p value | CFI | RMSEA | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Fixed growth factors equal across groups** | 992 | 172.31 | 25 | 6.89 | n/a | n/a | n/a | 0.64 | 0.15 | 0.13 - 0.18 |
| **2. Free intercept across groups** | 992 | 53.15 | 22 | 2.42 | 119.16 | 3 | 0.00 | 0.92 | 0.08 | 0.05 - 0.10 |
| **3. Free Intercept and Linear Slope across groups** | 992 | 39.76 | 19 | 2.09 | 13.40 | 3 | 0.00 | 0.95 | 0.07 | 0.04 - 0.10 |
| **4. Free All Growth Factors** | 992 | 29.74 | 16 | 1.86 | 10.02 | 3 | 0.02 | 0.97 | 0.06 | 0.02 - 0.08 |

*Notes.* N = study population; $\chi^2$ = chi-squared statistic; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean squared error of approximation; CI = confidence interval.

## 6.6. Phase 5: Levels of Job Crafting by Motivation Profile

This section describes the analysis approach for 3-step LPA with auxiliary variables to test specifically how levels of job crafting vary by motivation profile. It presents specific hypotheses for each type of expansive and restrictive job crafting followed by the results of chi-squared difference tests. As there are sets of hypotheses for each motivation profile, they are presented by motivation profile with those related to expansive levels of job crafting presented first, followed by those of restrictive job crafting. A summary of outcomes can be viewed in Tables 6.20 and 6.21.

### 6.6.1. Analysis: 3 step latent profile analysis with auxiliary variables to test how levels of job crafting vary by motivation profile

To understand the nature of any statistically significant differences in starting levels, a 3 step LPA with auxiliary variables was run which included the original 4 motivation profile model but added the relevant job crafting variable individually at each of the four time points as cross-sectional distal outcomes. The resulting output allowed profile-based means to the plotted, and significant differences in means, to be examined in the context of implications for starting levels for the current section but also for change trajectories in Section 6.7. This step was important for two reasons: a) to test for hypothesized specific differences in levels of job crating as a function of motivation profile (expansive job crafting H5a, H6a, H7a, H8a; restrictive job crafting H10a, H11a, H12a, H13a) and, b) as two of the motivation profile groups were significantly smaller than the others (*Amotivation Dominant* n = 119 (60 in BCH approach with LGM); *Controlled Dominant* n = 82 (37 in BCH approach with LGM), this analysis supported LGM results, which were susceptible to a lack of power to detect significant growth factors in this groups, by allowing change trajectories in these two groups to be observed in means plots.

### 6.6.2. Hypotheses: Levels of job crafting by motivation profile

This section presents the hypotheses around how levels of job crafting vary as a function of motivation profile (H5a, H6a, H7a, H10a, H11a, H12a).

The hypotheses suggest that levels of expansive job crafting, specifically increasing challenging job demands, increasing structural job resources and increasing social job resources, are ranked such that:

- *Amotivation Dominant* and *Balanced Low* groups will demonstrate the lowest starting levels of expansive crafting among all motivation profiles (H5a)

- *Controlled Dominant* motivation groups will demonstrate higher starting levels of expansive crafting than *Amotivation Dominant* and *Balanced Low* and lower levels than *Balanced Moderate/High* or *Autonomous Dominant* motivation groups (H6a)
- *Balanced Moderate/High* groups will demonstrate higher levels of expansive crafting than *Amotivation Dominant/Balanced Low* and *Controlled Dominant* motivation groups and lower levels than *Autonomous Dominant* motivation groups (7a)

The hypotheses also suggest that levels of restrictive job crafting, specifically decreasing hindering demands, are ranked such that:

- *Amotivation Dominant/Balanced Low* groups will demonstrate the highest levels of restrictive crafting among all motivation profile (H10a)
- *Controlled Dominant* motivation groups demonstrate lower levels of restrictive crafting than *Amotivation Dominant/Balanced Low* groups and higher levels than *Balanced (Moderate/High) and Autonomous Dominant* motivation groups (H11a)
- *Balanced (Moderate/High)* groups will demonstrate lower levels of restrictive job crafting than *Amotivation Dominant/Balanced Low* and *Controlled Dominant* motivation groups and higher levels than *Autonomous Dominant* motivation groups (12a)

As no *Autonomous Dominant* or *Balanced Moderate* motivation groups emerged from the population during LPA, hypotheses relating to these groups, including H8a and H13 in full (presented in Chapter 4), could not be tested and were excluded.

### 6.6.3.Results: Levels of job crafting by motivation profile

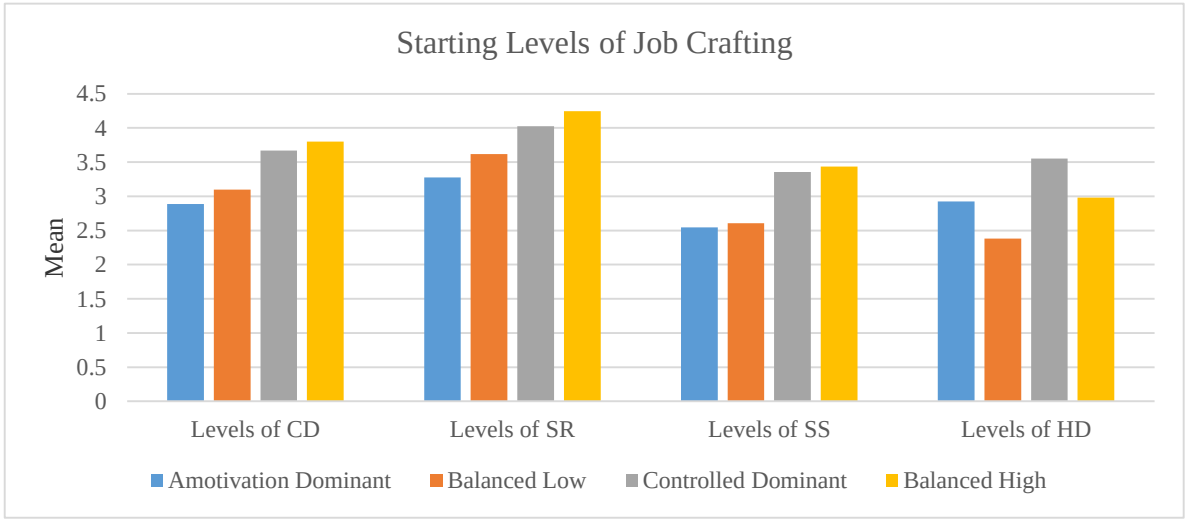



*Figure* **6**-*G Starting levels of job crafting from multi-group LGM*
*Notes.* CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

Starting levels within groups for all forms of job crafting from multi-group LGM are presented in Figure 6-G/Table 6.30. Results from BCH approach with LGM are included for comparison.

Table 6.30 Unstandardized intercept parameters from multi-group latent growth modelling and BCH approach with LGM

| Motivation profile | *N* | Levels of CD | Level of SR | Level of SS | Levels of HD |
|---|---|---|---|---|---|
| **Amotivation Dominant** | 119 (60) | 2.89 (2.88) | 3.28 (3.25) | 2.55 (2.66) | 2.92 (2.84) |
| **Balanced Low** | 305 (145) | 3.10 (3.00) | 3.62 (3.60) | 2.61 (2.41) | 2.38 (2.35) |
| **Controlled Dominant** | 82 (37) | 3.67 (3.8) | 4.02 (4.45) | 3.36 (3.49) | 3.55 (3.67) |
| **Balanced High** | 486 (254) | 3.80 (3.92) | 4.25 (4.27) | 3.44 (3.49) | 2.98 (3.01) |

*Notes. N* = study population; SR results from LHET model; all intercepts significant at p <0.001. Parameters from BCH approach with LGM in parentheses. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

Chi-squared means difference tests from 3-step LPA with auxiliary variables at T1 were run to test hypotheses for significant differences in starting levels of each form of job crafting between motivation profile groups (Table 6.31). There were significant differences between all groups in all forms of job crating with a few exceptions. There were no significant differences in levels of CD between *Balanced High* and *Controlled Dominant* groups. There were no significant differences in levels of SS between *Amotivation Dominant* and *Balanced Low* groups or between *Balanced High* and *Controlled Dominant* groups. There were no significant differences in HD between *Amotivation Dominant, Balanced High or Controlled Dominant* groups.

Table 6.31 P values for means difference tests at T1 from LPA with distal outcomes

| | **Amotivation Dominant vs** | | | **Balanced High vs** | | **Balanced Low vs** |
|---|---|---|---|---|---|---|
| | Balanced High | Balanced Low | Controlled Dominant | Balanced Low | Controlled Dominant | Controlled Dominant |
| **Starting level of CD** | 0 | 0.03 | 0 | 0 | 0.72 | 0 |
| **Starting level of SR** | 0 | 0 | 0 | 0 | 0.03 | 0.001 |
| **Starting level of SS** | 0 | 0.43 | 0.01 | 0 | 0.34 | 0.002 |
| **Starting level of HD** | 0.76 | 0 | 0.14 | 0 | 0.15 | 0 |

*Notes*. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

### 6.6.4. Outcomes: Levels of job crafting by motivation profile

The *Amotivation Dominant* group consistently demonstrated the lowest levels of expansive job crafting and significantly lower levels of expansive job crafting than all other groups with the exception of increasing social resources among Balanced Low. Apart from this exception, the *Balanced Low* group consistently demonstrated the second lowest levels of expansive job crafting among all forms of job crafting, and significantly lower levels of expansive job crafting than *Controlled Dominant* and *Balanced High* groups. Therefore the *Amotivation Dominant* and *Balanced Low* groups report lowest starting levels of expansive job crafting among all motivation groups: hypotheses 5a is supported. Although not hypothesized, the *Balanced Low* starting levels for expansive job crafting were generally higher than the *Amotivation Dominant*

group with a significant difference in increasing challenging job demands and structural job resources.

The *Controlled Dominant* group demonstrated higher starting levels of expansive job crafting than *Amotivation Dominant* and *Balanced Low* groups and lower levels than the *Balanced High* group (except in BCH approach with LGM for SS). All differences in starting levels were significant with the exception of increasing challenging job demands and social job resources among the *Balanced High* group. Therefore hypotheses 6a is partially supported.

The *Balanced High* group demonstrated higher levels of expansive job crafting than all other groups (except *Controlled Dominant* in BCH approach with LGM) although the differences in increasing challenging demands and increasing social resources among the *Controlled Dominant* group were not significant. Therefore hypotheses 7a is partially supported.

There were no significant differences in starting levels of restrictive job crafting between *Amotivation Dominant, Controlled Dominant* and *Balanced High* groups. While not significant, the *Controlled Dominant* group had the highest levels of restrictive job crafting followed by the *Balanced High* and *Amotivation Dominant* groups which had very similar levels. In addition, rather than demonstrating the highest levels of restrictive crafting (H10a), the *Balanced Low* group demonstrated significantly lower starting levels of decreasing hindering demands than all other groups. Therefore H10a, H11a and H12a are unsupported.

## 6.7. Phase 6: Trajectories of Job Crafting by Motivation Profile

Within this final section, the analysis involves an examination of growth parameters and means plots to identify the type of trajectory of each form of job crafting in each motivation profile. This allows hypotheses related to how trajectories vary as a function of motivation profile to be tested. Results of multi-group LGM, supported by results of the BCH approach with LGM, are presented along with means plots from the 3-step LPA with auxiliary variables described in Section 6.6. The outcomes for hypotheses are presented alongside the results by motivation profile. Again, a summary of these outcomes is presented in Tables 6.20 and 6.21.

### 6.7.1. Analysis: Using FOF LGM growth parameters to test how trajectories of job crafting vary by motivation profiles

The growth parameters from the final multi-group LGM models were examined to test the final round of hypotheses regarding the nature of change in each form of job crafting within each motivation profile (expansive job crafting: H5b, H6b, H7b, H8b; restrictive job crafting: H10b, H11b, H12b, H13b respectively). Multi-group LGM does not account for measurement error in probability based classification groups. However, while the BCH approach with LGM does account for this error, it utilises list wise deletion and therefore reduces statistical power and risks the introduction of bias. Indeed, the requirement for list wise deletion in the BCH approach had a significant impact on the size of the final dataset: just 496 of 992 cases remained for analysis. Therefore the relevant growth factors from multi-group LGM were reviewed and the extent to which they were aligned with those from the BCH approach was reported. The BCH approach used the final best fitting model from multi-group LGM with one exception. The quadratic heteroscedastic model (QHET) for the job crafting variable increasing structural job resources (SR) generated warnings relating to model specification during the BCH approach with LGM, although it was the best fitting and most parsimonious model in multi-group LGM. However, in multi-group LGM, the next best alternative, the linear heteroscedastic model (LHET), had acceptable model fit (See Table 6.24). The LHET was attempted in the BCH approach and ran without issues. Therefore, for SR, LHET was used to validate intercepts and growth parameters in both sets of analyses (multi-group and BCH approach). Finally, means plots from 3-step latent profile analysis with all job crafting variables at all time points as auxiliary outcomes provided useful validation data to indicate whether Type II errors had arisen in either multi-group LGM or the BCH approach with LGM.

### 6.7.2. Hypotheses: Trajectories of job crafting by motivation profile

The hypotheses of trajectories of expansive job crafting, specifically increasing challenging job demands, increasing structural job resources and increasing social job resources, are as follows among motivation profile groups:

- Amotivation Dominant/Balanced Low groups will demonstrate a negative continuous trajectory over time (H5b)
- Controlled Dominant motivation groups will demonstrate a non-continuous trajectory over time (H6b)
- Balanced (Moderate/High) motivation groups will demonstrate a flat/positive continuous trajectory over time (H7b).

The hypotheses regarding trajectories of restrictive job crafting among motivation profile groups are as follows:

- *Amotivation Dominant/Balanced Low* groups demonstrate a non-continuous trajectory over time (10b)
- *Controlled Dominant* motivation groups demonstrate a non-continuous trajectory over time (11b)
- *Balanced (High)* motivation groups demonstrate a non-continuous trajectory over time (12b).

Hypotheses relating to groups that did not emerge in the population, specifically *Autonomous Dominant* and *Balanced Moderate* groups, were excluded.

### 6.7.3.Results and outcomes: Trajectories of job crafting by motivation profile

Hypotheses were tested by a review of the relevant slope parameters from FOF LGM (multi-group and BCH approach) and the means plot from 3 step LPA with auxiliary outcomes. Overall, the direction of all slopes was fully aligned between multi-group and BCH approach although the BCH approach had considerably less power to detect significance due to sizeable reductions in group sizes (See Table 6.30). In addition, due to the smaller size of the *Amotivation Dominant* group ($n$ = 119 in multi-group; $n$ = 60 BCH approach) and *Controlled Dominant* groups ($n$ = 82 in multi-group; $n$ = 37 in BCH approach), LGM did not have sufficient power to detect significant growth parameters (see Table 6.32). However, preliminary conclusions were drawn for these groups based on the direction of growth parameters and observations of means plots.

Table 6.32 Slope parameters of job crafting for all motivation profiles from multi-group LGM (and BCH approach with LGM)

| | ***N*** | **CD** Linear | **SR** [b] Linear | **SS** Linear | **HD** Linear | **HD** Quadratic |
|---|---|---|---|---|---|---|
| **Amotivation Dominant** | 119(60) | -0.03 (-0..02) | -0.02 (-0.01) | 0.06(0.01) | -0.18[a] (-0.15) | 0.06 (0.04) |
| **Balanced Low** | 305(145) | 0.05**(0.08*) | 0.06*(0.08**) | 0.11**(0.12*) | 0.343**(0.16) | -0.09**(-0.05) |
| **Controlled Dominant** | 82(37) | -0.01(-0.03) | -0.001 (-0.17) | 0.05(0.05) | -0.03(-0.13) | -0.01 (0.03) |
| **Balanced High** | 486(254) | -0.03* (-0.06) | -0.05** (-0.03) | -0.05[a](-0.02) | 0.160*(0.18) | -0.05*(-0.02) |

*Notes:* [a] $p > 0.1$, *$p > 0.05$ ** $p > 0.01$; parenthesis indicate results from BCH approach with LGM; [b] LHET model applied. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

#### 6.7.3.1. Amotivation Dominant

An analysis of the means for each time point confirms an overall decline in all forms of expansive job crafting over the year from T1 to T4 (Table 6.33). However, as evident on the means plot (Figure 6-H) this change is demonstrably non-linear for all forms of job crafting.

Table 6.33 Means of job crafting by time point for *Amotivation Dominant* group

| ***Amotivation Dominant* Group** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **CD** | 2.83 | 2.82 | 3.01 | 2.68 |
| **SR** | 3.21 | 3.30 | 3.31 | 3.15 |
| **SS** | 2.67 | 2.38 | 2.82 | 2.57 |
| **HD** | 2.95 | 2.89 | 2.74 | 3.00 |

*Notes.* Means based on LPA with auxiliary outcomes. T1 means may differ slightly from intercept means during LGM analysis due to model constraints. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

In addition, patterns of change across forms of expansive job crafting are not aligned for this group with SR demonstrating a visibly different trajectory (an inverted curve) than CD and SS. H5b is tentatively rejected for the Amotivation Dominant group. A review of the means and means plots reveals non-continuous trajectory for restrictive job crafting (HD) which appears to be positive for the *Amotivation Dominant* group (see Table 6.33) providing preliminary support for H10b. It is noteworthy though, that the linear slope of HD within the *Amotivation Dominant* group was negative and significant at p <0.1 (See Table 6.32).

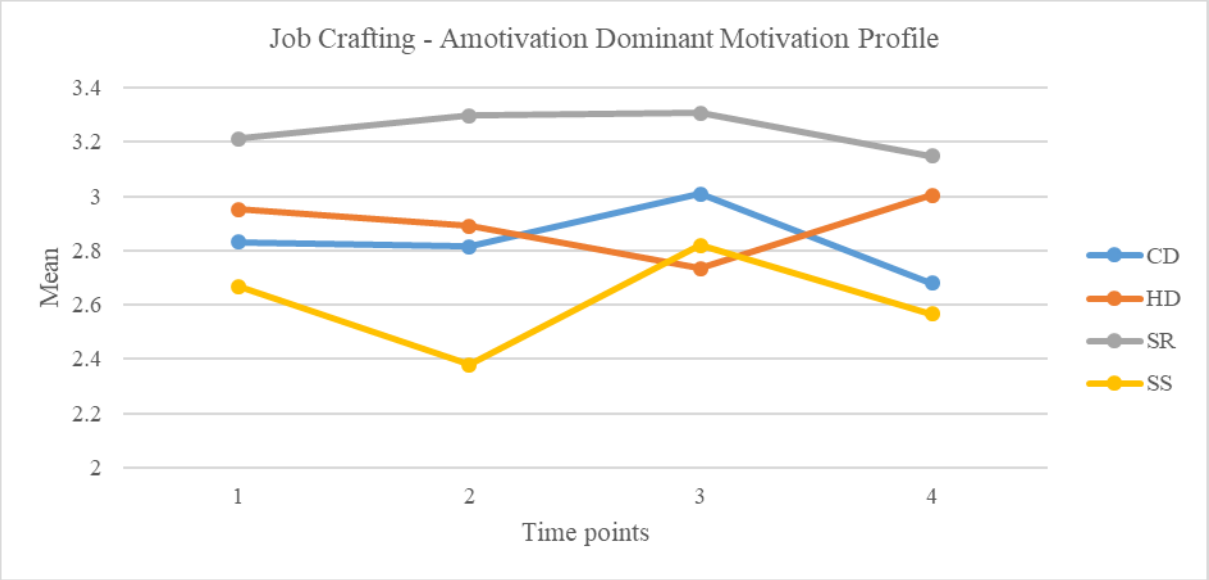



*Figure 6-H Job crafting means plot for* Amotivation Dominant *profile*

*Notes.* Trajectories plotted based on means mapped individually as outcomes in latent profile analysis. Means may differ slightly from estimated means during LGM; CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

#### 6.7.3.2. Balanced Low

For this group, means for each time point (Table 6.34/Figure 6-I) revealed an increase in all forms of expansive job crafting and suggest far more stable trajectories than those of the *Amotivation Dominant* group.

Table 6.34 Means of job crafting by time point for *Balanced Low* group

| ***Balanced Low* Group** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **CD** | 3.07 | 3.11 | 3.12 | 3.33 |
| **SR** | 3.58 | 3.59 | 3.53 | 3.79 |
| **SS** | 2.58 | 2.63 | 2.76 | 2.82 |
| **HD** | 2.36 | 2.65 | 2.69 | 2.65 |

*Notes.* Means based on LPA with auxiliary outcomes. T1 means may differ slightly from intercept means during LGM analysis due to model constraints. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

LGM (multi-group and BCH approach) confirmed the linear slopes for the *Balanced Low* group were positive and significant for increasing challenging job demands, social job resources and structural job resources (see Table 6.32). H5b for *Balanced Low* group is partially supported as these patterns of expansive job crafting are relatively continuous (although not negative in direction) when compared to those of the *Amotivation Dominant* group. In addition, patterns of change in all forms of expansive job crafting within this group are aligned. For restrictive job crafting (HD), FOF LGM confirmed the means plot observations with significant linear and quadratic slopes for the *Balanced Low* (see Table 6.32) within multi-group LGM results (BCH approach results demonstrated the same pattern but were not significant). These results suggest the trajectory is non-continuous and H10b is supported.

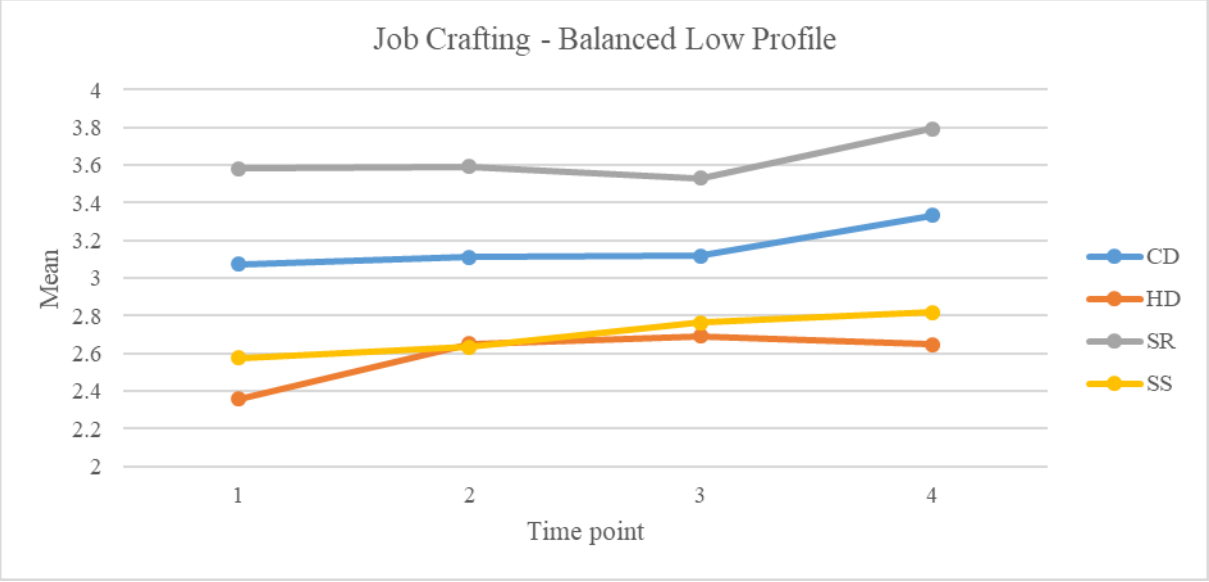



*Figure 6-I Job crafting means plot for* Balanced Low *profile*

*Notes.* Trajectories plotted based on means mapped individually as outcomes in latent profile analysis. Means may differ slightly from estimated means during LGM. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

#### 6.7.3.3. Controlled Dominant

A review of the means for each time point (Table 6.35) and means plots (Figure 6-J) confirms that for SR overall change in the mean over the year is within a range of less than 0.1, suggesting that there is no significant change in SR among this group.

Table 6.35 Means of job crafting by time point for *Controlled Dominant* group

| ***Controlled Dominant* means by time point** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **CD** | 3.80 | 3.63 | 3.74 | 3.64 |
| **SR** | 4.01 | 3.97 | 4.04 | 4.10 |
| **SS** | 3.23 | 3.49 | 3.54 | 3.44 |
| **HD** | 3.41 | 3.56 | 3.59 | 3.42 |

*Notes.* Means based on LPA with auxiliary outcomes. T1 means may differ slightly from intercept means during LGM analysis due to model constraints. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

The trajectories of CD and SS are observably more changeable and non-continuous providing some preliminary support for H6b. It is also apparent from the means plot that the trajectories of expansive forms of job crafting are not aligned for this group. For restrictive job crafting, the means plot appears to show a non-continuous inverted curve trajectory, providing tentative support for H11b.

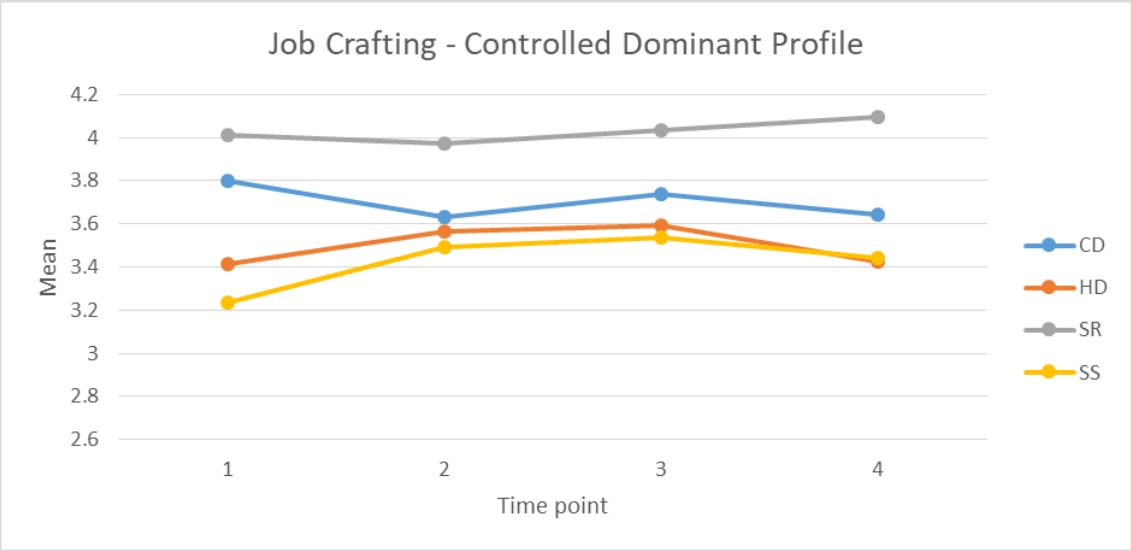



*Figure 6-J Job crafting means plot for* Controlled Dominant *profile*

*Notes.* Trajectories plotted based on means mapped individually as outcomes in latent profile analysis. Means may differ slightly from estimated means during LGM; CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

**Balanced High**

The means and means plot suggests relatively continuous and slightly negative trajectories in expansive job crafting among the *Balanced High* profile group (See Table 6.36).

Table 6.36 Means of job crafting by time point for *Balanced High* group from LCA

| **Balanced High means by time point** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **CD** | 3.85 | 3.80 | 3.81 | 3.78 |
| **SR** | 4.30 | 4.24 | 4.25 | 4.20 |
| **SS** | 3.44 | 3.46 | 3.38 | 3.55 |
| **HD** | 2.98 | 3.14 | 3.14 | 3.00 |

*Notes.* Means based on LPA with auxiliary outcomes. T1 means may differ slightly from intercept means during LGM analysis due to model constraints. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

LGM confirms this, finding significant negative linear trajectories for CD and SR in the multi-group analysis (and in the same direction albeit not significant in BCH approach) and a non-significant negative linear trajectory for SS (significant at $p < 0.1$), reflecting the dip in levels at T3 (Table 6.32). Given that this group have the highest levels of job crafting, intercept slope covariances were tested for ceiling effects but were not significant. H7b is partially supported with regard to pattern of change (continuous) but not direction (negative). FOF LGM confirmed significant linear and quadratic slopes for restrictive job crafting (HD) the *Balanced High* profile (see Table 6.32) within multi-group LGM results (BCH approach with LGM results demonstrated the same pattern but were not significant). The results provide support for a non-continuous trajectory and therefore support H12b.

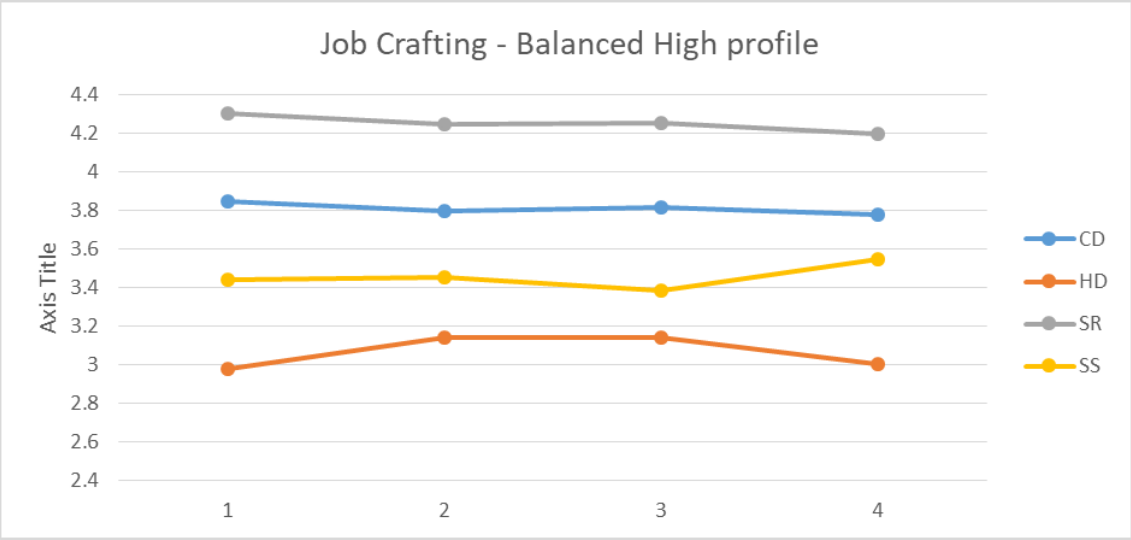



*Figure 6-K Job crafting means plot for* Balanced High *profile*

*Notes.* Trajectories plotted based on means mapped individually as outcomes in latent profile analysis. Means may differ slightly from estimated means during LGM. CD = increasing challenging job demands; SR = increasing structural job resources; SS = increasing social job resources; HD = increasing hindering job demands.

## 6.8. Conclusion

This chapter presented the extensive set of analyses completed in the present study and tested relevant hypotheses. The measurement model, and factor structures for the motivation and job crafting measures therein, were validated. Latent profile analyses were presented based on six latent motivation factors and a four profile model was identified as the optimal model.

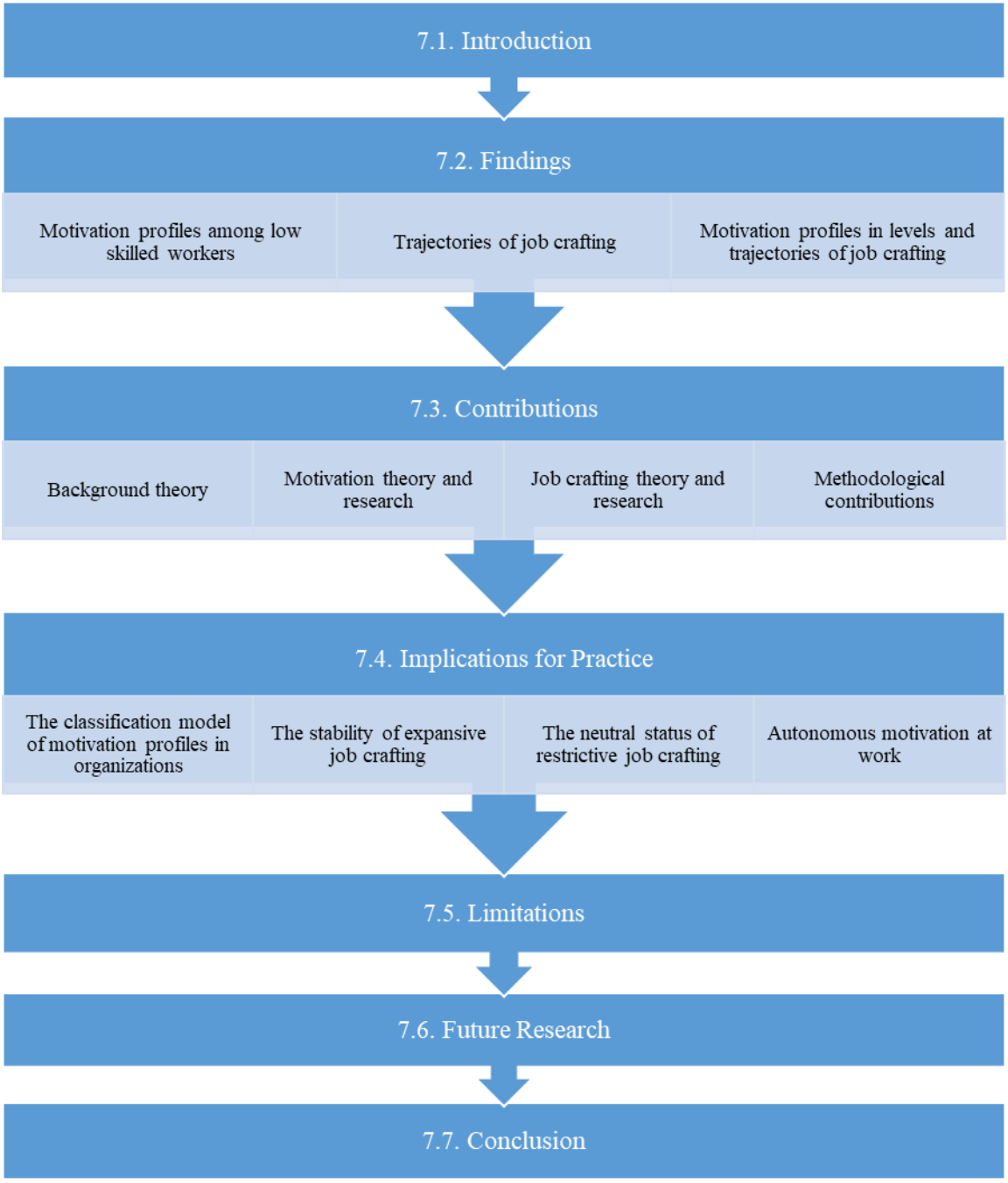
Measurement invariance of the longitudinal job crafting measure was conducted and the models incorporated into second-order factor latent growth modelling to identify trajectories of job crafting over four waves. Hypothesis 1 was partially supported in that all forms of expansive job crafting demonstrated aligned trajectories that were continuous in pattern although not positive in direction (no change was detected). Hypotheses 2 was fully supported in that restrictive job crafting demonstrated non-continuous change which differs from trajectories of expansive job crafting. Hypothesis 3 was fully supported in that levels and trajectories of all forms of job crafting varied among employees.

Three sets of analyses tested H4-12: these were multi-group latent growth modelling, the BCH approach with LGM, and 3 step LPA with auxiliary variables to test cross-sectional outcomes. Hypotheses 4 was fully supported as levels and trajectories of expansive job crafting varied as a function of motivation profile. Hypothesis 5 related to levels and trajectories of expansive crafting among the *Amotivation Dominant/Balanced Low* groups. This was partially supported in that levels were lowest among these groups and the *Balanced Low* group demonstrated a linear pattern of change. However, this change was positive in direction, and the *Amotivation Dominant* group demonstrated non-continuous change. Hypotheses 6 and 7 relating to levels and trajectories of job crafting among *Controlled Dominant* and *Balanced High* groups respectively were also partially supported. Expected higher levels of all forms of expansive job crafting were found among the *Balanced High* group but not all were significant. Trajectories for *Controlled Dominant* group were non-continuous as hypothesized for CD and SS but no change was detected in SR. Trajectories were all continuous for *Balanced High* groups as hypothesized but the direction of change was negative rather than positive. Hypothesis 9 was also supported by findings that levels and trajectories of restrictive crafting varied as a function of motivation profile. Hypothesis 10 and 11 were partially supported in that trajectories of restrictive job crafting were all non-continuous as hypothesized. Unexpectedly, levels of restrictive job crafting did not differ with the exception of the *Balanced Low* group which had significantly lower levels than all other groups. In summary, of the eleven hypotheses tested, four were fully supported, and seven were partially supported.[4] These findings and their implications are discussed in detail the next chapter.

[4] H8 and H13 could not be tested as an Autonomous Dominant motivation profile did not emerge from the population

# CHAPTER 7

# Discussion




### 7.1. Introduction

The present study had three primary goals. The first was to examine naturally occurring work motivation profiles among low-skilled workers, adding to the growing body of knowledge of core and peripheral motivation profiles based on Self-Determination theory. In doing so, the utility of a proposed new classification model for these profiles was tested. The second goal was to posit and test a temporal theory of job crafting, based on the integration of job crafting

theories (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001) with specific tenets of the Job Demands-Resources Model (Demerouti et al., 2001), Self-Determination theory (Ryan & Deci, 2017), Broaden-and-Build theory of positive emotions (Fredrickson, 2001), and Conservation of Resources theory (Hobfoll, 2001). The third and final goal was to expand upon that new theorizing by proposing, and subsequently testing, a role for motivation profiles as predictors of the level and trajectory of job crafting activities.

This final chapter opens with a detailed presentation of the findings of this study in three parts: motivation profiles among low-skilled workers, trajectories of job crafting over time and the role of motivation profiles in job crafting over time. This research makes a number of key contributions to the research fields of work motivation and proactive work behaviours, the most significant of which are outlined in detail in the Section 7.3 of this chapter. This is followed by a review of the specific implications of these findings for practice within organizations. It concludes by outlining the limitations of the current research and makes a number of recommendations of interesting avenues which future research might pursue.

### 7.2. Findings

This section examines the findings of this study, including the motivation profiles that emerged among the population and the extent to which propositions and hypotheses were supported. It outlines relevant theory and research relating to these findings, including possible explanations for unexpected results.

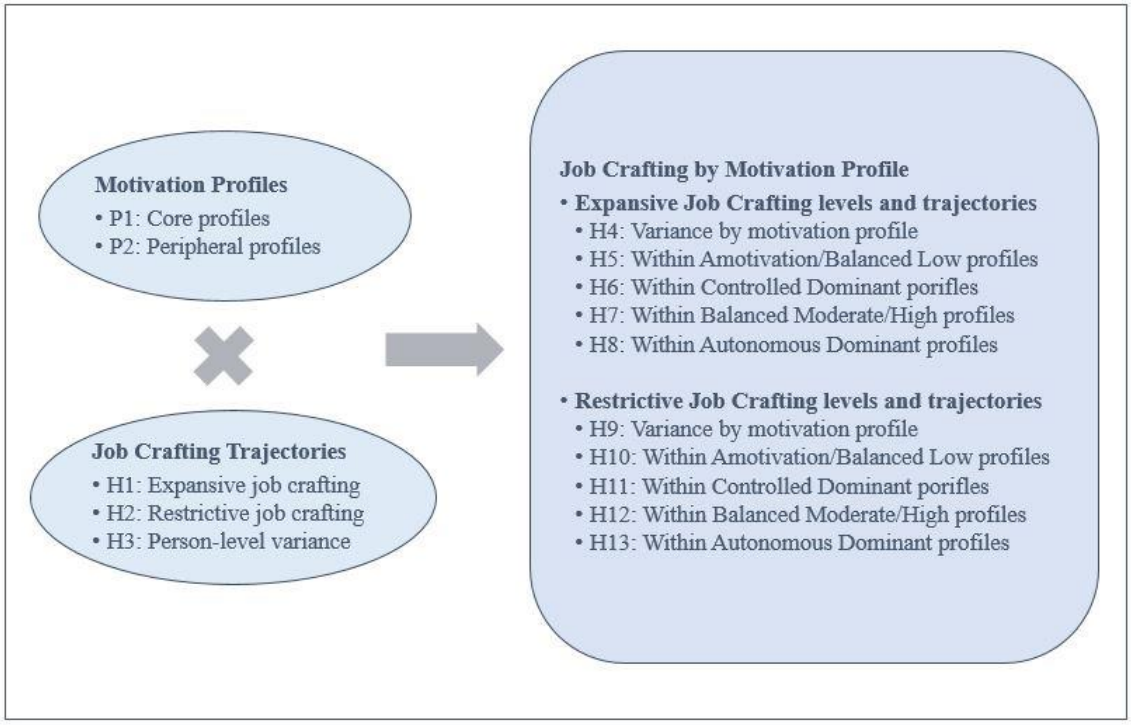



*Figure 7-A Overview of Study Propositions and Hypotheses*

### 7.2.1.Motivation profiles among low-skilled workers

Four naturally occurring motivation profiles emerged from latent profile analysis: *Balanced High, Amotivation Dominant, Balanced Low and Controlled Dominant*. As the analysis was exploratory in nature, hypotheses were not specified. However, two propositions were outlined in Chapter 2 based on previous research in motivation profiles among working populations. Firstly, it was proposed that two 'core' profiles identified as recurring in the work domain (Graves et al., 2015; Howard et al., 2016; Moran et al., 2012; Van den Broeck et al., 2013) would emerge in this study.

The first 'core' profile to emerge, *Balanced High* profile, was the largest group, representing 49% of the current sample (n = 486). This suggests that while external motivators play a large role in their reasons for doing the job, the repetitive nature of the work and the controlled working environment does not prevent some employees from simultaneously experiencing autonomous motivation indicating that needs for autonomy, competence and relatedness are met at work (Van den Broeck et al., 2016).

The second 'core' profile to emerge was the *Amotivation Dominant* profile, representing 12% of the sample, supporting related findings that *Amotivation Dominant* profiles emerge in all working populations (Howard et al., 2016). Indeed, the *Amotivation Dominant* group is a very similar profile and size to that of an *Amotivated* group (12%) that emerged among a sample of heterogeneous workers in a Belgium-based sample (Howard et al., 2016). A *Balanced Low* profile also emerged in the present study representing 30.7% of the population. *Amotivation Dominant* and *Balanced Low* profiles have been somewhat conflated in the research literature due to the lack of an amotivation measure in many studies to date (Howard et al., 2016). However, this result supports the position of SDT that amotivation is distinct from low levels of motivation and that the former reflects an intention not to act whereas the latter reflects a low level of intention to act (Ryan & Deci, 2017). While a *Balanced Low* group did not emerge in the only other directly comparable study using the same measures and analysis method (Howard et al., 2016), a similar profile group did emerge in a study among Belgian/Dutch workers from a range of sectors (Van den Broeck et al., 2013). In that study, this group made up just 16% of the sample; the fact that the group is considerably larger in the current research (30.7%) may be reflective of the low autonomy working environment.

Thus two 'core' profiles (Howard et al., 2016) emerged, *Balanced High* and *Amotivation Dominant,* adding weight to the argument that these profiles are context-independent and potentially common to all work populations regardless of the working environment. The *Balanced Low* profile may instead be what Howard et al. (2016) described as a 'peripheral'

profile. These peripheral profiles are context-dependent; their presence and size in a working population is dependent on the nature of the work and environmental factors.

The second proposition suggested that a *Controlled Dominant* profile would emerge. The profile emerged, representing 8% of the sample. This profile can be characterised as a 'peripheral'. While it did not appear in heterogeneous or management samples (Graves et al., 2015; Howard et al., 2016), blue-collar workers were dominant in a similar profile in a study by Van den Broeck et al. (2013). Interestingly, in the present study, this profile includes high levels of amotivation, albeit not as high as the *Amotivation Dominant* profile, alongside above average levels of external and introjected regulation.

It is noteworthy that although Howard et al. (2016) proposed that *Autonomous Dominant* and *Balanced Moderate* profiles are core to all working populations, they did not emerge in the present study. There are a number of possible explanations for this. In the rejected 5 profile model, a *Balanced Moderate* profile was present, representing the lower end of the *Balanced High* group. While class enumeration indicators suggested the final 4 profile model was optimal, it may be that this 'core' profile was omitted as a result. There was, however, no evidence of an *Autonomous Dominant* profile among participants suggesting that this profile may be 'peripheral'. It may be more likely to occur in high-skilled work and organizational contexts where needs for competency, autonomy and relatedness can be readily met. Indeed, to apply these findings more generally, it may be that this profile is not experienced by the vast majority of global workers who are engaged in low skilled work.

Finally, the 4 profiles that were identified provide support for the proposed classification model outlined in Chapter 2, by including distinct quantity-driven profiles (*Balanced High, Balanced Low*) and quality-driven profiles (*Controlled Dominant, Amotivation Dominant*). Both quantity and quality driven profiles have emerged within all working populations in published motivation profile research to date (Graves et al., 2015; Howard et al., 2016; Moran et al., 2012; Van den Broeck et al., 2013).

### 7.2.2. Trajectories of job crafting

This study presented a new theoretical model of trajectories of job crafting based on the specific tenets within JD-R model (Demerouti et al., 2001; Schaufeli & Bakker, 2004), SDT (Ryan & Deci, 2017), Broaden-and-Build theory (Fredrickson, 2001) and Conservation of Resources theory (Hobfoll, 1989, 2001). It postulated that due to the association of increasing challenging job demands (CD) with positive affect, basic need satisfaction, and requirements for resources, this act of expansive job crafting would be sustainable over time, would be aligned with other crafting activities that increase resources, and would reflect a positive, albeit gentle, gain spiral over time at a variable level. As such, it was hypothesized that each form of expansive job

crafting would demonstrate a continuous positive trajectory over time (H1a), and that these trajectories would be aligned with each other (H1b). Conversely, as restrictive job crafting is reactive in nature and not sustained over time, it was argued that, at a variable level, it would demonstrate a non-continuous trajectory (H2a). This trajectory would therefore not be aligned with trajectories of expansive job crafting (H2b).

Results confirmed that the trajectories of each form of expansive job crafting were indeed continuous but flat rather than positive, suggesting that expansive job crafting is stable over time at a variable level. This is the first piece of research to demonstrate the sustainable nature of these behaviours over time. To some extent, the fact that the trend was not positive, and that demands and resources are not increased exponentially, is not a surprise. The enactment of increasingly more tasks or demands at work is constrained by numerous temporal, physical, psychological and cognitive realities including time available, cognitive capacity to take on demands and the presence of competing existing demands inside and outside the work domain. The average number of years in job among participants in this study was over 6; it may be that among newcomer populations, a non-continuous learning curve trajectory exists where expansive job crafting increases exponentially until the capacity to take on increasing levels of demands has been exhausted, from which time on it is simply sustained (Ployhart & Vandenberg, 2009). The fact that years in job was one of the only control variables that explained significant amounts of the variance in levels of increasing structural job resources (SR) and CD, and demonstrated a negative relationship with both, adds weight to this explanation.

The trajectories of the three different forms of expansive job crafting were aligned as hypothesized. This finding suggests that expansive job crafting activities are interdependent and where the act of increasing resources is sustained over time, increasing demands can also be sustained. This supports cross-sectional research which found that forms of expansive job crafting are highly correlated (Rudolph et al., 2017) but extends these findings to demonstrate that this relationship is sustained over time for the first time.

Results also confirmed that decreasing hindering job demands (HD), a restrictive job crafting activity, is not stable over time at a variable level. The results support earlier cross-sectional research which suggests that HD is distinct from expansive forms of job crafting (Rudolph et al., 2017) and very recent theoretical examinations in this direction (Zhang & Parker, 2019). They expand our understanding of this form of job crafting to reveal that, not only are its correlates, predicators and outcomes different from those of expansive job crafting (Rudolph et al., 2017), the way it is enacted over time and its sustainability as a work behaviour is unique among forms of job crafting. The theoretical model presented in Chapter 4 suggests that this

may be due in part to the reactive, adaptive quality of decreasing hindering demands, which, by definition, entails a reaction to a present or perceived demand. Once this demand has been effectively decreased, related job crafting activities do not need to be sustained. It may also be that demonstrated associations of decreasing hindering job demands with burnout and exhaustion, and its negative relationship with proactive personality (Rudolph et al., 2017), are indicative of low levels of the internal resources required to allow individuals to sustain these behaviours over time (Hobfoll, 2001). Finally, the potential differences in motives for crafting among individuals lead to differences in the timing of crafting and type of demands that are crafted resulting in a non-continuous trajectory at variable level. For example, motivated individuals may decrease hindering demands to reduce unnecessary or inefficient tasks and allow for challenging demands to be taken on, while others may attempt to reduce the very basic demands of the job due to a lack of interest in meeting them.

At a person level, it was hypothesized that individuals vary in their levels and trajectories of both expansive and restrictive job crafting. Both hypotheses were supported. This finding is striking given the homogenous nature of the population: low-skilled employees within the same, relatively stable, highly structured organization. While not excluding a role for other situational factors as predictors of behaviours, it provides support for the subjective experience of work and the job as a social construct, and highlights the importance of internal psychological experiences with regard to their impact on behaviours at work, a position espoused by the authors of both SDT (Ryan & Deci, 2017) and the job crafting model (Wrzesniewski & Dutton, 2001).

### 7.2.3. The role of motivation profiles in levels and trajectories of job crafting

The hypotheses that the level and trajectory of each form of job crafting would vary as a function of motivation profile were fully supported. The findings confirm the role of experienced forms of motivation as antecedents of levels of job crafting as proposed by Wrzesniewski and Dutton (2001) but never previously tested. Going further, the current study provides preliminary support for the model outlined in Chapter 4, which suggests that the motivation profile of an individual allows the prediction of distinct levels and trajectories of job crafting based on a range of associated psychological experiences and behavioural tendencies. These include experienced affect and its related reward, punishment, bias and behavioural patterns as outlined in the Broaden-and-Build theory of positive affect (Fredrickson, 2001); experienced internal resources, how they are acquired through need satisfaction, and related patterns of employee-driven resource change behaviours as outlined in Conservation of Resource theory (Hobfoll, 1989, 2001), SDT (Ryan & Deci, 2017) and the JD-R model (Demerouti et al., 2001; Schaufeli & Bakker, 2004; Tims & Bakker, 2010); and individuals'

responses to external demands and investment of effort as outlined in the JD-R model and SDT (Demerouti et al., 2001; Ryan & Deci, 2017; Tims & Bakker, 2010).

It was hypothesized that levels of expansive job crafting would vary as a function of motivation profile such that the *Balanced (Moderate/High)* groups would demonstrate the highest levels, followed by *Controlled Dominant* groups, and that *Amotivation Dominant/Balanced Low* Groups would not differ and demonstrate the lowest levels of expansive job crafting (H5a, H6a, H7a). (Note: *Autonomous Dominant* profiles did not emerge among the population so related hypotheses were not tested). These hypotheses were supported in the main. This suggests that, in the *Balanced High* profile, the positive affect associated with the experience of enjoyable and meaningful work, and the buffering impact of autonomous motivation on burnout, creates a bank of available resources from which individuals can draw to take on more challenging demands and further increase structural and social resources.

As autonomous motivation levels decline in the profiles, so too do levels of expansive crafting. For those with *Controlled Dominant* profiles, the positive experience of receiving external rewards, or indeed, punishment avoidance, promotes expansive job crafting but with a more limited effect than that of autonomous motivation like enjoyment or meaningfulness (Ryan & Deci, 2017). For those with low overall levels of motivation (*Balanced Low*), levels of expansive crafting are lower again, as these individuals experience low levels of positive affect associated with internal sources of motivation or external rewards, and low levels of internal resources at work. Those who are in the *Amotivation Dominant* profile experience negative work-related affect and seek to avoid action, resulting in similarly low levels of expansive job crafting. The findings of relatively low levels of expansive job crafting among the latter two profiles supports the theory that a lack of positive affect narrows the extent to which individuals can identify opportunities to craft at work in which to engage (Fredrickson, 2001).

There were a couple of unexpected findings. Although, as predicted, the *Balanced High* group were higher in CD and increasing social job resources (SS) than the *Controlled Dominant* group, this difference was not significant. While it was expected that, among anticipated profiles, *Balanced High* and *Controlled Dominant* profiles would be adjacent in levels of expansive job crafting, they were still expected to differ significantly. This is because, as outlined in Chapter 4, it is likely that those who experience dominant controlled motivation will take on demands and related resources in order to secure external rewards, to experience ego boost and to avoid punishment. Taking on these demands requires an increase in resources to meet them. However, those who also experience autonomous motivation (i.e. *Balanced High*), can be expected to take on more demands and related resources because they also enjoy and identify with the value of the work.

A possible explanation for the fact that the difference between the two profiles was not significant may relate to the work and organizational context. The participants were engaged in low-skilled work in a highly engineered environment where there is a focus on controlled sources of regulation, such as error and compliance monitoring. There are limited autonomous sources of regulation which might include, for example, the freedom to volunteer for interesting project work. As such, the environment may provide more opportunity to take on demands driven by external regulation to avoid punishment (e.g. audit failures) and less opportunity to take on interesting demands driven by autonomous forms of motivation like intrinsic motivation. The fact that an *Autonomous Dominant* profile did not emerge in the population supports this explanation.

Despite the fact that *Balanced Low* and *Amotivation Dominant* profiles have been equated in the SDT literature (Howard et al., 2016), these profiles demonstrated different levels of expansive job crafting in the present study. Specifically, the *Balanced Low* profile demonstrated significantly higher levels of CD and SR. This finding provides support for the proposed classifications in Chapter 2 which reflect the contention of SDT that the experience of high levels of amotivation is not equivalent to the experience low levels of overall motivation. Lower levels of CD and SR among the *Amotivation Dominant* group members reflect their high levels of intent not to act and related negative work-related affect (Ryan & Deci, 2017): the individual does not take on demands, and therefore does not require related resources. The fact that the *Balanced Low* profile demonstrates higher levels of expansive job crafting reflects the slightly different associations of this profile when compared to *Amotivation Dominant*. There are low levels of positive affect but not necessarily negative affect; there are low levels of intention to act but not necessarily intent not to act.

I hypothesized that levels of restrictive job crafting would vary as function of motivation profile such that *Amotivation Dominant*/*Balanced Low* groups would demonstrate the highest levels of HD, followed by *Controlled Dominant* and that the *Balanced High* group would demonstrate the lowest levels. Yet, there were no significant differences between *Amotivation Dominant*, *Controlled Dominant* or *Balanced High* groups. The *Balanced Low* group demonstrated significantly lower levels of HD than all other profiles. This latter finding once again validates the distinct nature of *Amotivation Dominant* and *Balanced Low* profiles. Low levels of overall motivation reflect a low intention to act, therefore it follows that this behaviour is reflected in low levels of action (expansive job crafting) but not necessarily an active attempt to avoid action (restrictive job crafting). Conversely, amotivation is an intention not to act. It follows that intention is reflected in actively reducing job demands to the same levels as *Balanced High* and

*Controlled Dominant* profiles. This finding provides support for the proposition of SDT examined later in this discussion chapter that amotivation can be autonomous in nature.

The fact that all remaining profiles engaged in similar levels of HD is interesting, especially because these profiles are so varied in their quality of motivation including *Amotivation Dominant*, *Controlled Dominant* and *Balanced High*. Examined in more detail, we can note that even at variable level, intrinsic motivation demonstrates higher correlations with HD than identified motivation, likely reflecting the attempt of workers to focus on task they enjoy to the exclusion of those less enjoyable. It can further be observed that, while the differences between profiles may not be significant, levels of decreasing demands increase as the total quantity of motivational regulation increases in any profile (See Figure 7-A). While this observation requires investigation in future research, it suggests that levels of decreasing demands are impacted by quantity of motivation. The act of HD is much less positively weighted than expansive job crafting activities; instead it is a more neutral behaviour given meaning and effect by the motives for action. Individuals may engage in it at levels that reflect their overall quantity of motivation, while their motives for action are reflected in the dominant form of motivational regulation.

For example, someone who experiences work as "pointless" (see MWMS amotivation scale item 3; Gagné et al., 2015) is likely to view even basic job demands as hindering, and act to reduce them. Whereas some who experiences work as an opportunity to get the approval of others (see MWMS external regulation – social scale item 1; Gagné et al., 2015) is likely to reduce demands that are not high profile or visible. Finally someone who finds work interesting (see MWMS intrinsic motivation scale item 3; Gagné et al., 2015) is likely to reduce job demands that are not of interest to them. From a motivation profile perspective, individuals can be expected to reduce a range of demands for a range of different motives as reflected in their profile. Taken a step further, future research could explore whether outcomes of job crafting vary as a function of motive (i.e. motivation profile) rather than just the level of job crafting activity. Such an exploration might explain why research has been unable to validate predictions that decreasing hindering job demands can improve performance through employee-led optimization of job design (Rudolph et al., 2017; Tims & Bakker, 2010).

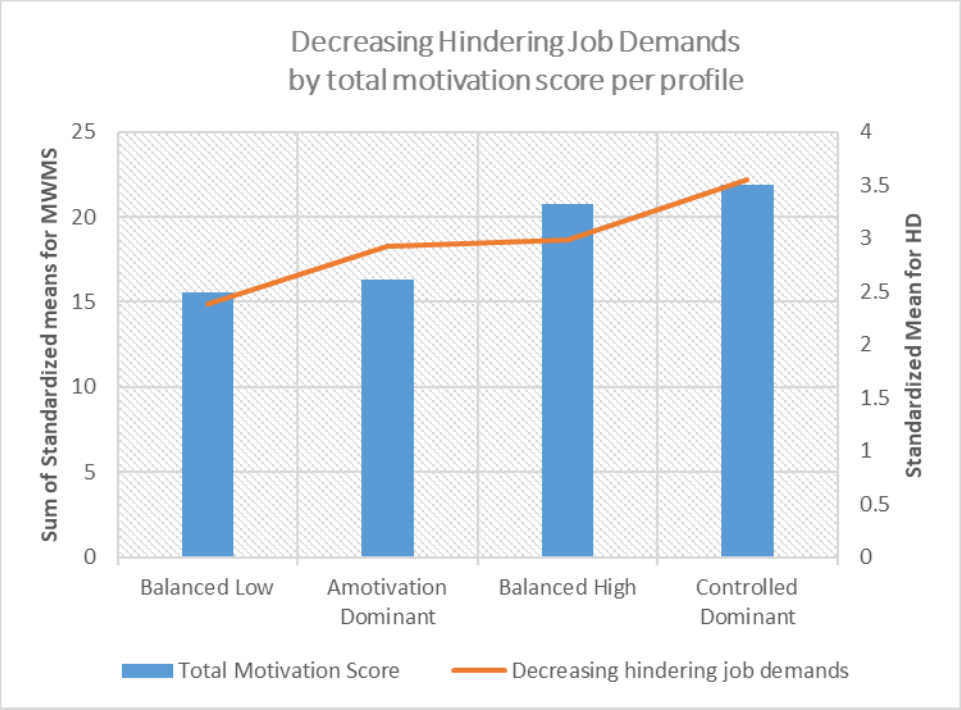



*Figure 7-B Decreasing Hindering Job Demands by Quantity of Motivation per Profile*

*Notes.* MWMS = Multi-dimensional Work Motivation Scale; HD = Decreasing hindering job demands.

Finally, this study examined the impact of motivation profile on trajectories of job crafting. The related hypotheses were supported in part. As hypothesized, restrictive job crafting demonstrated non-continuous trajectories over time in all profiles providing support for the argument that the reactive nature of this form of job crafting, due to its being dependent on the occurrence or perceived occurrence of hindering demands in the environment, results in it being episodic in nature. This non-continuous pattern can be linked to resource availability at the time the demand arises (Hobfoll, 2001).

As outlined in Chapter 4, this non-continuous change trajectory is likely to occur for a range of reasons across motivation profiles. Although all trajectories were non-continuous, the *Balanced High*, *Balanced Low* and *Controlled Dominant* profile demonstrated an aligned inverse quadratic curve (see Figure 7-B below). The alignment of these trajectories suggests that although levels may differ by motivation profile, the drivers of these behaviours are consistent across these motivation-based profiles. All of these profiles are characterised by the intention to act, albeit at different levels and for different motives. When individuals in these profile groups craft to reduce hindering job demands, they do so to allow them to take on other actions within the job for reasons driven by their profiles. For example, interest may drive *Balanced High* profiles, external rewards may drive *Controlled Dominant* profiles, or limited resources to meet all job demands may drive *Balanced Low* profiles (Hobfoll, 2001).

Conversely, the *Amotivation Dominant* profile demonstrated a positive quadratic curve. This finding supports the distinction made between *Balanced Low* and *Amotivation Dominant* profiles in the proposed classification model in the Chapter 2 and supports the SDT proposition that amotivation is a distinct psychological experience (Ryan & Deci, 2017).

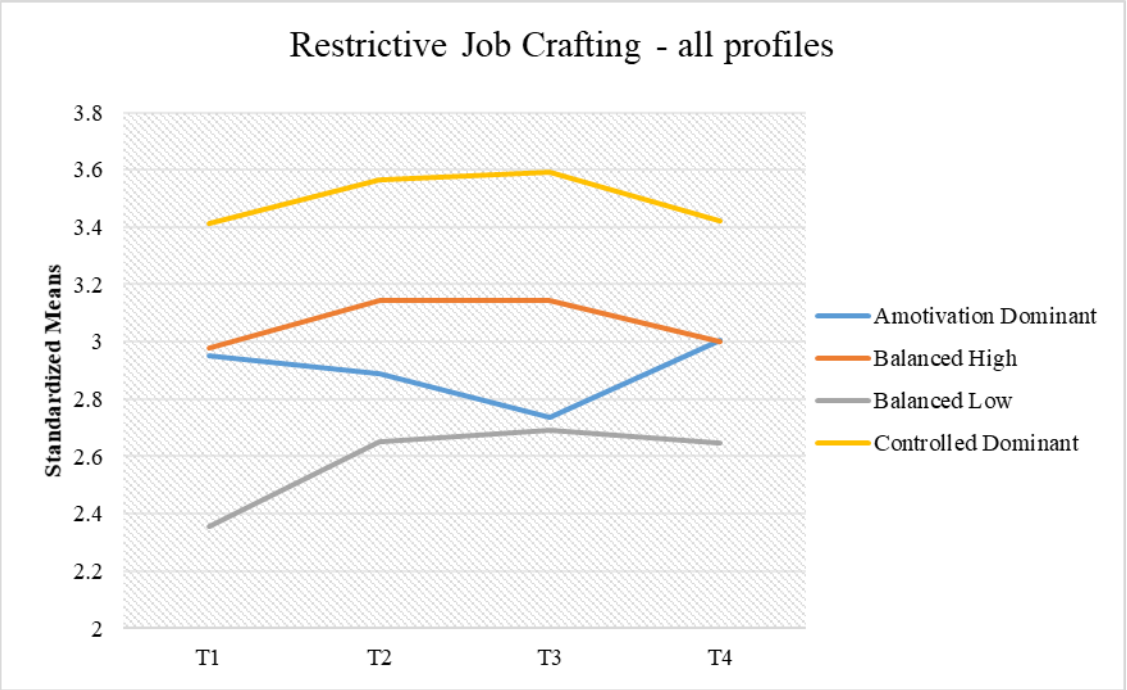



*Figure 7-C Trajectories of restrictive job crafting by profile*

*Notes.* Trajectories plotted based on means mapped individually as outcomes in latent profile analysis. Means may differ slightly from estimated means during LGM

With regard to trajectories of expansive job crafting by motivation profile, the findings were varied (See Figure 7-C). Firstly, it was hypothesized that *Amotivation Dominant* or *Balanced Low* motivation profiles would demonstrate the same negative linear trajectory over time in expansive forms of job crafting. This was not the case, providing further support for the distinct nature of these two types of motivation as proposed by authors within the field of SDT (Gagné et al., 2015; Ryan & Deci, 2017) and challenging recent motivation profile literature that equates the two (Howard et al., 2016). The preliminary findings for the *Amotivation Dominant* profile suggest non-continuous trajectories in expansive job crafting over time. To some extent, this is explained by the SDT proposition that those who experience amotivation cannot sustain effort over time (Ryan & Deci, 2017). Similarly the de-energizing experience of negative affect related to work reduces perceived opportunities to craft and the likelihood of taking action (Church et al., 2012; Fredrickson, 2001; S. K. Parker et al., 2010).

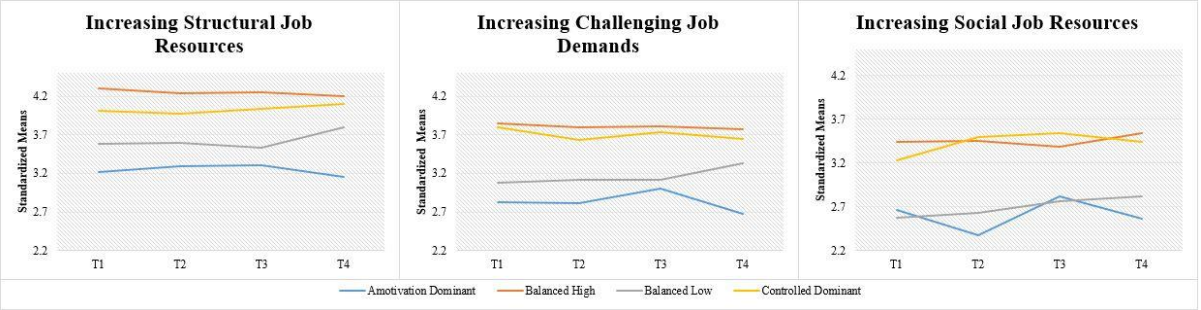



*Figure 7-D Trajectories of expansive job crafting by motivation profile*

*Notes.* Trajectories plotted based on means mapped individually as outcomes in latent profile analysis. Means may differ slightly from estimated means during LGM

It was not anticipated that those who experience high levels of amotivation would increase levels of expansive job crafting at any point. However there was a gentle increase in SR from T1-T3, followed by a decline at T4; for SS and CD, there was a distinct and aligned T3 spike in SS and CD evident in the means plot. It is reasonable to assume that structural and social resources at work are just as important, perhaps more so, for those who are amotivated as for those in other profile groups and that this need for resources may occasionally drive crafting activities even if this cannot be done in a sustained continuous manner (Ryan & Deci, 2017) and even if this crafting effort may not yield results due to lack of available resources to invest in it (Hobfoll, 2001). Further research is required to test possible explanations for why those who experience low levels of controlled and autonomous motivation along with high levels of amotivation would seek to increase challenges at work. Specifically, research could explore related variables which may drive this activity, including boredom (Harju et al., 2016), manager expectations (Bolino et al., 2010; Grant et al., 2011; Griffin, Neal, & Parker, 2007) and peer effects (Peeters et al., 2016).

The *Balanced Low* profile demonstrated the hypothesized continuous linear trajectory in expansive job crafting over time but this was unexpectedly positive for CD and SR (no change was detected in SS although the trend appears positive). For the *Balanced High* profile, the predicted positive continuous linear trajectory was unexpectedly negative in CD and SR with no change in SS. Therefore the proposed loss and gain spirals were not evident in the timeframe of the present study. Those with *Balanced Low* profiles began the 9 month study with a relatively low levels of expansive job crafting while those with *Balanced High* profiles had the highest levels of expansive job crafting of all profiles. Intercept-slope covariances within both profiles were not significant, therefore floor and ceiling effects were ruled out and other explanations for the direction of change were explored.

The sample in this research had an average length of service of 6 years in a low-skilled, controlled environment. It may be that this *Balanced Low* group had experienced a loss spiral

which levelled off and that the current results represent something like a "dead cat bounce" in stock market terms. Indeed, the significantly positive change was primarily based on a slight increase in T4 after relatively flat trajectory from T1-T3. Conversely, the *Balanced High* group may have experienced gain spiral followed by a levelling off of expansive job crafting due to exhausted opportunities and capacity leading to a very gentle but significant decline as evident in a non-continuous learning curve type trajectory (Ployhart & Vandenberg, 2009). Further research may help to reveal whether shifting the research design from medium term (months) to longer term (years) provides clarity as to the nature, significance and reasons for the direction of linear change in these quantity-driven profiles over time. It is also possible that the effect of membership of the *Balanced High* group on the linear slope of expansive job crafting was weakened by the fact the inclusion of a Balanced Moderate group within that profile, identified in latent profile analysis but not supported as an independent profile by class enumeration guidelines.

Regardless of direction, it is clear is that for both profiles, the pattern of change is relatively slow. The trajectories are stable and continuous over a 9 month period. This sustainability can be attributed to the balanced nature of these profile groups, providing support for the integrated theoretical model of how time and motivation profile impact job crafting outlined in Chapter 4. They both involve the experience of similar levels of autonomous and controlled motivation and low levels of amotivation. Autonomous motivation, as a source of internal resources, provides a buffer against the potential burnout effects of crafting for additional demands or related resources allowing them to be sustained over time (Demerouti et al., 2001; Schaufeli & Bakker, 2004). While the quantity of motivation may lead to differences in the levels of expansive job crafting, the interaction between autonomous and controlled forms of motivation in *Balanced* profiles appears to create stability in the trajectory of that crafting over time.

Finally, initial findings for the *Controlled Dominant* profile provide preliminary support for the hypothesized non-continuous trajectory in CD and SS proposed in Chapter 4, although no change was evident in SR. This suggests that those with higher levels of externalized regulation in their profiles are more selective about the challenging demands they take on. There are times when they adopt higher levels of demands such as when the possibility of material or social reward attainment or punishment avoidance exists, and times when these outcomes are not evident and demands are not taken on to the same level. This makes the process of increasing challenging demands, and related resources, more reactive and dependent on the external environment. In addition, the act of controlling behaviour for individuals can be difficult to sustain over time (Baumeister et al., 1998) and the lack of autonomous motivation to provide internal resources that buffer this effect means that burnout can arise (Demerouti et al., 2001;

Ryan & Deci, 2017; Schaufeli & Bakker, 2004). In these situations, levels of expansive job crafting can decline, leading to a non-continuous pattern over time as evident in this study.

Overall, these findings indicate that while some motivation profiles appear to be present in all populations (e.g. *Amotivated, Balanced High*), others appear to be context-dependent (e.g. *Controlled Dominant*). The proposed classification model usefully identifies these quantity and quality based profiles. It is also clear from the above results that the apparent lack of change in expansive job crafting at the variable level, is quickly refuted by a person-centred analysis. Job crafting is dynamic: individuals demonstrate differences in direction (positive, negative and flat) and stability (continuous and non-continuous) of trajectories which vary as a function of the type of job crafting involved and the motivation profile of the job crafter. The following section examines the contributions these findings make to research and theory

### 7.3. Contributions

The current study makes a range of contributions to theory, research and methodology within and beyond its focal domains. This section presents these contributions, beginning with an examination of the theoretical implications of this research to perspectives about the subjective nature of the work experience and the job as a social construct. It then examines the contributions of this research to the study of motivation and job crafting respectively. For motivation, these include: a consistent classification framework and nomenclature for use in the analysis of emergent motivation profiles in working populations; the validation of the existence of two 'core' motivation profiles (*Amotivation Dominant* and *Balanced High*) and evidence supporting the impact of the proximal work and organizational environment on the types of peripheral profiles which emerge in a low-skilled population for the first time. For job crafting, this research presents and validates a theory of change for job crafting behaviours by integrating existing job crafting theory and related JD-R theory with Self-Determination theory and others. It is the first study to generate theory and test related hypotheses regarding impact of time on job crafting, one of the only fully temporal studies in the field of job crafting among those published to date, and the first study in the field to directly test the long-since published contention that job crafting is dynamic in nature (Wrzesniewski & Dutton, 2001).

This research is also among the first studies to test the proposed role of motivational regulation as an antecedent of job crafting activities (Wrzesniewski & Dutton, 2001) and expands upon this proposition by elucidating a theory of how motivation profiles impact levels and trajectories of expansive and restrictive job crafting in unique ways from the perspective of Self-Determination theory. In subsequently testing this theory, it is first study to examine longitudinal outcomes of motivation profiles in SDT research and among a very few others within job crafting literature to focus on the role of motives and related meanings in the

measurement and interpretation of job crafting activities (Niessen et al., 2016). Importantly, this research contributes new data about the distinct nature of two rather aberrant and less perspicuous phenomenon within otherwise relatively well-explored fields: amotivation within SDT literature (and the related *Amotivation Dominant* motivation profile), and restrictive job crafting activities within job crafting literature.

This section closes with comments on how the applied measures and research design within the study contribute to methodology within motivation, job crafting, and the wider field of organizational research. This research took a novel approach to fully utilise all available data in situations where identified latent profiles were used in growth modelling. As this analysis requires a leap from classification-based to prediction-based statistics, the available approaches are limited by either list wise deletion (in BCH approach with LGM), which reduces statistical power and has the potential to introduce bias, or the introduction of error by treating latent classes as known classes (in multi-group LGM). By using three sets of analyses (multi-group LGM and the BCH approach with LGM, with 3 step LPA with auxiliary variables to test starting levels and generate means plots), all available data was used, results were compared and validated, and the respective strengths of each approach were exploited while weaknesses were offset.

### 7.3.1. Background theory: subjectivism and the job as a social construct

The findings of this study support the idea that work and working environments are subjective experiences and that the job itself a fluid social construct. Despite the fact that the employees in this study were doing similar repetitive work in the same highly controlled working environment, almost half of them (49%) experienced high levels of autonomous motivation alongside high levels of controlled motivation. Conversely, the other half experienced high levels of controlled motivation, high levels of amotivation or low levels of overall motivation. Thus the experience of work and organisational characteristics, and the extent to which they meet basic psychological needs, is subjective. This aligns with contentions of SDT that individual differences like causality orientation and individual goal content explain variation in how needs are satisfied by environmental factors.

Levels and trajectories of job crafting activities also varied across individuals, despite the relatively homogenous sample and environmental factors. Individual motivation profiles help to explain this variance. These findings emphasize the subjective nature of work and jobs as a social construct rather than an objective, empirical reality. We do not see things as they are, we see them as we are. Despite a number of identical work and organizational characteristics (e.g. job characteristics, nature of work, organizational culture) individuals in this study experience, interpret and cognitively frame their work subjectively and enact jobs differently as a result.

Future research which includes cognitive job crafting measures may reveal more about how individuals create their subjective work view.

The implication from this research is that, overall, individuals continuously increase demands and resources within their jobs and, more episodically, decrease hindering job demands over a 9 month period. This provides support for Wrzesniewski and Dutton's (2001) contention that the job is a fluid social construct which changes over time. Time related factors in the present study suggest the pattern of this change may vary as years pass: years in job predicted lower levels of CD SR and SS; and age had a significant negative impact on the slope of SR. This implies that over the longer term (i.e. a period of years), the rate at which jobs continue to evolve may decline.

### 7.3.2. Contributions to motivation theory and research

The primary contributions of this study to motivation theory and research are outlined in this sub-section. They include new knowledge gained about motivation profiles among the largest of all working populations: low-skilled workers; the presentation and validation of a classification model for motivation profiles; new information about the relationship between motivation profiles and the exertion of effort; and a greater understanding of the nature of amotivation.

#### 7.3.2.1. The organizational context of motivation profiles

Research in the area of work motivation profiles is at its earliest stages. It is important that the nature of these profiles is examined in a range of organizational contexts, to enhance our understanding of the circumstances in which they arise. The current research provides the first insight into motivation profiles among low-skilled workers in a low autonomy environment in the UK and responds to calls for the contextualisation of organisational and motivation research (Howard et al., 2016; Rousseau & Fried, 2001). Reports of the decline of blue-collar work in the West (e.g. Baker & Buffie, 2017) misrepresent the situation for the vast majority of workers around the world. According to the International Labour Organization as at May 2018, just 19.2% of the global workforce are engaged in white collar, professional or management work; 80.7% are engaged in low-skilled work, representing a total figure of over 2.6 billion people (International Labour Organisation, 2018). Yet this group remain underrepresented in the research literature in industrial-organizational psychology (Bergman & Jean, 2016). The value and importance of organizational research that focusses on individual and work outcomes for the majority of working people cannot be overstated.

The results support the existence of two 'core' profiles: *Amotivation Dominant* and *Balanced High.* Similar profiles (*Very Low/Amotivated* and *Highly Motivated)* have been found to recur among public sector workers in Belgium, call centre workers in the Netherlands, and white

collar management in the US and heterogeneous worker in samples from China, Belgium, Canada (Graves et al., 2015; Howard et al., 2016; Moran et al., 2012; Van den Broeck et al., 2013). While it is noteworthy that the levels of motivation in the Balanced High profile are lower than those in the same profile in Howard et al.'s 2016 As such the generalizability of these 'core' profiles' to wider organizational contexts is extended by the current research.

The results also indicate that the nature of work and the organizational context is an important factor in the range of motivation profiles that emerge. It is noteworthy that although a *Balanced High* profile emerged, the levels of motivation therein are lower than those in the same profile found by Howard et al.'s (2016) in a heterogeneous sample. In addition, previous research among heterogeneous types of public sector workers in Belgium (Van den Broeck et al., 2013) found that lower educated, blue-collar workers were dominant in a high controlled, low autonomous motivation profile. The organizational context for the low-skilled workers in the present study was a highly engineered, structured work environment. Thus, as proposed in Chapter 2, out of a range of possible profiles, a *Controlled Dominant* profile emerged among these workers.

Finally, the lack of any *Autonomous Dominant* profiles, further reinforces the role of work and organizational context in the profiles that emerge in any given population. *Autonomous Dominant* profiles are related to better individual outcomes including wellbeing, engagement and job satisfaction (Howard et al., 2016), including making individuals less susceptible to burnout. The fact that these profiles do not emerge within a low-skilled population has implications for the well-being of the wider working population across the world, who represent the majority of workers, and for the practices of the organizations that employ them. Indeed, the findings highlight a potential motivational problem among these workers. But it is not without a solution: research has repeatedly shown that organizational leaders who choose to do so can successfully engage in interventions that support and enhance the internalization of motivation at work, regardless of the nature of the work (Ryan & Deci, 2017).

#### 7.3.2.2. The classification of motivation profiles

The current research builds on the theory around motivation profiles by proposing a comprehensive classification model of motivation profiles derived from self-determination theory. The model suggests that profiles can be characterised by the extent to which they are driven by *quantity* of overall motivation (and therefore relatively balanced with regard to autonomous and controlled forms) or driven by *quality* of motivation (and therefore reflect a dominant type of motivation: autonomous, controlled or amotivated). This model provides a lens for the post hoc analysis of outcomes, helping to identify differences in outcomes as a function of the interaction of various forms and levels of motivation. Such differences are

evident in the findings that distinct classifications were related to distinct outcomes of expansive job crafting (see Figure 7-D below). More specifically, among quantity-driven balanced profiles, the group with higher overall levels of motivation (*Balanced High*) engaged in more job expansive job crafting than the group with lower overall motivation (*Balanced Low*). Among quality-driven profiles, *Controlled/Amotivation Dominant* profiles demonstrated more erratic trajectories of expansive job crafting (non-continuous) than *Balanced (Low/High)* profiles (continuous) suggesting that, in line with Conservation of Resources theory (Hobfoll, 2001), the balanced nature of the latter profiles provides sufficient internal resources to sustain proactive work behaviours over time. Finally, as autonomous motivation and introjected motivation levels increase within a profile, level of expansive job crafting increase. This pattern is not replicated or reversed for controlled motivation therefore the presence of controlled motivation in a profile does not appear to be related to levels of expansive job crafting. Future research among populations which include *Autonomous Dominant* profiles may shed further light on this relationship.

Another interesting finding is that introjected motivation is aligned with levels of autonomous motivation within profiles and as such, with levels of expansive job crafting. Indeed, *Balanced High* had the highest levels of introjected motivation, followed by *Controlled Dominant*, *Balanced Low* and *Amotivation Dominant*. The majority of work motivation research has used composite measures that include introjected motivation as a form of controlled motivation. However, it has recently been argued that this practice may confound results (Howard et al., 2017). It has been suggested that introjected motivation is not strictly a controlled form of motivation given that it includes positive feelings of pride as well as more negative experiences of shame (Howard et al., 2017). The results of a recent meta-analysis confirm that it demonstrates similar levels of correlations with identified and external regulation and within the work domain specifically, introjected motivation is more closely correlated with autonomous forms of motivation, than controlled forms (Howard et al., 2017). The current research supports this conclusion and suggests that future SDT researcher should avoid the use of composite measures of controlled motivation that include introjected motivation.

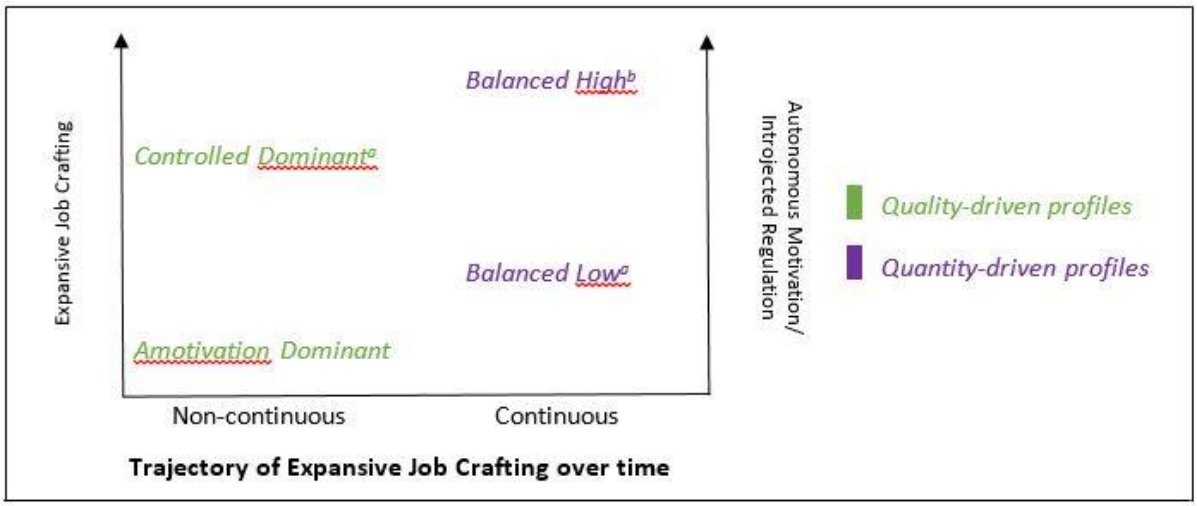



*Figure 7-E Expansive job crafting as a function of motivation profile*

*Notes.* [a] except SR (no change); [b] except SS (no change); Figure illustrates relative levels of expansive job crafting, autonomous motivation/introjected regulation based on standardized means.

A second set of useful distinctions from the classification model emerged when examining levels and trajectories of restrictive job crafting. Across the population as a whole, and among the three motivation-based profiles of *Controlled Dominant*, *Balanced High* and *Balanced Low*, the trajectory of restrictive job crafting was an inverse quadratic curve. Conversely, the trajectory for *Amotivation Dominant* profiles was a positive quadratic curve. *Amotivation Dominant* profiles are qualitatively distinct from all other profiles. Individuals in this profile group craft to reduce hindering demands in order to avoid action at work, a defensive strategy to retain and optimize limited work related resources (Baltes & Baltes, 1990) and to instead allow the investment of personal resources in domains outside of work (Hobfoll, 2001; Ryan & Deci, 2017). This leads to a different pattern of change in HD than profiles dominated by intention to act.

In addition, although the differences in levels of restrictive job crafting between profiles were not always significant, levels increased as overall quantity of motivational regulation increased in the profiles. This trend is mirrored in external material regulation, such that levels of restrictive job crafting appear to increase, albeit not always significantly, as levels of external material regulation within a profile. Of all motivational factors, external material regulation is the most strongly correlated with HD across all waves ($r$ = 0.36** - 0.41**). These observations suggest a relationship between restrictive job crafting and both overall quantity of motivation, and levels of external material regulation among working populations which future research should explore.

Overall, these observations highlight the potential of the classification model presented in this study to contribute to ongoing attempts to “unravel” the role of quantity versus quality of

motivation on behavioural outcomes (Van den Broeck et al., 2013). It provides a consistent nomenclature for future studies of motivation profiles. It helps to demonstrate how different qualities of motivation have distinct relationships with specific behavioural outcomes. It highlights the role of specific form of regulation such as amotivation and controlled motivation in the unsustainability of behaviours over time, and the effect of balanced or quantity based profiles in sustaining behaviours over time. It also highlights the unique nature of amotivation, differing semantically as it does from all other motivational factors as the intention not to act, and its resulting impact on how specific behaviours occur over time. Furthermore, as discussed later in this chapter, the full classification model proposed in this research provides a useful diagnostic tool for practitioners and managers in organisations.

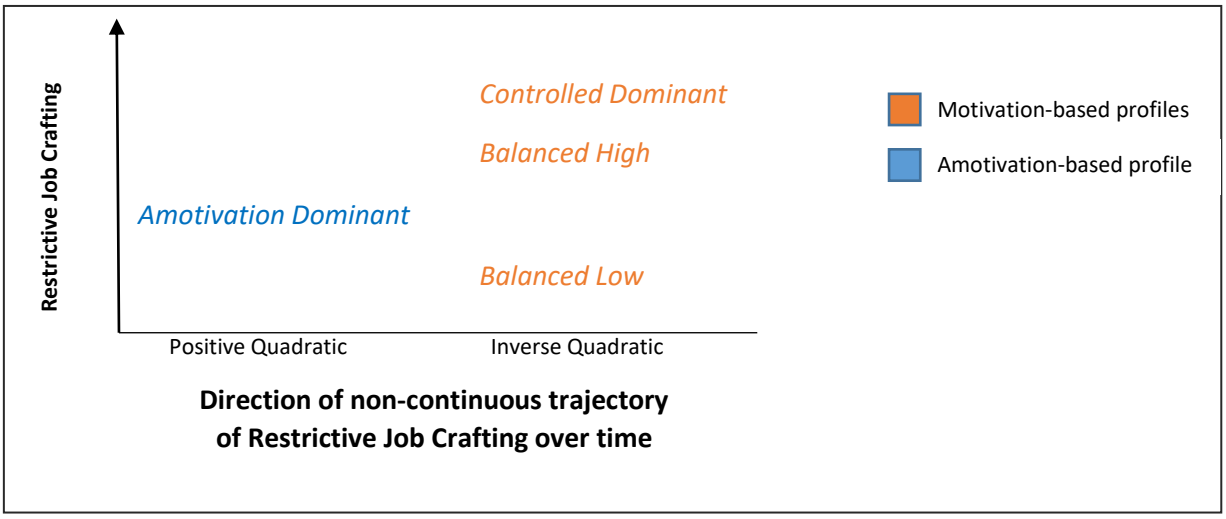



*Figure 7-F Restrictive job crafting as a function of motivation profile*

*Note.* Figure illustrates relative levels of restrictive job crafting based on standardized means.

#### 7.3.2.3. The exertion of effort

Research has demonstrated that amotivation is adjacent to external regulation on a continuum of self-determination but findings also suggest that it may be more distant from external regulation on a second continuum of effort or behavioural enactment (Howard et al., 2017; Sheldon et al., 2017). Job crafting activities involving seeking resources and challenges are useful indicators of this proposed continuum as they are effortful behaviours. The significant difference in levels of expansive job crafting between *Amotivation Dominant* and *Controlled Dominant* profiles in the present study provide initial support for the theory that while they demonstrate similar levels of self-determination, these forms of motivation differ significantly in associated behavioural enactment.

Previous research findings in SDT relating to how individuals handle demands at work suggest that autonomous motivation and need satisfaction act as mediators in the relationships between both job design and work pressure, and work effort (De Cooman et al., 2013). The findings of

the present study overwhelmingly support this research: as levels of autonomous motivation increase in a motivation profile, levels of the effortful behaviours of expansive job crafting increase. Those who experience the highest levels of autonomous motivation appear to be the most active and exert the most effort. Whereas those whose profiles are dominant in amotivation appear to be the least active.

Persistence over time is arguably an even more useful an indicator of effort. In the current study, *Balanced* profiles are more persistent and sustain effort over time when compared to profiles dominated by either controlled forms of motivation or amotivation. Future research should explore persistence in profiles dominated by autonomous forms of motivation which did not emerge in this population for this study.

#### 7.3.2.4. *Amotivation Dominant* profiles: active agent versus passive resister

It has been suggested that proactive behaviour is inherently autonomous (Ryan & Deci, 2017). Therefore it would be paradoxical to suggest that an individual who experiences the lowest levels of self-determination and autonomy, such as those in and *Amotivation Dominant* profile, would engage in proactive behaviour. By this argument, the current findings are indeed paradoxical: those who experience high levels of amotivation and very low levels of all other forms of motivational regulation engage in similar levels of the proactive work behaviour of restrictive job crafting to those who experience high levels of autonomous motivation. There are two possible explanations for this. Firstly, individuals are naturally active and agentic (Bandura, 1986; Ryan & Deci, 2017). If an individual is motivated not to act within a particular domain, they will act autonomously and proactively in support of this motive. In the present study, this means that they will act to reduce demands that require them to take actions they do not wish to take. In this regard, the intention not to act can be conceptualised as autonomous. This can be the case in work environments where, due to the experience of related amotivation, drivers of other work behaviours are experienced as overwhelmingly controlled.

The second explanation, discussed earlier in this chapter, is that the act of decreasing hindering demands is more adaptive and reactive to existing demands in the environment than it is proactive (Zhang & Parker, 2019). If this reconceptualization is accepted then, those in *Amotivation Dominant* profiles do not engage in proactive behaviour and therefore the question of whether it is autonomous or not becomes moot. Instead, they are passive resisters. They engage in what has been termed as “adaptive moves”, that reflect their experienced levels of motivation and amotivation, to resist the demands of their job (Berg, Wrzesniewski, et al., 2010).

There are a couple of caveats to the last point. In the current study, those in *Amotivation Dominant* profiles engaged in expansive job crafting on a non-continuous basis. While levels

were low, they were also dynamic: there were times over the course of the 9 month study where they engaged in higher levels of expansive job crafting. If these individuals do not assign internal or external value to their job but engage in expansive job crafting, the question is: does this behaviour reflect genuine job crafting driven by the self (Niessen et al., 2016)? For example, is it to avoid boredom at work? Recent research has found that controlled motivation is positively associated with boredom (van Hooff & van Hooft, 2014) and that job crafting can reduce boredom (Harju et al., 2016). Although these studies did not include measures of amotivation, it may be that those who experience amotivation also experience boredom at work, which they seek to relieve through occasional expansive job crafting. Alternatively, this finding may reflect an issue with the criterion-related validity of the JCS (Niessen et al., 2016; Tims et al., 2012) discussed later in this chapter. Going further, does an *Amotivation Dominant* profile preclude individuals from engaging in proactive self-driven job crafting as originally conceptualised (Wrzesniewski & Dutton, 2001) and does this reported behaviour instead reflect activities driven by other such as peer effects (Peeters et al., 2016) or implicit job demands (Bolino et al., 2010)? Recently, researchers have begun to question the extent to which restrictive job crafting can be conceptualised as proactive (Zhang & Parker, 2019); there is more work to do in the field to examine the role of motives as boundary conditions for proactive behaviour constructs.

To conclude, this study has revealed a unique set of motivation profiles among low-skilled workers among which there is a "peripheral" *Controlled Dominant* profile. However, the profiles which demonstrate the strongest links to positive individual and work outcomes (i.e. *Autonomous Dominant*) were not present. The proposed classification model allows for motivation profiles to be analysed across a number of dimensions, including quantity versus quality of motivation and the dominance of amotivation versus motivation. The study findings support SDT as a normative theory of basic needs and highlight opportunities for organizations to help workers meet their basic needs inside and outside work. It is also clear from this study that autonomous forms of motivation are related to greater levels of effort; and that external regulation is related to higher levels of effort than amotivation despite being adjacent on the continuum of self-determination. Finally, the results indicate that amotivated individuals engage in job crafting. Therefore amotivation is either somewhat autonomous in nature or reports of job crafting among those who are amotivated at work reflect reactive or adaptive behaviours; the appropriate conclusion remains to be investigated in future research. The next sub-section examines contributions to the field of job crafting theory and research.

### 7.3.3. Contributions to job crafting theory and research

The contributions of this study to job crafting theory and research are far-reaching and significant. Among them are the expansion of job crafting theory to include a temporal model of job crafting; the testing of propositions made early in job crafting theory about the dynamic nature of job crafting over time (Wrzesniewski & Dutton, 2001); new knowledge about the differing natures of expansive and restrictive job crafting as conceptualized in the JD-R model of job crafting (Tims & Bakker, 2010); and a detailed examination of the long-since proposed role of work motivation and meaning as antecedents of job crafting (Wrzesniewski & Dutton, 2001). These are described in detail in this sub-section.

#### 7.3.3.1. Expanding theory within job crafting research

The hypotheses in this study are underpinned by a new temporal model of job crafting, the first of its kind in the published theory and research, which synthesizes tenets of the JD-R model (Demerouti et al., 2001; Schaufeli & Bakker, 2004) and SDT (Ryan & Deci, 2017) among others. These hypotheses have been generally supported by the findings of this study. As outlined in Chapter 3, there has been a proliferation of cross-sectional and methodologically temporal studies in the field of job crafting. The majority of these have been quantitative studies seeking to confirm antecedents or outcomes of job crafting. Yet, there has been very little detailed theorizing within these. Indeed, until very recently, it has been difficult to identify any significant theoretical contributions within the job crafting literature since the publication of the original job crafting model (Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019) and the subsequent application of the JD-R model to identify types of job crafting (Tims & Bakker, 2010). The theoretical model of how job crafting happens over time proposed in the present study bucks this trend, expanding the theoretical basis of job crafting research to include a role for time and stimulating future job crafting research in new and unexplored temporal directions.

The application of SDT to job crafting in the current research represents a valuable contribution to theoretical developments in both literatures. Examinations of the antecedents of job crafting have often been piecemeal and lacking an overarching theoretical framework which SDT provides (Rudolph et al., 2017). SDT research has lacked specific theoretical propositions relating to how motivation profiles might impact behavioural enactment over time (Howard et al., 2016; Kanfer et al., 2017). Motivation profiles have the potential to be powerful predictors of behavioural outcomes at work because they reflect the combined effect of a number of personal and situational variables as outlined within self-determination theory and research (Ryan & Deci, 2017) including individual causality orientation, goal content, manager basic need support, work-related affect, work resource status, need supportive environmental characteristics, and the extent to which an individuals' basic psychological needs are met within

the work domain. In addition, they are the aligned with resource and demand crafting behaviours, representing both the level of existing internal resources available to invest in crafting and the nature of the individual's response to external demands in the environment.

#### 7.3.3.2. The dynamism of job crafting

Wrzesniewski and Dutton (2001) suggested that job crafting is dynamic and changes over time. This research is the first to test this contention through variable-centred and person-centred analytical lenses. From a variable-centred perspective, HD is the only form of job crafting that can be described as dynamic demonstrating non-continuous change over time. Expansive forms of job crafting of CD, SR and SS are stable at variable level, demonstrating relatively flat, continuous trajectories over a 9 month period. However, latent growth modelling allows researchers to look beyond the variable level and examine the variance among individuals (Lawrence & Hancock,1998). Individuals vary in levels of and trajectories of job crafting across all forms of job crafting. This finding provides unequivocal support for a core tenet of the original job crafting model: job crafting is indeed dynamic and demonstrates both stable and changeable trajectories across individuals. This contribution opens the door for research to examine the reasons why job crafting may be more stable for some and more changeable for others, a question which this research has addressed by examining the role of motivation profiles.

#### 7.3.3.3. Understanding expansive and restrictive job crafting

The current research greatly enhances our understanding of the distinct natures of expansive and restrictive job crafting. In general, trajectories in expansive forms of job crafting appear to be relatively aligned and stable over time. While previous cross-sectional research has confirmed consistently significant intercorrelations between expansive forms of job crafting (Rudolph et al., 2017), the current research, with its within-person longitudinal design, confirms that these relationship are consistent within individuals over time. Moreover, an examination of means plots confirm that the trajectories of CD and SS are particularly closely aligned within motivation profiles. This suggests that three expansive forms of job crafting, SS, CD, and to some extent SR, may be interdependent over time. As individuals craft increased job demands, they seek the social and structural resources that allow these demands to be met. The findings also confirm that individual forms of expansive job crafting are enacted at consistent relative levels over time, across the population and within motivation profiles, that is: SR is consistently the most frequently reported expansive job crafting activity followed by CD, and SS is the least frequently reported expansive job crafting activity.

What emerges quite dramatically from the present study is the very unique nature of restrictive job crafting, specifically, the act of decreasing hindering job demands. As opposed to expansive

job crafting which is positive in nature, decreasing hindering job demands is not value-loaded: it is neutral. While it has been argued to signal withdrawal from work (Rudolph et al., 2017; Tims, Bakker, & Derks, 2013), the current research demonstrates that this is not necessarily the case. Rather, it is utilised by individuals based on a range of differing work motives which may include, for those in *Amotivation Dominant* profiles, withdrawal. These differing motives help to explain its inconsistent or non-existent relationships in the research literature with a range of predictor and outcome variables such as big five traits, self-efficacy, autonomy, workload, work engagement, performance and job strain in variable-centred research (Rudolph et al., 2017).

A second unique characteristic of decreasing hindering job demands among forms of job crafting, is that it is dynamic and non-continuous over time in the population as a whole and within all motivation profiles. Individuals do not sustain continuous patterns of this restrictive job crafting behaviour over time. This reflects the adaptive and reactive nature of this behaviour as a response to the occurrence or perceived occurrence of a hindering job demand (Zhang & Parker, 2019). By contrast all other dimensions of the job crafting scale (Tims et al., 2012), which reflect expansive job crafting activities, require that individuals go beyond responding and instead seek out resources and demands. Berg, Wrzesniewski, et al. (2010) proposed the existence of adaptive acts of job crafting and included a qualitative example of an individual delegating perceived hindering job demands to allow them to engage in proactive job crafting. Integrating this approach with the JD-R conceptualisation job crafting, I suggest, in line with recent theorizing in the field (Zhang & Parker, 2019), that decreasing hindering job demands reflects adaptive job crafting, as opposed to proactive job crafting, and that this distinction explains its unique trajectory over time.

#### 7.3.3.4. Motives, meaning and job crafting outcomes

Wrzesniewski and Dutton (2001) proposed that intrinsic motivation is an antecedent of job crafting and results in more expansive and far-reaching crafting activities than extrinsic motivation. SDT expands on the intrinsic/extrinsic conceptualisation of motivation instead highlighting the distinction between autonomous internalized forms of motivation and controlled forms of motivation. Applying the SDT conceptualisation of motivational regulation to this proposition for the first time, the present study is the first to directly test the antecedent role of forms of experienced motivation in job crafting. The findings confirm Wrzesniewski and Dutton's (2001) prediction through an SDT lens: levels of expansive job crafting are highest in the profiles with the highest levels of autonomous forms of motivation (*Balanced High*), with levels of expansive job crafting declining as levels of autonomous motivation decline within the remaining three profiles (see Figure 7-D).

The meaning that individuals assign to their work has been widely identified as a driver of job crafting activities (e.g. Bertolotti, Macri, & Tagliaventi, 2005; Leana, Appelbaum, & Shevchuk, 2009) but has not previously tested as a covariate of the JD-R conceptualisation of job crafting (Tims et al., 2012). The "reason to" motives highlighted by a motivation profile help to illuminate in some detail the meaning that individuals ascribe to their jobs. For example in the present study, the individuals in the *Controlled Dominant* profile can be interpreted as viewing work primarily as a source of external material and social reward (External Regulation – Material, External Regulation – Social) which appears to be in all other respects relatively pointless (*Amotivation*), whereas those in the *Balanced High* group, view work primarily as source of ego validation (Introjected Regulation) and external social reward (External Regulation – Social), while being both important (Identified Regulation) and enjoyable (Intrinsic Motivation). Thus the present study provides the first confirmation of the role of work meaning, as distinct from meaningfulness (e.g. Maria Tims, Derks, & Bakker, 2016), as a covariate of expansive and restrictive crafting activities relating to both job demands and resources.

The authors of the original job crafting model have explicitly called for job crafting research to focus on motives (Wrzesniewski et al., 2013). Understanding meaning of work and related motives is key to accurately interpreting and predicting outcomes of reported job crafting activities (Niessen et al., 2016). For example, when people with an *Amotivation Dominant* profile proactively decrease hindering demands, we can infer, in line with SDT, that this is because they are motivated not to act in the work domain, not motivated to complete the demands of their job and that their basic needs are not met at work. These activities are unlikely to positively impact work performance. Alternatively, when those in the *Balanced High* profile decrease hindering job demands, we can infer from SDT that these activities may be related to focussing on other more important (identified regulation) or high profile (introjected regulation) work tasks. These reductions in demands are more likely to positively impact objective and/or supervisor-rated performance. The present study highlights the potential of motivation profiles not only to predict levels and trajectories of job crafting but, in future research, to predict related organizational outcomes.

In conclusion, the contributions of this study to job crafting theory include a theory of how and why job crafting activities are impacted by time, related evidence of the dynamic nature of job crafting, new information about the distinct natures of expansive and restrictive job crafting which sheds light on existing research showing differences in outcomes of these forms of job crafting (Rudolph et al., 2017), and a clear role for motivation profiles, and their related implications for work meaning, on levels and trajectories of job crafting over time.

### 7.3.4.Methodological contributions

The methodological contributions of this study include the use of the MWMS in full, the first application of the JCS in a fully temporal repeated measures design, the use of a within-persons longitudinal design in both fields, the combination of approaches to the use of latent classes in subsequent analyses and implications for the criterion-related validity of the job crafting scale.

In using the full MWMS scale without excluding any validated forms of motivation or using composite measures, this study is one of only handful among published studies that capture the full range and complexity of forms of motivational regulation outlined in SDT (e.g. Gagné et al., 2015; Howard, Gagné, Morin, & Van den Broeck, 2016). For example, by incorporating the often omitted amotivation sub-scale, this research responds to the call for further exploration of amotivation in SDT research (Howard et al., 2017). In addition, to the best of author's knowledge, since the publication of the MWMS, only one other published study measured the full range of motivational forms in a person-centred design, which allows for the simultaneous experience of different forms of motivation to be analysed (Howard et al., 2016). Furthermore, the use of latent profile analysis allows for naturally occurring profiles to emerge rather than a priori profiles to be demonstrated as in other methods (e.g. non-hierarchical cluster analysis). This is useful in reflecting the population as is it and in allowing profiles, like *Amotivation Dominant* which may not have been predicted as distinct from *Low Motivation* (Van den Broeck et al., 2013), to emerge naturally.

The use of the job crafting scale (Tims et al., 2012) in a four wave fully temporal study provided the first opportunity to the best of the authors' knowledge, to test the JCS for longitudinal measurement invariance, validating the scale for use in future longitudinal studies. Measurement invariance tests at configural and metric level allow researchers to be confident that the same items measure the same latent factor over time and that the strength of the relationship between each item and the factor is relatively stable over time. The benefit of using latent growth modelling for longitudinal studies is that partial measurement invariance can be controlled for by including the final measurement model, freeing only the latent variable intercepts. All forms of job crafting demonstrated the full invariance at configural and metric levels with the exception of increasing social job resources which suffered from a single instance of differential item function at the metric level which can be categorized as small (Kim & Willson, 2014) and as such demonstrated partial metric invariance.

Longitudinal research design is at an early stage in job crafting research. Studies that utilise a fully temporal quantitative design (Roe, 2008) to understand how job crafting behaviour unfolds over time are limited. This is first study in the field to examine latent growth trajectories of job crafting, as well as the first to analyse longitudinal outcomes of motivation profiles. The results

reveal that different types of job crafting happen differently over time: expansive job crafting is relatively stable, restrictive job crafting is non-continuous. Knowing this sheds light on existing research. For example, a variable level, HD occurs at lower levels than CD and these two forms of crafting demands demonstrate weak non-significant correlations in cross-sectional studies (Rudolph et al., 2017). Clearly, this may not always be the case; rather, at any point in time they may be more closely related as the erratic trajectory of HD moves toward the more stable trajectory of CD. It may be that CD is related to decreasing HD for some individuals at particular points in time.

Within-persons designs have been extremely limited within SDT and job crafting research. The examination of person-centred motivation profiles in SDT has emerged as one of the most exciting recent developments in the field of work motivation, bringing with it a host of new research possibilities (Howard et al., 2016). The present study taps into these possibilities, being the first of its kind to examine the impact of within-person variations in experienced motivation on longitudinal outcomes and more specifically on proactive work behaviours. Within job crafting literature, person-centred research is limited to a series of diary studies (e.g. Demerouti, Bakker, & Halbesleben, 2015; Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012; Maria Tims, B. Bakker, & Derks, 2014), none of which have explored either the relationships between forms of job crafting or changes within forms of job crafting over time. The current research has directly addressed this gap.

The use of latent profiles in subsequent analyses is relatively straightforward in relation to cross-sectional outcomes of latent profiles (Asparouhov & Muthen, 2014). However, when applying latent profiles to secondary models, such as latent growth models, additional complexities arise. The BCH approach, which uses weighting to account for measurement in error in classifications, applies list wise deletion which reduces power and introduces bias into an often complex set of analyses. The alternative multi-group latent growth modelling approach treats latent classes as known classes and therefore introduces error into the analysis but has the advantage of utilising FIML estimation to use all available data. This study took the novel approach of running the latter analysis and validating results with those of the former to maximise the strengths of both approaches. This approach allows researchers, especially those using within-person longitudinal models, to fully utilise hard-earned field data, while controlling for errors in classification.

Finally, the current research provides further data to contribute to recent debates about the criterion-related validity of the job crafting scale (Niessen et al., 2016; Tims et al., 2012). It has been argued in SDT that all proactive behaviour is autonomous in nature (Ryan & Deci, 2017) but the present study findings reveal that acts of crafting demands and resources are not

necessarily driven by autonomous forms of motivation. Job crafting, in its original iteration, is conceptualised as employee-driven, based on autonomous internal motives for need satisfaction (Wrzesniewski & Dutton, 2001). Thus motives are a key validator of whether a behaviour can be described as job crafting in its truest form. Individuals can craft the demands and resources of their jobs based on external sources of behavioural regulation such as material and social reward and punishment. While it is reasonable to argue that these crafting behaviours may still be proactive in that they are not explicitly required within the job, it is equally arguable that implicit demands for these job crafting behaviours are being communicated via the operationalisation of social and material reward and punishment mechanisms within the work environment.

The finding in this study that expansive job crafting among *Controlled Dominant* profiles is non-continuous over time provides some support for the latter argument. Among individuals primarily driven by controlled motivation, these behaviours may represent episodic reactions to implicit job demands indicated by reward or punishment systems. This argument is given additional weight by fact that the *Amotivation Dominant* group, characterised by a lack of intention to act, still engaged in behaviours to increase challenging job demands. Are these behaviours driven by implicit organizational demands for proactivity (Bolino et al., 2010)? Future research may need to examine if factors, other than employee-driven proactivity, are at play in driving these behaviours.

Conversely, for employees who experienced levels of autonomous work motivation at least equal to those of controlled motivation (*Balanced Low/Balanced High*), it can be inferred that at least some of their job crafting behaviours are aligned to the original conceptualisation of job crafting, and represent employee-driven crafting to satisfy needs for autonomy, competence and relatedness. The autonomous nature of these crafting behaviours is reflected in their continuous trajectory over time which are driven by a stable internal set of basic needs and therefore are much less susceptible to change based on reactions to the dynamics of social and material rewards and punishments.

These conclusions have implications for how researchers measure job crafting behaviours and ensure criterion-related validity (e.g. JCS, Tims et al., 2012). The requirement to capture motives and meaning within job crafting measures themselves or within concurrent measures has been raised by researchers (Lu et al., 2014; Niessen et al., 2016). The findings of current research suggest that not all behaviours measured by the JCS may constitute proactive job crafting. It is of fundamental importance for researchers to demonstrate the validity of job crafting measures and therefore their research findings, to ensure knowledge of job crafting, its

antecedents and outcomes, both cross-sectionally and longitudinally, is built on solid foundations.

This section has outlined the broad and far-reaching contributions of this study to organizational theory and research. These contributions include support for background theoretical perspectives on subjectivity and social constructionism at work; theoretical and research contributions to the field of work motivation, advancing knowledge in the area of motivation profiles and the nature of amotivation; new theorizing and testing of the role of time and motivation in job crafting, adding clarity to the distinct natures of expansive and restrictive job crafting; and, finally, new applications and tests of existing measures, novel applications of analytical procedures,. The sections that follow highlight specific implications for practice, the limitations of the present study, and avenues for future research.

## 7.4. Implications for Practice

### 7.4.1. Applying the classification model of motivation profiles to organizations

Considering the range of motivation profiles that can emerge in a given organization, a comprehensive classification model can provide valuable insights for practitioners. For example, the green boxes in Figure 7-G indicate the motivation profiles that occur in the current organisation from a range of possible motivation profiles derived from self-determination theory. This is useful diagnostic tool for organisation practitioners looking to enhance performance and motivation outcomes among specific groups of employees. In reviewing their emergent profiles, managers and practitioners can tailor interventions to specific groups of employees rather than using broad sweeps that do not address the needs of all. For example, the lack of *Autonomous Dominant* profiles and the presence of *Balanced Low* and *Amotivation Dominant* profiles in the current sample suggests that the need for autonomy is not being met at work for a significant portion of the workforce. This could be addressed through interventions like work redesigns. The *Balanced High* and *Controlled Dominant* groups suggest a dominant role for external motivators such as reward or recognition among some groups, suggesting that changes to these motivators should be approached with caution as they could have significant impacts on work outcomes.

| | | | | |
|---|---|---|---|---|
| Autonomous Motivation | High | Highly Autonomous Dominant | Autonomous Dominant | Balanced High |
| | Moderate | Autonomous Dominant Moderate | Balanced Moderate | Controlled Dominant |
| | Low | Balanced Low | Controlled Dominant Moderate | Highly Controlled Dominant |
| | Amotivation Dominant | Low | Moderate | High |
| | | Controlled Motivation | | |

*Figure 7-G Motivation Profiles in the focal organization of the current study (highlighted in green)*

### 7.4.2.The stability of expansive job crafting at work

All forms of expansive job crafting have consistently been associated with positive outcomes for organizations and individuals including job satisfaction, work engagement, contextual performance and other-rated performance (Rudolph et al., 2017). Therefore, it is heartening for managers and organizational leaders to understand that, at a variable level, this behaviour is sustainable over time. At the same time, it is important for managers to be aware that stability of increasing challenging job demands, the form of job crafting that demonstrates the strongest relationship with other-rated performance (Rudolph et al., 2017), is associated with similar levels of stability in crafting to increasing social and structural job resources over time. Therefore, managers seeking to facilitate crafting endeavours that increasing challenging job demands must also ensure they make available, and respond to requests for, structural and social resources to allow positive performance impacts to be sustained over time.

Individuals enact the same job in different ways (Biddle, 1979; Graen, 1976; Katz & Kahn, 1978). The current case study confirms that there is significant variance in levels and trajectories of proactive behaviours among a homogenous group of employees. However, it goes a step beyond this descriptive analysis and seeks to explain why this might be the case through the application of motivation profiles. While expansive job crafting is stable for those with *Balanced* profiles (High/Low), the remaining 20% of the population in the present study demonstrated non-continuous trends. Job crafting interventions demonstrably change job crafting behaviours and subsequent work outcomes (van Wingerden et al., 2017). Understanding motivation profiles can help managers to direct these job crafting interventions toward groups who may benefit most.

### 7.4.3. The neutral status of restrictive job crafting

Although the restrictive job crafting act of decreasing hindering job demands has not consistently demonstrated relationships with positive individual and work outcomes (Rudolph et al., 2017), this research suggests that this may be related to the variety of possible motives for this activity. I therefore argue that restrictive job crafting is neither inherently positive nor negative for organizations. Instead, any effect on the organization is related to the motives behind it. It is therefore entirely possible that decreasing hindering job demands can demonstrate a positive relationship with individual and work outcomes but only for those with particular motivation profiles such as *Autonomous Dominant* or *Balanced* motivation profiles. This is because individuals in these motivation profile groups enjoy their work and believe it is important. When they reduce demands, it is likely to be because they experience them as genuinely as hindering their ability to meet more important demands, a form of employee-led job design which has the potential to increase performance at work. It is less likely that this relationship will be present where individuals seek to avoid even basic job demands at work (e.g. *Amotivation Dominant* profile) or where individuals seek to avoid job demands that do not generate social or material rewards (e.g. among *Controlled Dominant* profiles). These proposed relationships require examination in future research but their implication is that managers would be best placed investing their resources in supporting basic need satisfaction at work, rather than attempting to minimize the restrictive job crafting activities of employees.

### 7.4.4. Supporting autonomous motivation at work

Research has repeatedly shown that support for the satisfaction of basic needs at work can lead to the experience of autonomous forms of motivation (Van den Broeck et al., 2016). Motivation profiles with high levels of autonomous motivation, that have similar level or lower levels of controlled motivation demonstrate positive work outcomes (Howard et al., 2016). In the present study, while an *Autonomous Dominant* profile did not emerge, the profile with the highest levels of autonomous motivation, and equivalent levels of controlled motivation, demonstrated the highest levels of expansive job crafting and these were persistent over time. Conversely, the *Controlled Dominant* profile demonstrated lower levels of expansive job crafting that were not consistently sustained over time. Leaders in all working contexts, by supporting the satisfaction of basic needs for autonomy, competence and relatedness at work, can directly impact experienced work motivation and in turn increase levels and sustainability of expansive job crafting and of effective employee led job design in the form of restrictive job crafting.

## 7.5. Limitations

While this study makes a number of valuable contributions to motivation and job crafting research, there are limitations.

Firstly, the study was conducted among low-skilled workers within a single organization in the UK. As a relatively homogenous group, the generalizability of this study may be limited to similar types of workers in similar working environments. However, the fact that two 'core' motivation profiles emerged replicating those found in a number of motivation profile studies among heterogeneous participants suggests that at least some of the findings can be generalized to all working populations.

Secondly, I relied on self-report measures as an appropriate tool for the measurement of unobservable phenomena that were the focus of this study (Bartlett, 2005): job activities such as crafting may not visible to managers and peers (Tims et al., 2012) and work motivation is an internal psychological experience (Bartlett, 2005). However, self-report measures are susceptible to common-method bias (Podsakoff et al., 2012). The study adopted a number of strategies to minimize this risk including randomized question order, and clear scale midpoint and labelling. The occurrence of non-significant and negative correlations in the data suggested that common method bias was not an issue in this study (Spector, 2006).

Latent class growth modelling is advantageous in allowing a range of trajectories to be examining over time and allow intercepts and slopes of these trajectories to predict and be predicted by auxiliary variables (Jackson, 2010; Lawrence & Hancock, 1998). However, its power increases as the number of available data points increases (Davey & Savla, 2009; S. Y. Kim et al., 2014). While the 46% response rate in the present study across all data points was sufficient for FIML to estimate missing data, it reduced the number of possible data points available and, therefore, statistical power as a result. Data points are impacted by sample size: in the current multi-group LGM, two of the motivation profiles groups (*Amotivation Dominant, Controlled Dominant*) had samples of less than 200. Due to list wise deletion, this issue was exacerbated in the BCH approach with LGM. As a result, neither LGM approach could detect significant growth parameter to reflect patterns of change distinctly evident on the means plots for these groups (Davey & Savla, 2009). While the means plots were relied upon as required, this issue makes the findings for these groups somewhat preliminary in nature. Finally, while the four wave design of the present study is acceptable for LGM (Lawrence & Hancock, 1998), additional waves would be optimal to ensure trajectories are accurately captured over time and LGM has sufficient power to identify them as significant.

A small degree of variance in the increasing social job resources subscale was detected at the metric level (Kim & Willson, 2014). Future research needs to determine if these results represent an anomaly specific to this population or an inherent issue with this sub-scale.

While including 10 variables (6 motivation factors and 4 job crafting factors), along with demographic variables, a number of variables shown to demonstrate antecedent relationships

with job crafting were omitted (e.g. personality related variables, variables related to perceived opportunities to craft). This ensured sufficient statistical power to complete a complex set of analysis and was justified by the fact that motivational regulation is a broad construct which captures the impact of situational variables and manager support on basic need satisfaction and the impact of individual factors on perceptions of the work environment. Future research should aim to include antecedents of job crafting to determine the extent to which they explain unique variance beyond that of motivation profile (Meade et al., 2009).

Finally, my research did not include a quantitative measure of cognitive job crafting. It is one of the valid critiques of the JD-R model of job crafting and its related measurement scale (Tims et al., 2012) that it does not include this dimension (Niessen et al., 2016; Zhang & Parker, 2019). Cognitive job crafting is an important concept within job crafting theory. It has been demonstrated qualitatively (Berg, Wrzesniewski, et al., 2010) and in some limited quantitative studies (Chen, Yen, & Tsai, 2014; Niessen et al., 2016; Slemp & Vella-brodrick, 2013). However, the success of the present study as a quantitative longitudinal four wave design was contingent upon the use of a well-validated internally consistent quantitative measure of job crafting. The only existing measure that meets these criteria is the JD-R based job crafting scale (Rudolph et al., 2017; Tims et al., 2012).

### 7.6. Future Research

There are a number of questions relating to motivation and job crafting which the current research did not address and which future research might explore. While some of these are mentioned earlier in this chapter, a number of key avenues are highlighted here.

Fully temporal longitudinal research is in its infancy in both fields of motivation profiles and job crafting and has the potential to answer many of these questions. Firstly with regard to motivation profiles: how stable are they when the working environment is stable? Do motivation profiles change over time? Age was the only demographic variable in this study related to profile group membership; this suggests some changeability. If so, in what timeframe? Daily, weekly, monthly or even over years? Are some profiles more stable that others? What roles do causality orientation and goal contents play in these changes? Secondly, if motivation profiles do change, do they demonstrate aligned trajectories with those of job crafting? While motivation has been demonstrated to be an antecedent of job crafting in the present study and others (e.g. Niessen et al., 2016), it is possible that this relationship is reciprocal. Previous job crafting research has identified motivation-related factors as demonstrating reciprocal relationships with job crafting (e.g. engagement; Tims, Bakker, Derks, & van Rhenen, 2013). Therefore it may be that job crafting activities predict changes in motivation profile, and even that the trajectories of various forms of motivation are related to those of job crafting. Thirdly,

job crafting activities themselves appear to vary as a function of time in role. Future research should explore longitudinal patterns in newcomer job crafting, and consider using alternative time lags (e.g. long term trends over years) to build on the current findings of how job crafting occurs over time.

The nature and enactment of cognitive crafting requires further examination in job crafting literature, including how it occurs over time. It may be that some forms of cognitive crafting reflect the internalization or externalization of motivation (Niessen et al., 2016). Future investigations may help to illuminate and expand not only theory on the phenomenon of cognitive job crafting but also the process of internalization of motivation and, less well developed theorizing around regressive transitions (Ryan & Deci, 2017). Cognitive crafting can occur at job and task level (Berg, Wrzesniewski, et al., 2010). In the present study, motivation profile is measured at job level, whereas job crafting activities are measured below job level. It is, of course, perfectly valid and of interest, to test the impact of job-level of motivation on below job-level crafting, not least because many forms of job crafting occur only at a demand, resource, task or relationship level. However, future research should explore the impact of job level of motivation on job-level forms of crafting, such as cognitive crafting.

By design, the present study controlled for a number of situational variables including job characteristics such as autonomy, rank, task interdependence and organizational uncertainty by being conducted among a homogenous low-skilled population within the same stable organization. However, with the exception of the impact of manager need support on motivational regulation, the role of the supervisor relationship was not accounted for in the design. Research findings suggest that those in lower ranking positions have been found to dependent on the support of managers to allow them to craft their jobs (Berg, Wrzesniewski, et al., 2010). Future research should explore the effect of supervisor trust and supportive supervision on levels and trajectories of job crafting and their relationship with motivation profiles.

Finally, a number of hypotheses in this study included *Autonomous Dominant* profiles but, as this profile did not emerge in the study population, these could not be tested. Future research should explore the proposed relationships between *Autonomous Dominant* motivation profiles and the level and trajectory of expansive and restrictive job crafting.

## 7.7. Conclusion

This study was the first of its kind in adopting a fully temporal longitudinal design to identify motivation profiles among low-skilled workers and examine their role in levels and trajectories of job crafting over time. It proposed a classification model for motivation profiles and a theoretical model of job crafting over time, extended with an antecedent role for motivation

profile group. It tested these models utilizing latent profile analysis, second-order factor LGM and first-order factor LGM (BCH approach and multi-group), generating results at the variable and person level from data contributed by a sample of 992 workers in a single organization across four waves.

Results confirmed the existence of core motivation profiles and identified context-specific peripheral profiles, demonstrating inherent differences in the stability of expansive versus restrictive job crafting activities over time and the role of motivation profiles in predicting levels and trajectories of job crafting. The results highlight the potential of motivation profiles to explain proximal work behaviours and predict individual and work outcomes, the value in examining the effect of time on job crafting, and the importance of motives in job crafting research (Wrzesniewski et al., 2013) both to ensure criterion-related validity of job crafting research (Niessen et al., 2016) and to allow for the accurate interpretation of job crafting activities and their related outcomes.

Practical implications include the importance of focussing on creating need supportive environments for employees that encourage the internalization of motivation leading to increased levels of expansive job crafting which persist over time. The avenues for future research include explorations of the dynamics of motivation profiles, trajectories of cognitive job crafting over time, and an examination of the cross-section and longitudinal relationships between cognitive job crafting and motivational variables.

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# Appendix A Plain Language Statement

Dear UK Team Member

As you may be aware, our appraisal/performance management processes across EMEA are currently being reviewed. Within the review, the UK front line operations teams are participating in a pilot of Appraisal/Performance Management tools. Across different parts of the operations, teams are using the current FedEx UK Appraisal process, an Annual Performance Development Discussion (PDD) process or a Quarterly PDD process.

In order to assess the impact of these tools, we are conducting a series of four work motivation surveys over 12 months. Each survey will ask you to respond to statements about your current work motivation and also provide an open text area for you to give general feedback about appraisal and performance management processes. This is the final survey. It is important that you repeat the survey as your feedback from all four surveys over the course of the year allows us to assess the impact of different appraisal cycles e.g. annual, quarterly.

These surveys give UK front line employees the unique opportunity to have an input into the future of our appraisal and performance management processes in EMEA. This feedback will allow the EMEA team to ensure that the processes we implement will be effective and motivational. Your survey responses and the performance assessments completed by managers will also form part of an academic research project about motivation and performance management at work which is being conducted by Sarah Farrell at Dublin City University.

Each survey takes 10-15 minutes to complete. Please take care to complete all parts of the survey. Once completed, please return your survey via post in the sealed freepost envelope provided. Should you have any questions, you can speak to your manager, your local HR representative or Sarah Farrell/Katarzyna Rado in the OD team directly at orgdevemea@fedex.com,

Thank you in advance for your participation,

Sarah Farrell - EMEA OD Team

*Questions related to the academic research can be directed to Sarah Farrell at sarah.byrne78@mail.dcu.ie.* If participants have concerns about the academic research and wish to contact an independent person, please contact: *The Secretary, Dublin City University Research Ethics Committee, c/o Research and Innovation Support, Dublin City University, Dublin 9. Tel +35317008000.*

***A note on consent, anonymity and confidentiality.***

Completion of each survey is voluntary and you can withdraw from participating in the surveys at any time. As collecting your signature to confirm your consent could compromise anonymity, completion of each survey indicates that you have understand the purpose of the survey and have provided your informed consent to participate in the EMEA review and research project. The survey does not require you to enter your name or contact information. The survey does require your employee PIN to allow us to link your responses across each of the four surveys and performance data. The employee PIN will not be used to access any data about you and therefore we request you to provide demographic information (gender, age, job title and length of service).

Your responses will be sent directly to a secure third party data processor, Wyman Dillon (www.wymandillon.co.uk), and once processed will be sent via an encrypted data file directly to Sarah Farrell/Katarzyna Rado in the OD team. Wyman Dillon have signed a non-disclosure agreement to ensure that no data from the paper surveys is disclosed to anyone outside of the data processing team. Upon receipt of the data file from Wyman Dillon, your employee pin will be removed from the encrypted data file to ensure anonymity.

At no time will anyone else in the Company except Sarah Farrell/Katarzyna Rado in the OD team have access to your individual response, either via paper or online survey. Paper copies of the survey will stored at a secure location and will be destroyed upon completion of data processing. All online data gathered and data files will be fully protected using encrypted files and password protected survey tools throughout the review. All online or soft copy data will be destroyed via deletion at the completion of the review and research project.

The outcome of the pilot programme, including information gathered from the four questionnaires over the course of the year, will be summarized and reported back to you, as part of the UK Team. Data will only be reported in aggregate for groups of 3 or more and in ways that ensure participants cannot be identified. If you are interested in receiving further information on the outcome of the academic research project, please contact Sarah Farrell at sarah.byrne78@mail.dcu.ie.

# Appendix B Survey Questions

| | |
|---|---|
| **EMPLOYEE PIN NUMBER:** | |
| *(This is required to link your responses across four surveys, not to link responses to your identity. Please note if your PIN is not included, we cannot include your responses in the review).* | |
| **AGE:** | |
| **GENDER:** | |
| **JOB TITLE:** | |
| **NUMBER OF YEARS IN CURRENT JOB:** | |
| **IN WHICH MONTH WAS YOUR LAST PERFORMANCE DISCUSSION (PR/PDD):** | |
| *(This may be a discussion with your manager, team leader or supervisor. Please enter month and year, for example, June 2014. If you have not had a Performance Discussion, please write "NONE").* | |

| **Please indicate the degree to which each statement is true for you *over the past three months* at work by circling a number from 1 to 5** | **Not at all true** → **Very true** |
|---|---|
| ***EXAMPLE: I decide on my own how I do things*** | 1 2 3 4 5 |
| 1. I try to make my work more challenging by examining the underlying relationships between aspects of my job | 1 2 3 4 5 |
| 2. I put efforts into my job because I have fun doing my job | 1 2 3 4 5 |
| 3. I have a lot of say about what happens on my job | 1 2 3 4 5 |
| 4. I don't put efforts into my job because I really feel that I'm wasting my time at work | 1 2 3 4 5 |
| 5. It is my responsibility to decide how the job gets done | 1 2 3 4 5 |
| 6. My job activities are personally meaningful to me | 1 2 3 4 5 |
| 7. I ask colleagues for advice | 1 2 3 4 5 |
| 8. I try to ensure that I do not have to make many difficult decisions at work | 1 2 3 4 5 |
| 9. I put efforts into my job because others offer me greater job security if I put enough effort in my job (e.g. employer, supervisor…) | 1 2 3 4 5 |
| 10. I can rely on my supervisor's work-related judgements | 1 2 3 4 5 |
| 11. I put efforts into my job because others will respect me more (e.g. supervisor, colleagues, family) | 1 2 3 4 5 |
| 12. I can depend on my supervisor to back me up in difficult situations | 1 2 3 4 5 |
| 13. I put efforts into my job to get others approval (e.g. supervisors, colleagues, family) | 1 2 3 4 5 |
| 14. The work I do is meaningful to me | 1 2 3 4 5 |
| 15. I put efforts into my job because I personally consider it important to put efforts into this job | 1 2 3 4 5 |
| 16. I feel prepared for most of the demands of my job | 1 2 3 4 5 |
| 17. If there are new developments, I am one of the first to learn about them and try them out | 1 2 3 4 5 |
| 18. When an interesting task comes along, I offer myself proactively as a task co-worker | 1 2 3 4 5 |
| 19. I try to ensure that my work is not too emotionally intense | 1 2 3 4 5 |
| 20. I ask my supervisor to coach me | 1 2 3 4 5 |
| 21. If I believe in an idea, no obstacle will prevent me from making it happen | 1 2 3 4 5 |
| 22. I can depend on my supervisor to handle an important issue on my behalf | 1 2 3 4 5 |
| 23. I love being a champion for my ideas, even against others' opposition | 1 2 3 4 5 |
| 24. I try to learn new things at work | 1 2 3 4 5 |
| 25. I do little because I don't think this work is worth putting efforts into | 1 2 3 4 5 |
| 26. I try to develop my abilities | 1 2 3 4 5 |
| 27. I regularly take on extra tasks even though I do not receive extra salary for them | 1 2 3 4 5 |
| 28. I put efforts into my job because the work I do is interesting | 1 2 3 4 5 |
| 29. I put efforts into my job because what I do in my work is exciting | 1 2 3 4 5 |
| 30. When there is not too much to do at work, I see it as a chance to start new tasks | 1 2 3 4 5 |

| **Please indicate the degree to which each statement is true for you *over the past three months* at work by circling a number from 1 to 5** | **Not at all true → Very true** |
|---|---|
| 31. I put efforts into my job because otherwise I will feel bad about myself | 1 2 3 4 5 |
| 32. The work I do is very important to me | 1 2 3 4 5 |
| 33. I don't know why I'm doing this job, it's pointless work | 1 2 3 4 5 |
| 34. No matter what the odds, if I believe in something I will make it happen | 1 2 3 4 5 |
| 35. I can remain calm when facing difficulties in my job because I can rely on my abilities | 1 2 3 4 5 |
| 36. I put efforts into my job because putting efforts into this job aligns with my personal values | 1 2 3 4 5 |
| 37. I put efforts into my job because I have to prove to myself that I can | 1 2 3 4 5 |
| 38. My past experiences in my job have prepared me well for my occupational future | 1 2 3 4 5 |
| 39. I look to my supervisor for encouragement | 1 2 3 4 5 |
| 40. If I see something I don't like, I fix it | 1 2 3 4 5 |
| 41. I put efforts into my job because it makes me feel proud of myself | 1 2 3 4 5 |
| 42. I decide on my own how I do things | 1 2 3 4 5 |
| 43. I put efforts into my job because I risk losing my job if I don't put enough effort in it | 1 2 3 4 5 |
| 44. I organize my work so as to minimize contact with people whose expectations are unrealistic | 1 2 3 4 5 |
| 45. I excel at identifying opportunities | 1 2 3 4 5 |
| 46. I organize my work in such a way to make sure that I do not have to concentrate for too long a period at once | 1 2 3 4 5 |
| 47. I can rely on my supervisor's task-related skills and abilities | 1 2 3 4 5 |
| 48. Whatever comes my way in my job, I can usually handle it | 1 2 3 4 5 |
| 49. I ask whether my supervisor is satisfied with my work | 1 2 3 4 5 |
| 50. I make sure that my work is not too mentally intense | 1 2 3 4 5 |
| 51. I try to develop myself professionally | 1 2 3 4 5 |
| 52. I put efforts into my job because putting efforts into this job has personal significance to me | 1 2 3 4 5 |
| 53. I ask others for feedback on my job performance | 1 2 3 4 5 |
| 54. I put efforts into my job because others will only reward me financially if I put enough effort into my job (e.g. employer, supervisor…) | 1 2 3 4 5 |
| 55. I put efforts into my job to avoid being criticized by others (e.g. supervisor, colleagues, family) | 1 2 3 4 5 |
| 56. I make sure that I use my abilities to the fullest | 1 2 3 4 5 |
| 57. I put efforts into my job because otherwise I will feel ashamed of myself | 1 2 3 4 5 |
| 58. When I am confronted with a problem in my job, I can usually find several solutions | 1 2 3 4 5 |
| 59. I manage my work so that I try to minimize contact with people whose problems affect me emotionally | 1 2 3 4 5 |
| 60. I meet the goals that I set for myself in my job | 1 2 3 4 5 |
| 61. I can rely on my supervisor to represent my work accurately to others | 1 2 3 4 5 |
| 62. I have the freedom to decide what I do on my job | 1 2 3 4 5 |
| 63. I am always looking for better ways to do things | 1 2 3 4 5 |
| 64. I can be myself in my job | 1 2 3 4 5 |

| | |
|---|---|
| 1. On a scale from 1-7 where 7 is the highest, please indicate what is the importance of work and its meaning in your life at the moment? | **1 2 3 4 5 6 7** |
| 2. Distribute a total of 100 points in order to signify the relative level of importance of the following areas in your life over the past three months: | |
| **my family and friends** | _____% |
| **my leisure and hobbies** | _____% |
| **my community** | _____% |
| **my work** | _____% |
| **my spiritual or religious life** | _____% |

# Appendix C Ethical Approval Letter

Ollscoil Chathair Bhaile Átha Cliath
Dublin City University

DCU

Ms Sarah Farrell
DCU Business School

2nd October 2014

**REC Reference:** DCUREC/2014/189

**Proposal Title:** Patterns of work meaning: Their impact of job crafting activities and work role performance

**Applicants:** Ms Sarah Farrell, Dr Finian Buckley

Dear Sarah,

Further to expedited review, the DCU Research Ethics Committee approves this research proposal. Materials used to recruit participants should note that ethical approval for this project has been obtained from the Dublin City University Research Ethics Committee. Should substantial modifications to the research protocol be required at a later stage, a further submission should be made to the REC.

Yours sincerely,

DCU
Research & Innovation

Dónal O'Mathúna

Dr. Donal O'Mathuna
Chairperson
DCU Research Ethics Committee

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