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The Development and Validation of a Measure of Organisational Flexibility

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Thesis submitted in partial fulfilment of the requirements for the degree of Doctor of
Philosophy (PhD).

Candidate Declaration of Authorship

I, Anneli Gascoyne, confirm that this thesis and the work presented in it is entirely my own.
Where I have consulted the work of others, this has been clearly acknowledged within the
thesis.

Signature: _____ Date: _____

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Abstract

This thesis describes four empirical studies designed to develop and validate a scale to measure organisational flexibility, and a protocol study designed to guide an initial assessment of the scale's utility. The organisational flexibility scale (OFS) was developed to reflect a theoretical model (Bond, 2015), guided by contextual behavioural science, for predicting and influencing individual and organisational effectiveness and wellbeing. Results from the analysis of two distinct samples support the structure, reliability and validity of the OFS. From an initial sample of 303 individuals, results of an exploratory factor analysis indicate a scale with a unidimensional, seven-item structure. From a second sample of 331 individuals, from 31 organisations, results of a multilevel confirmatory factor analysis support the proposed structure, at both the individual and organisational levels. Data from the second sample also support the scale's reliability and validity. In terms of construct validity, results indicate a small-to-moderate relationship with psychological flexibility, and a very strong relationship with people's perceptions of their organisations' shared vision, open-mindedness, and commitment to learning (components of organisational learning). Yet the relationships between the OFS and the latter constructs are sufficiently distinct to be able to discriminate between them. In terms of criterion-related validity, results indicate that the OFS significantly predicts individuals' mental health. They also indicate that the OFS significantly predicts individual and collective work motivation and job satisfaction, and individual and shared perceptions of organisational performance. Furthermore, the OFS offers incremental prediction beyond psychological flexibility and organisational learning. In order to further this research towards an assessment of the utility of the OFS, this thesis has proposed that a pilot intervention study is conducted, and it provides a protocol for doing so. The overall implications of these findings are discussed, for their relevance in future research and practice.

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Chapter 1. Introduction

1 General Introduction

The overall aspiration for this research is towards improving the ability of organisations to survive and thrive, while also helping the people that work within them to thrive, too. In pursuit of this aspirational aim, the current research is focused on a concept and model of organisational flexibility (Bond, 2015). Organisational flexibility refers to organisations that are both ‘mindful’ and committed to pursuing their aspirational goals. Bond believes that by enhancing organisations’ flexibility we can improve their effectiveness and wellbeing, and in doing so, create organisational environments that promote the mental health and behavioural effectiveness of their employees. The overarching hypothesis is that organisational flexibility is able to both predict and influence individual and organisational effectiveness and wellbeing.

We understand that for organisations to survive and thrive, they need to find ways to perform effectively over both the short and long term. To manage effectiveness, mainstream organisational literature typically focuses on the organisation’s reliability and efficiency, for short-term effectiveness, and its adaptability, for long-term effectiveness. The challenge of managing these competing strategies has been described as the “basic dilemma of organisational life” (Quinn & Rohrbaugh, 1983, p. 370). Indeed, the competing demands of such strategies have been shown to place pressure on employees that can lead to an adverse impact on their wellbeing (Karasek, 1979; Smith & Lewis, 2011). They have also been shown to trigger defensive responses, such as inertia or rigid attachment to familiar processes, that can lead to an adverse impact on employees’ effectiveness (Menzies, 1970). In turn, these effects can be expected to have an impact the organisations’ effectiveness, too. To limit such effects, organisations have been increasingly turning to initiatives to help employees to manage their health and productivity (such as time management, goal setting, physical exercise, mindfulness, resilience, etc.). Indeed, “wellbeing strategies”, designed to encompass

both health and productivity, were highlighted as being in the “top three workplace trends”, in a 2018 UK Human Capital Trends report (Deloitte, 2018). However, the report also points out a risk to the organisational bottom line of investing in unsystematic or ill-defined approaches to wellbeing; which is pertinent, given that research has shown mixed results for workplace wellbeing interventions (Daniels, Gedikli, Watson, Semkina, & Vaughn, 2017; Richardson & Rothstein, 2008).

A particular strategy that does have strong supporting evidence for improving people’s effectiveness and wellbeing in the workplace (as well as in other contexts), even under difficult circumstances, is acceptance and commitment training/therapy (ACT; Hayes, Strosahl, & Wilson, 1999). ACT works by enhancing individuals’ psychological flexibility, which has been shown to be a primary determinant of mental health and behavioural effectiveness (Hayes et al., 1999). Psychological flexibility is enhanced by cultivating mindfulness, combined with a commitment to values-based action, that help individuals to thrive (Bond & Lloyd, 2016). ACT and psychological flexibility were originally developed for use in a clinical context, and have a rigorous philosophical, scientific, theoretical and practical basis. They have since been shown to be applicable across levels of functioning, from serious mental ill-health to elite athletic performance (Cenci, 2016), and across settings. Indeed, ACT and psychological flexibility have been demonstrably effective in the workplace, for more than 18 years, as well as in clinical settings for more than 25 years. However, the focus on *psychological* flexibility is necessarily limited to effecting change in individuals (Bond, Lloyd, Flaxman, & Archer, 2016). Bond believes that we can scale up the concept of psychological flexibility, to the organisational level, as a strategy for creating flexible, effective and healthy organisations (Bond, 2015). This strategy provides the foundations for the current research.

In order for us to evaluate Bond's model of organisational flexibility, we need to be able to measure the model's ability to both predict and influence individual and organisational effectiveness and wellbeing. However organisational flexibility is not an objective entity, with an obvious and direct gauge for measuring it. It is a subjective concept, that describes the behaviour of organisations. We therefore need to create an appropriate gauge, that is valid and reliable for measuring flexibility as a subjective organisational behaviour. Furthermore, in order to evaluate the hypothesis of prediction and influence, we need to assess whether, by enhancing organisational flexibility (according to the measure), we can positively change individual and organisational effectiveness and wellbeing. The results of such an assessment provide us with an understating of the utility of the measure. The need to develop and validate a measure of organisational flexibility, and to progress our understanding of its utility, provide the direction for the current research.

In the next section (Section 2) of this introductory chapter, psychological flexibility and ACT are discussed in more detail, to clarify the theoretical and practical foundations of organisational flexibility. In Section 3, the philosophical and scientific foundations are introduced: functional contextualism and Contextual Behavioural Science (CBS). This thesis chooses to be explicit in discussing these foundations, in order to clarify how they serve to guide the current research. In Section 4, organisational flexibility is discussed, first presenting Bond's (2015) model, and subsequently an alternative CBS model, comparing them, and explaining the use of Bond's model in the current research. In Section 5, mainstream perspectives of organisational flexibility are discussed, to clarify how Bond's (2015) conceptualisation of organisational flexibility is defined differently. In Section 6, organisational flexibility is discussed as a construct for measuring behaviour, explaining the challenges of doing so in organisations. This is followed, in Section 7, by a discussion of methodological considerations for developing and validating measures of organisational

behaviour, including the CBS requirement for measures to demonstrate utility. The final section (Section 8) of this introductory chapter, presents a brief outline of the empirical chapters, serving as a guide to the studies that were used to develop and validate the measure of organisational flexibility.

2 Psychological Flexibility in the Workplace

The aim of this section is to introduce psychological flexibility as a foundational concept for understanding Bond's model of organisational flexibility. This section starts by explaining the concept of psychological flexibility, as reflecting a combination of values-based action and mindfulness, and in contrast with its negative counterpart, psychological *inflexibility*. Then, evidence is provided for psychological flexibility predicting individuals' effectiveness and wellbeing, in workplace research. Next, this section turns to ACT: an intervention model for improving individuals' effectiveness and wellbeing, by increasing their levels of psychological flexibility. These concepts are important to the current research, as psychological flexibility, and the processes that are targeted in ACT, are used in scaling-up the concept and model to the organisational level.

2.1 Psychological Flexibility

Psychological flexibility has been shown to be a primary determinant of behavioural effectiveness and psychological wellbeing (Hayes et al., 1999). It refers to a person's ability to be consciously aware of the current situation and, based on the opportunities that are available to them in the situation, take action that is appropriate for pursuing their values, even in the face of challenging or unwanted internal experiences (e.g. thoughts, feelings, memories, impulses and bodily sensations; Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

2.1.1 Psychological flexibility: values-based action and mindfulness.

To clarify the concept of psychological flexibility, it can be useful to understand it as a combination of (a) values-based action and (b) mindfulness. First, in terms of values-based action: when we take action, it is more likely to result in effective outcomes if we are aware of what we value, and if our actions are then guided by those values. In any given situation, we might choose to act in any number of ways; however, the extent to which our actions are effective, for us, can be understood based on the extent to which they work (i.e. function

coherently), in the situation, for pursuing what we value. To be effective, across situations, we need to maintain a commitment to taking action that aligns with our values, in so far as it is possible, in each situation. The usefulness of this characteristic of committing to values-based action is supported by theory and evidence. When a person's actions are guided by their own freely-chosen values, the person is likely to be more effective and psychologically healthy (Hayes et al., 2006). For example, if an employee values being an influential leader, she is likely to be more effective and psychologically healthy if, despite her fears, she takes on challenging roles and responsibilities that help develop her influencing skills and her leadership skills.

Secondly, to clarify psychological flexibility in terms of mindfulness: when we are sensitive to noticing the situation, we are more likely to notice factors that influence our responses, and more likely to identify those which align with our values. In any given situation, we might be influenced by our internal experiences (e.g. avoiding a job interview in response to a fearful thoughts), and/or we might be influenced by anticipated consequences from the situation (e.g. taking a new job in anticipation of gaining valued knowledge and a pay cheque). Depending on the situation, responding to either type of influence can lead to action that is effective, or not. However, we are more likely to choose an effective response when we notice factors in the situation that are likely to influence our actions, and we respond to those that offer us opportunities for taking values-based action. For example, an employee who values being a cooperative and respected member of their team, might notice their deadline approaching, and notice the influence that it has on them. In terms of their internal experiences, they might notice anxiety, and in terms of anticipated consequences, they might notice an expectation of a reprimand for missing the deadline, or praise for meeting the deadline. Noticing these factors, in relation to their values, the employee might respond to the opportunity for praise, in order to achieve respect. For us to be sensitive to noticing factors in

the situation, to discern their relevance, and to identify opportunities for responding, we need to be willing and open to experience events, with curiosity and without judgement. This characteristic, supported by theory and evidence, is described as mindfulness (Brown & Ryan, 2003; Kabat-Zinn, 2003; Linehan, 1993).

2.1.2 Psychological *inflexibility*.

By way of contrast, psychological *inflexibility* is characterised by a person's actions being dominated by an effort to control (e.g. change, modify or avoid) challenging or unwanted internal experiences, rather than paying attention to the likely consequences of their actions, or how their actions relate to their values. All people experience challenging or unwanted internal experiences (e.g. anxiety, self-doubt, rejection), at times, and our efforts to control them can sometimes appear helpful, in the short-term. However, somewhat counter-intuitively, such strategies can increase the frequency and impact of unwanted thoughts, and lead to a disconnection from the present moment and values-based action, that persists into the longer-term (Hayes et al., 2006, 1999). For example, an employee who values being an influential leader, but feels anxious about public speaking, may avoid speaking in any public forum. In the short-term, her avoidance strategy may help alleviate her feelings of anxiety, reinforcing her strategy. However, over the longer-term, her avoidance is likely to result in her missing useful steps for developing skills for influential leadership, perpetuating her anxiety about public speaking, and increasing her anxiety about performing as a leader. Consequently, her response to her internal experiences prevents her connection with the present moment, making it harder for her to notice and respond to opportunities that could otherwise help her with pursuing valued action. Indeed, the impact of challenging and unwanted internal experiences, preventing people connecting with the present moment and pursuing their values (i.e. psychological inflexibility), can explain an entire spectrum of behavioural problems, from those that are relatively minor to those that are associated with serious mental ill-health.

(Hayes et al., 1999; Zettle, Hayes, Barnes-Holmes, & Biglan, 2016). Consequently, psychological inflexibility can have a profound effect on people's effectiveness and wellbeing at work, as well as on the organisations that they work in (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Wenzlaff & Wegner, 2000). For targeting and reducing the problematic behaviours of psychological inflexibility, and for enhancing psychological flexibility, we turn to ACT, an evidence-based approach for improving effectiveness and wellbeing.

2.2 Acceptance & Commitment Therapy (ACT)

ACT (said as one word, as in "act"; not as initials, as in A-C-T) improves people's behavioural effectiveness and psychological wellbeing, by increasing their psychological flexibility (Hayes, 1987; Hayes et al., 1999). This can be understood in terms of psychological flexibility being the process underlying mental health, and ACT as providing the technology for enhancing it (Bond et al., 2016). ACT is an empirically-based approach to psychological intervention, for promoting meaningful change that can be applied across behaviours (from problematic to high performance), across populations (e.g. clinical and non-clinical), and across settings (e.g. clinical therapy, workplace training, sports coaching etc.; Hayes et al., 2006). Indeed, in workplace settings, ACT has been applied, evaluated and adapted, through research on working populations, for over 18 years.

ACT enhances psychological flexibility using techniques that have been developed to target six core processes: values clarification, committed action, cognitive defusion, acceptance, awareness of the present moment, and conceptualising the self-as-context. These processes are not highly-precise technical terms, but describe 'mid-level' terms, meaning that they are looser abstractions, designed to orient practitioners to features that work to guide people towards greater psychological flexibility (Hayes, Barnes-Holmes, & Wilson, 2012; Levin & Hayes, 2009). The six processes, are depicted in the hexagon graphic, known colloquially as the Hexaflex, below (Figure 1). The Hexaflex groups the processes, based on

how they relate with commitment to values-based action and mindfulness, though, the skills they develop are interrelated and overlapping: the two processes on the left (acceptance and cognitive defusion) develop mindfulness; the two processes on the right (values and committed action) develop commitment to values-based action; and the two in the middle (present moment awareness and self-as-context) serve a dual purpose, being relevant to both groups. These six processes will now be described, in these groupings, to explain how they facilitate greater psychological flexibility.

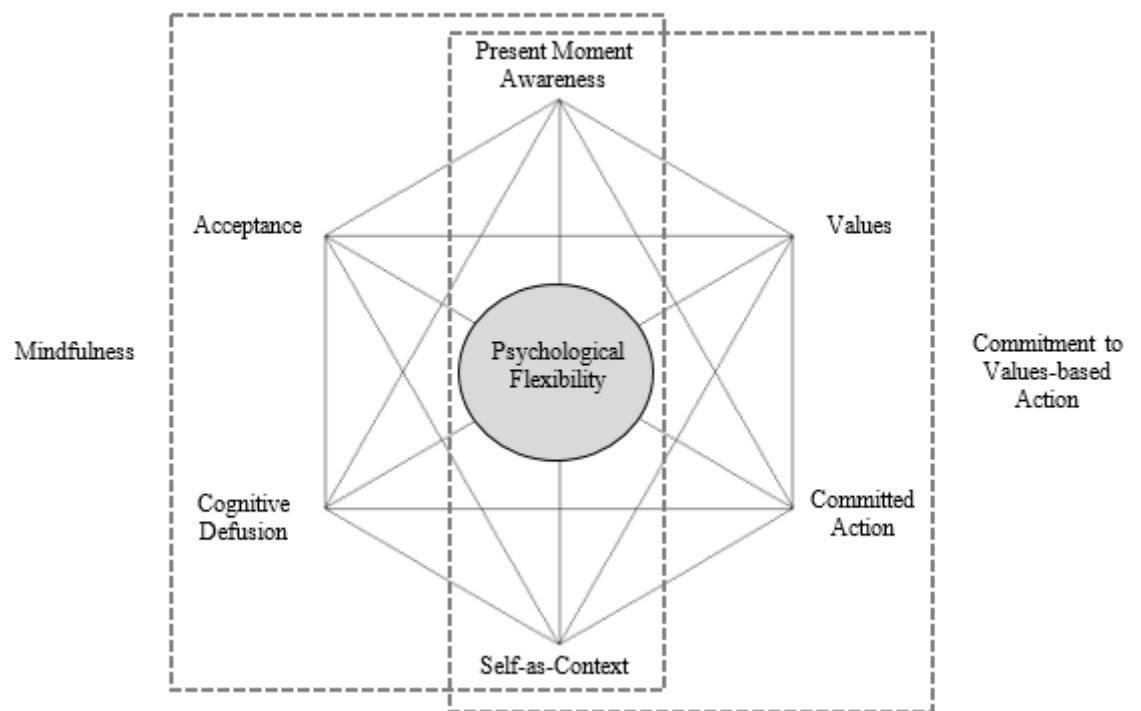


Figure 1. The Hexaflex: ACT’s model of psychological flexibility

2.2.1 Commitment to values-based action.

Values and committed action provide people’s lives with meaning and motivation. They serve as a gauge for a person to evaluate whether they are living effectively, *for them*, based on the extent to which they are guided by their own values (Bond, Hayes, & Barnes-Holmes, 2006).

Values. From an ACT perspective, values are seen as personal, freely-chosen and desired, ongoing qualities of action. They are *qualities* of action, in that they describe *how* a person behaves, on a moment-to-moment basis, based on what matters to them. For example, a person may value being a supportive manager, which can guide how he responds to opportunities for nurturing and developing his team. Values are *ongoing*, in that a person can work towards them, but never definitively, if ever, reach them; like a compass setting (Hayes et al., 2012; Hayes & Strosahl, 2004). For example, an employee must continuously work at being a supportive manager, else he ceases to be one. Values are *personal, freely-chosen* and *desired*, in that they are based on what matters to the individual. This is highlighted to contrast them with values being motivated by a sense of personal or social obligation, or by the desire to avoid challenging internal experiences, or by impulse, where the actions don't serve the person over the longer-term (Bond, 2004; Flaxman, Bond, & Livheim, 2013; Harris, 2009). However, while providing a longer-term focus, values are not rigid and unalterable. As a person's life evolves, what is important to them may shift, such that qualities of action are valued differently (Flaxman et al., 2013). ACT seeks to encourage people to clarify, specify and connect with their values. Values can be seen to interact with the other processes of psychological flexibility, by providing the context, or reason, for the person to commit to take action or behave mindfully.

Committed Action. To bring about valued behaviour, a commitment to taking action helps by specifying goals that link day-to-day behaviour with values. Unlike values, which can never be fully reached, committed action provides meaningful steps and goals that *can* be reached. Taking steps and reaching goals reinforces the motivation for, and likelihood that a person will pursue valued behaviour. Defining values-based goals across the short-, medium- and long-term provides a clear and consistent path of valued behaviour, creating larger and larger patterns of value-driven action. In this way, ACT helps guide people to taking small,

direct, immediate steps, through to larger and more sustained patterns of valued action (Hayes et al., 2006).

2.2.2 Mindfulness.

For people to more easily connect to their values and take committed actions, they need to be sensitive to the opportunities available to them in the situation and to the factors that might influence their actions. This sensitivity can reduce when people's actions are dominated by the influence of their internal experiences. Cognitive defusion and acceptance help to undermine the dominance of internal experiences, helping people to experience their thoughts and feelings etc., without having to act on them.

Cognitive defusion. The process of cognitive defusion describes letting internal experiences (e.g., thoughts, feelings, etc.) come and go as ongoing experiences, without becoming entangled with them or allowing them to have excessive influence over the person's actions. This is in contrast with cognitive *fusion*, which describes a person's attachment to their internal experiences, such that they are treated literally, as though they are 'true'. These thoughts and feelings then act as internalised rules, reasons or justifications that drive reflexive action. Cognitive fusion is not necessarily problematic, unless the internal experiences come to dominate actions, relative to the values-based opportunities in the situation, and despite the cost or ineffectiveness of the actions. For example, an employee might hold the personal belief that "I am not good enough" and, believing the thought to be 'true' (i.e. being cognitively fused), he allows the thought to prevent him engaging with a work task, thus constricting his range of actions, and diverting his effort away from values-based action. Or he might hold a socially reinforced belief that "People who are more senior know best", and believing it to be 'true', he follows his manager's instructions, despite his concerns about the appropriateness or effectiveness of the actions, and how they might constrict his own values-base actions. ACT encourages cognitive defusion, by helping people

to notice their internal experiences and evaluate them, without allowing them to limit their range of actions or avoid values-based opportunities in the present (Bond et al., 2006; Flaxman et al., 2013).

Acceptance. The process of acceptance describes a person's willingness to actively notice and observe their internal experiences, allowing the experiences to be as they are, whether they are positive, neutral or negative. People are often unwilling to observe or allow their internal experiences, particularly when they are challenging or upsetting, so they divert their responses away from the present moment and values-based action, towards trying to change, minimise or avoid their internal experiences. However, experiencing even the most difficult thoughts, feelings, memories and bodily sensations does not directly result in ineffective behaviour or ill-health. It is only when people become cognitively fused or seek to avoid the contents of their internal experiences, that their experiences can become problematic (Bond & Hayes, 2002). For example, a job seeker might feel anxious about job interviews. In order to avoid the feelings of anxiety, she procrastinates by avoiding applying for jobs, or she cancels scheduled interviews. Alternatively, she could notice and accept that she feels anxious, and allow the feelings to be as they are. Despite the feelings, she can reconnect with the present situation, and notice what opportunities she has to take action towards finding valued work. To provide further clarity, according to ACT, acceptance does not describe passive resignation or tolerance of experiences, but an active willingness to observe them, as an alternative to fusing with them, or to avoiding them (Hayes & Strosahl, 2004). From an ACT perspective, acceptance is not an end in itself, but a skill that encourages values-based action (Hayes et al., 2006).

2.2.3 Dual processes.

In order to engage with values and valued-action, and undermine fusion and avoidance, people need the skills to be aware that they can be observers of their own current internal experiences. The final two skills facilitate this.

Present moment awareness. This process describes a person's ability to notice and pay attention to the experience of their immediate physical and social environment, as well as their current psychological reactions (Bond et al., 2006). ACT does not propose that people must always be present-focused. Indeed, people's ability to disconnect from the present can be seen as a powerful evolutionary skill, that enables people to think about the past and future, to take others' perspectives, and to perceive themselves from different perspectives. These skills have enabled humans to become the dominant species. Where animal behaviour is typically shaped and maintained by immediate consequences, humans are able to select behaviour, based on anticipated consequences, learnt based on previous patterns (Biglan & Barnes-Holmes, 2015). This enables humans to problem-solve: evaluating, predicting and planning without having to experience (potentially dangerous) situations (Flaxman et al., 2013; Hayes, Sanford, & Chin, 2017). However, these skills can become problematic when they dominate behaviour, such that a person takes action on autopilot and is less able to notice and attend to opportunities that are at hand. Increasing present moment awareness enables greater flexibility and range of focus (Flaxman et al., 2013). Sometimes it is important to have a narrow focus, for example, paying attention to what the manager is saying, right now, in this meeting. At other times, it is important to have a broader focus, for example, paying attention to changes in the market. Together with defusion and acceptance, ACT encourages present moment awareness skills that help people to be more sensitive to, and thus more open to a wider range of values-based opportunities available to them, in the situation (Bond et al., 2006).

Self-As-Context. This process refers to a particular perspective a person can take of themselves, that aids present-moment awareness, acceptance and defusion. While people can see themselves from different perspectives, self-as-context is a stable, consistent perspective, from which a person is able to observe themselves. To help provide a brief explanation of this relatively complex process and why it is important, it can be useful to describe self-as-context in contrast with two other important perspectives that people can have of themselves: self-as-process and self-as-story (Torneke, 2010). Self-as-process describes the present moment perspective of “I”: a person’s moment-to-moment experience of their internal experiences. For example, from this perspective, a person may say, “I feel happy”, or “I remember that report”, or “I am right”. This perspective changes (even if only slightly) as the moment, the situation and the person changes. For example, as the person’s level of happiness changes, or their distance from their memory changes, or their understanding of the situation changes. Self-as-story describes a broader perspective of “who I am”, as a description that a person uses for themselves, relative to their social environment. From this perspective, a person may say, “I am a happy person”, or “I am not very good at writing reports”, or “My beliefs are the right beliefs to have”. This perspective provides a person with continuity and a social shorthand or script about themselves. In contrast to these, self-as-context describes a perspective from which a person is able to be aware of their own awareness, and notice their ability to notice. From this perspective, a person may say “I am having a thought that I am anxious”, or “I am noticing that I am having a thought that I am anxious”, and “I am not my thoughts”. This ‘observing self’ is an enduring perspective that helps people to be aware of the ever-changing flow of their internal experiences, without needing to judge or defend them. ACT encourages the skill of taking this perspective, as it is important in helping people to observe their internal experiences – both the moment-to-moment ‘self-as-process’ experiences

and the broader 'self-as-story' experiences - such that people are more able to defuse from and accept their internal experiences, where necessary, in order to connect with what they value.

These six processes provide a practical focus to developing a commitment to taking values-based action and mindfulness; thus influencing psychological flexibility as the overarching process of change. Identifying this process of change and the skills to influence it, provides practitioners with the opportunity to vary their selection of process-based techniques according to the intervention, such that they can be applied flexibly and with sensitivity to the situation. This perspective enables an ACT practitioner to recognise a need to focus on, for example, building a person's defusion skills, and to do so they can vary the exercises, metaphors, language, etc., depending on whether they are in, for example, a clinical, educational, sports or workplace setting, and in relation to the individual's histories and aims. In this way, it is possible to apply appropriate and relevant workplace intervention protocols to target the skills to enhance psychological flexibility, across individuals within organisations.

2.3 Psychological and ACT Research in the Workplace

2.3.1 Psychological flexibility research.

In empirical research, psychological flexibility has been shown to predict a wide range of effectiveness and wellbeing outcomes. The following highlights some examples of workplace research. Higher levels of psychological flexibility predicted better mental health and job performance, a year later, even after controlling for well-established predictors such as locus of control, negative affectivity, job control (Bond & Bunce, 2003). Psychological flexibility also offered incremental prediction over emotional intelligence in predicting mental health and physical health, in the workplace (Bond & Donaldson-Feilder, 2004). In further longitudinal workplace research, psychological flexibility predicted better job-related learning, as well as mental health and job performance (Flaxman & Bond, 2006). In a work

reorganisation intervention that was designed to increase job control, people with higher levels of psychological flexibility perceived higher levels of job control, as a result of the intervention, leading to greater improvements in mental health and reduction in absence (Bond, Flaxman, & Bunce, 2008). Higher levels of psychological flexibility correlated with lower levels of stress, reduced emotional exhaustion, and higher general health, and social and emotional functioning (McCracken & Yang, 2008). Higher levels of psychological flexibility correlated with lower levels of burnout, and did so more strongly than other characteristics that are often associated with burnout, including job control, co-worker and supervisor support, salary, workload and length of service (Villardaga et al., 2011). While these examples of research have focused on psychological flexibility as a predictor, there is also an range of published research that supports the efficacy ACT in the workplace.

2.3.2 ACT research.

Empirical research has shown support for ACT's ability to improve outcomes of effectiveness and wellbeing and, importantly, has shown psychological flexibility to be the mechanism (or mediator) that explains the improvements (Kazdin, 2007). The following highlights some examples, from workplace research. In an intervention comparing ACT and problem-focused worksite training, both conditions led to reduced employee anxiety and increased innovation potential, but only ACT led to improved mental health. The mediator of the ACT condition was psychological flexibility, whereas the mediator of the problem-focused condition was a change in work methods (Bond & Bunce, 2000). In interventions comparing ACT and stress inoculation training, ACT has led to improved mental health (Flaxman & Bond, 2010a), with more pronounced effects in the changes in mental health for those whose distress was greater at the start of the intervention (Flaxman & Bond, 2010b), and reduced emotional burnout (Lloyd, Bond, & Flaxman, 2013). Again, psychological flexibility mediated improvements.

In this discussion, we have explored ACT and its ability to enhance individuals' psychological flexibility, improving their effectiveness and wellbeing in the workplace. However, ACT does not address characteristics of the organisation that can be expected to undermine psychological flexibility, including those characteristics that are likely to increase the chance of unwanted internal experiences, or that are likely to undermine peoples' attention to the internal and external environment, and their pursuit of personally-valued action. In order to improve outcomes for individuals and organisations, more broadly, it is hypothesised that a more comprehensive strategy is needed, that combines ACT with improved organisational characteristics (Bond & Hayes, 2002). Bond hypothesises that "the combination of a commitment to values-based actions and mindfulness (i.e. psychological flexibility) that is so beneficial to individuals can be designed into organisations (and teams), in order to produce similarly beneficial outcomes in those organisations" (Bond, 2015, p. 4). Hence organisational flexibility. However, before discussing organisational flexibility, the current research introduces the philosophy and science that underpin and guide psychological flexibility and ACT research, and which will also guide this organisational flexibility research.

2.4 In Summary

The concept of psychological flexibility, as a combination of a commitment to values-based action and mindfulness, predicts individual effectiveness and wellbeing. ACT improves individual effectiveness and wellbeing, by increasing psychological flexibility, and has been shown to do so in the workplace. The relevance of psychological flexibility and ACT, for the current research, is the hypothesis that our ability to positively influence individuals' effectiveness and wellbeing, can be scaled up for organisations, using a functionally-equivalent organisational model.

3 Philosophical & Scientific Roots of Flexibility

The aim of this section is to introduce the philosophy and science that underpin organisational flexibility, and explain how they guide the current research. Psychological flexibility, ACT, and now organisational flexibility, have been developed and researched as part of an ongoing body of scientific work within Contextual Behavioural Science (CBS), which is guided by the philosophy of functional contextualism. This section starts with some background, explaining why the current research is explicit in stating these foundations, given that much behavioural research does not do so. It then briefly introduces the goals of CBS and functional contextualism. This is followed by the main discussion, explaining the criteria and terminology for understanding, evaluating and improving organisational flexibility, in line with the CBS and functional contextual goals. Finally, this section discusses bridging the gap between CBS and other perspectives, and how to apply this perspective in terms of methodologies.

3.1 Contextual Behavioural Science (CBS) and Functional Contextualism

It is common for research in the behavioural sciences to be conducted without explicitly recognising or stating the assumptions that underpin it; and yet, without stating them, assumptions are still made (Levin, Twohig, & Smith, 2016). Such assumptions include the units of analysis we use, how we understand the nature of reality, and what it means for us to know something (Levin & Hayes, 2009). They guide research questions, the theories and models we create, and how to understand, analyse and evaluate their claims (Fox, 2008; Pepper, 1942). Without recognising these foundations, research can lack clarity and coherence in terms of what to analyse, how to analyse it and how to evaluate it. By stating the philosophical and scientific foundations of the current research, this section aims to establish clarity and coherence about its guiding principles.

CBS is a branch of science that aspires to promote positive, intentional change for human effectiveness and wellbeing (Hayes et al., 2012). Guided by this aspiration, CBS seeks to develop concepts and methods for understanding, evaluating and improving human behaviour, using research and practice that are explicitly guided by the goals of functional contextualism. Functional contextualism is a philosophy of science that has a primary goal of *predicting-and-influencing behaviour, with precision, scope and depth* (Hayes et al., 2012). These goals, and the criteria for evaluating them, are discussed, clarifying the terminology and explaining how they inform and guide the current research.

3.2 Understanding and Evaluating Behaviour

Understanding behaviour. This section starts by clarifying the use of specific terminology in the current research: behaviour, entity, context and act-in-context. In this section, we are discussing *behaviour* because both psychological flexibility and organisational flexibility are considered to be behaviours. They are behaviours that relate to different *entities*: the former to individuals, and the latter to organisations. From a CBS perspective, an entity's behaviour is not understood as action in isolation, but as inseparable from its ever-evolving historical and situational, internal and external, environment i.e. its *context* (Wilson, Hayes, Biglan, & Embry, 2014). For an individual, this means that their behaviour is understood in relation to, and inseparable from, their internal experiences (e.g. thoughts, feelings, memories etc.), as well as their experiences of their surroundings, all of which can be expected to change on an ongoing basis. For an organisation, its behaviour is understood in relation to, and inseparable from, its internal 'beliefs', history, structures and practices etc., as well as its market, geographical, political, and ecological situation etc., all of which can be expected to change on an ongoing basis.

To illustrate this understanding, we can use the example of an organisation (the entity) launching a new product (the behaviour), and the organisation's context can be seen to

include: its ever-evolving relationship with its history of product launches, its knowledge and experience of the marketplace, its processes for updating its IT systems, its communication methods, its trust in its suppliers, its expectations of customer and shareholder reactions, ad infinitum. From this perspective, our understanding of the product launch is not as an isolated event, but is in relation to the organisation and its context. This guides the current research to also see organisational flexibility in relation to the organisation, acting within, and inseparably from, its context. As a short-hand way to describe this view of behaviour, CBS uses the term '*act-in-context*' as the unit of analysis. Thus, organisational flexibility can be described as an organisational act-in-context. Though, it is also important to note that, in addition to being an act-in-context, organisation flexibility forms part of the context for all the individuals working within the organisation. Thus, organisational flexibility can also be understood *as a context*, for its workforce. The ability to view organisational flexibility from these two perspectives serves a useful function throughout the current research.

Evaluating behaviour. To evaluate behaviour, from a CBS perspective, it is necessary to understand how well the behaviour works in line with what the entity intended. With this in mind, we need to know *the entity's goal*, in order to understand how successful the behaviour is, for the entity, towards achieving what it intended to achieve. Using the example from above, the organisation's goal for its product launch may have been to branch out into an entirely new market, or to increase brand loyalty in its existing market, or any other stated goal. The extent to which the organisation's product launch may be considered to be successful is understood differently, depending on which goal the organisation intended to reach with the launch. While it is possible that the product launch could be judged using alternative, externally-imposed criteria (e.g. trending on social media, short-term profit, etc.), if these were not the intended goals of the product launch, then such judgements do not provide a meaningful evaluation of the behaviour, for the organisation. In the current research,

the goals of increasing individual and organisational effectiveness and wellbeing guide the evaluation of organisational flexibility.

The criterion for evaluating the entity's behaviour towards achieving its stated goal in the given context, is its *workability*. This criterion is pragmatic, taking into consideration the contextual opportunities and limitations for achieving the goal, and evaluating the behaviour according to how coherently the action works for achieving the goals, within that context. This perspective can be contrasted with research that focuses on revealing the 'existence' of a behaviour, or uncovering an absolute 'truth' in terms of what is 'out there' waiting to be discovered. Again, continuing with the example from above, the organisation may consider an approach to launching the new product that uses a high-budget advertising campaign, because the organisation has previously used that approach to entering a new market; or it may consider a soft-launch, as an approach to testing the new market, etc. However, CBS does not assume that a true or correct product-launch behaviour exists out there, that the organisation needs discover in order to achieve success. Instead, from a CBS perspective, selecting either of the example approaches, or any number of alternative approaches, to launch the product may be workable, for the entity, in its context and towards its goal. This perspective guides the current research towards finding evidence for the workability of organisational flexibility, as a tool for predicting-and-influencing individual and organisational effectiveness and wellbeing, rather than towards finding evidence for the 'existence' of organisational flexibility. CBS does not argue that this approach is 'the' correct or best approach for conducting research. Instead, it is considered to be a pragmatic approach towards achieving CBS goals (Levin et al., 2016).

3.3 Predicting-and-Influencing Behaviour

Equipped with this understanding of behaviour, and how to evaluate it from a CBS perspective, we now turn to the goal of *predicting-and-influencing* behaviour. This goal

focuses CBS research on changing behaviour, in order to increase the likelihood of the behaviour being workable for achieving its goals. Prediction-and-influence is hyphenated in this way, to emphasise that it is one goal, and that prediction alone, is considered insufficient for us to be able to improve effectiveness and wellbeing (Hayes, 1993). Prediction tells us about the likelihood of a behaviour being workable for achieving its goals; however, it doesn't provide us with a tool that we can manipulate to improve the likelihood of its success.

Returning to the example, the organisation's history of previously unsuccessful attempts to enter new markets might serve as a strong and ominous *predictor* of its current attempt, but the history itself doesn't provide us with a tool that we can use for improving the likelihood of achieving a successful market entry this time: we can't change the organisation's history.

In order to improve the likelihood of success, we need to be able to change (i.e. influence) the likelihood of a behaviour being chosen, which is workable for the entity's goals, in its context (Wilson et al., 2014). This guides CBS towards identifying manipulable, contextual variables, for influencing greater effectiveness. We have already seen that psychological flexibility provides us with a tool, which we can manipulate using ACT, to improve the likelihood of individuals behaving in ways that are workable for their goals, despite challenging experiences, and thereby improving their effectiveness and wellbeing. It is hypothesised, in the current research, that organisation flexibility also provides us with such a tool, which can be manipulated to improve the likelihood of organisations behaving in ways that are workable for their goals, despite their challenging environments. This guides the current research: "by pursuing this goal of prediction-and-influence, we can ensure that we develop a model of organisational flexibility [...] that we can manipulate, in order to influence individual and organisational effectiveness." (Bond, 2015, p. 7).

3.3.1 Precision, scope and depth.

For the prediction-and-influence of behaviour to be effective, the concepts that CBS seeks to identify and manipulate need to also offer precision, scope and depth. *Precision* refers to the number of concepts (the smaller the better) that can be applied to explain a particular behaviour; *scope* refers to the range of behaviours (the larger the better) that can be explained by those concepts; and *depth* refers to the coherence of the concepts across levels of analysis and scientific domains (Hayes et al., 2012; Villatte, Villatte, & Hayes, 2016). For the current research, the implication is that Bond's conceptualisation of organisational flexibility needs to be precise, as a concept for predicting-and-influencing individual and organisational effectiveness and wellbeing; and it needs to offer scope, as a concept that explains organisational behaviour across contexts. Moreover, for the current research, it is especially important for organisational flexibility to demonstrate depth.

The 'depth' of organisational flexibility is important in two particular ways. First, as a functional equivalent to psychological flexibility, organisational flexibility research is expected to demonstrate coherence between the concepts of flexibility, across the individual and organisation levels. While psychological flexibility describes individuals' acting-in-context, organisational flexibility describes organisations' acting-in-context (and as a context), with both serving the same function of predicting-and-influencing effectiveness and wellbeing, in relation to their entities. Secondly, as an organisational concept, organisational flexibility can be expected to demonstrate coherence with organisational research from other relevant scientific domains. CBS promotes a 'reticulated' (i.e. a networked) approach, which encourages the development and sharing of complimentary and competing concepts, models and techniques, across domains, and between theory and practice, where they provide workable opportunities towards achieving CBS goals. The need to draw on research from

other domains is particularly pertinent to the development of organisational flexibility, given the relative novelty of group-level research in CBS.

3.3.2 Methods.

From a CBS perspective, any methodology may be considered for use in research, provided that it is workable towards achieving the goals of CBS (Levin & Hayes, 2009). For example, qualitative research may be used to ensure concepts maintain a rich connection with lived experiences, and correlational research may be used in the development of concepts (Hayes et al., 2012). However, to be able to demonstrate prediction-and-influence, research needs to be able to show evidence that we can manipulate change, and explain improvements in outcomes, in line with hypotheses. To establish such evidence, we need to be able to *measure* the mechanisms of change; ideally, with the precision that can be achieved in experimental conditions, while appreciating the need for workability in ‘real world’ settings, for achieving the desired goals (Villardaga, Hayes, & Schelin, 2007). These considerations help to guide the methodology for researching a measure of organisational flexibility, in the current research.

3.4 Building Bridges Between Perspectives

While the current research uses CBS to guide it in pursuing the prediction-and-influence of individual and organisational behaviour, it recognises that CBS is not the only perspective that is interested in this domain. Indeed, a wide variety of basic and applied scientific disciplines are interested in behavioural and cultural change (Wilson et al., 2014). When disciplines are open to other perspectives and learn from them, they are provided with greater opportunities for scientific progress. However, the narratives and experiences that differentiate each discipline often serve as barriers to sharing knowledge between them, isolating research and practice into silos, and limiting opportunities for scientific progress (Wilson et al., 2014). Indeed, “the human behavioural sciences are currently in disarray on the

subject of [behaviour] change. Every discipline has its own configuration of ideas that seldom relate to other disciplines” (Wilson et al., 2014, p397). For the current research, it is possible that by explicitly stating CBS as its guide, it risks the CBS ‘configuration of ideas’ being used as a barrier to other disciplines that are interested in improving individual and organisational effectiveness and wellbeing. Such a barrier could limit opportunities for this research to learn from concepts, phenomena, methods and practices found in those other disciplines, and limit opportunities to disseminate findings to them. To reduce such barriers, instead of adopting the CBS narrative rigidly, CBS researchers and practitioners are encouraged to apply flexibility to their own work; not by dropping the CBS goals, but by mindfully pursuing their own valued goals. In doing so, they are more likely to notice that, when bridges are built across disciplines, opportunities open up for pursuing their goals. Consequently, building bridges can serve as workable behaviour for achieving research and practice goals, and thus offers guidance for the current research to embrace such opportunities, too.

To illustrate how flexibility can be applied to research and practice, we can look at the example of CBS’s approach to therapy. Rather than rigidly adhering to protocols developed in CBS research, CBS researchers and practitioners are encouraged to be open to learning from other therapeutic models, practices and traditions, to help their clients. With a wider repertoire of approaches, a therapist is likely to be more able to notice those which are workable for their client, according to their specific context (Ciarrochi & Bailey, 2008). This openness does not imply that any or all alternative therapeutic approaches should arbitrarily be taken on; instead it encourages a focus on therapeutic approaches that seek the identification of manipulable, contextual variables, for influencing clients’ effectiveness and wellbeing. Taking this approach has led CBS to expand its repertoire beyond ACT protocols to also embrace ‘process-based therapies’, which describe approaches in which therapists seek to identify the mechanisms of change and the skills to influence them, and apply them in contextually-

sensitive interventions (Hofmann & Hayes, 2018). This can be contrasted with more traditional approaches to therapy which have sought to classify clients' symptoms (e.g. low self-esteem, heightened stress reactions, impulsive behaviours, etc.) into diagnoses (e.g. depression, obsessive-compulsive disorder, etc.), according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DMS-5; American Psychiatric Association, 2013). The diagnosis is then used to determine which therapeutic protocols to apply. However, this approach can lack sensitivity to the client's context (e.g. when the client's symptoms span diagnoses or do not clearly align with them) and can limit opportunities for influencing change in clients (e.g. when treatment protocols are unavailable or are inappropriate for the diagnosis; Frank & Davidson, 2014). Instead, taking a process-based approach enables therapists to target behaviour change, in ways that are more flexible and sensitive to the client's context, regardless of any diagnostic labelling (Hayes & Hofmann, 2017). CBS has pursued this process-based approach through an openness to building bridges across therapeutic traditions, including behavioural, cognitive, emotional, motivational, interpersonal, acceptance and mindfulness therapies (Hofmann & Hayes, 2018). Such an approach offers guidance for the current research towards an openness to opportunities that can be found by building bridges with other disciplines, and which further the ability to predict-and-influence individual and organisational effectiveness and wellbeing.

For researchers and practitioners to be able to build bridges, it is useful to identify common ground. However, the various terminologies used across the disciplines can serve as a barrier to finding that common ground: it's as though the different disciplines speak different languages. Indeed, this languages metaphor can highlight an opportunity, that by 'translating' terminology between disciplines, it can become easier to share understanding, making it easier to identify concepts and methods in common, in their context. For example, this section previously discussed the goal of functional contextualism as *prediction-and-*

influence with *precision*, *scope* and *depth*, and pursuing it based on *workability* in *context*. Such specific language may serve as a barrier to other disciplines that use different terminology. Yet, common ground can be found between disciplines when this terminology is translated. To illustrate this point, we can explore the premise that scientists and practitioners across disciplines are interested in understanding which factors explain (*prediction*) social or individual phenomena. Their explanations may be more or less parsimonious (*precision*), and be more or less comprehensive (*scope* and *depth*), and their research may identify certain boundary conditions that explain when and where (aspects of the *context*) the factors can be expected to work, and for whom (i.e. which *entities*; Whetten, 1989). Scientific understanding is further enhanced by identifying how sets of factors are related with each other, and disciplines often place a focus on the ‘causality’ between factors, in order to identify those factors which change behaviours. Some disciplines interpret a causal relationship literally, with a change in one factor being considered as the cause of change in another. CBS is less literal about such a relationship, instead seeking to understand a factor in terms of its serving as an *influence* for others’ behaviours. However, such a distinction need not be used a barrier to understanding the relationships between factors, particularly if the change in behaviour leads to successful steps forward towards achieving scientific goals (*workability*), that are desirable across disciplines. Such ‘translations’ serve to highlight how common ground can be found between disciplines when language is not used rigidly. Thus, disciplines may continue to develop distinct theoretical explanations as to *why* concepts and phenomena work in the way they do, according to their own ‘configuration of ideas’, yet bridges can still be built to support scientific progress between them.

This discussion guides the current research to apply flexibility in pursuit of its research goals, rather than applying the CBS narrative rigidly. In doing so it encourages taking other perspectives by building bridges that open opportunities to learn from and share information with others.

3.5 In Summary

By explicitly stating the philosophy and science that underpin the current research, it is hoped that the current research is presented with greater clarity and coherence, in terms of the goals and assumptions used to guide it. CBS guides the aims of the current research towards positive change in organisations, by improving their effectiveness and wellbeing. Furthermore, due to its philosophical underpinnings, CBS guides the current research to evaluate the concept of organisational flexibility, as behaviour for predicting-and-influencing workable action towards the goals of individual and organisational effectiveness and wellbeing. This perspective includes taking a workable, rather than a rigid approach to pursuing the goals of this research.

4 Organisational Flexibility: From a CBS Perspective

The aim of this section is to discuss organisational flexibility from a CBS perspective. First, the concept of organisational flexibility is introduced. Then, Bond's (2015) model of organisational flexibility is presented. His model is based on the concept of psychological flexibility, scaled-up to the organisational level, and informed by organisational characteristics selected from the field of organisational behaviour. Then, an alternative CBS model of organisational flexibility is presented, as proposed by Hayes (2010). His model also scales-up the model of psychological flexibility, though is informed by design principles for group efficacy, from the field of economics. Finally, the two models are briefly compared, to clarify the similarities and differences between them, and to position the use of Bond's model in the current research.

4.1 Conceptualising Organisational Flexibility

Organisational flexibility, from a CBS perspective, refers to an organisation's ability to be aware of and open to noticing the features of its internal and external environment and, based on the opportunities available in the situation, its ability to take appropriate action in pursuit of what it aspires to achieve. This concept can be understood to describe an organisation's behaviour from two perspectives. Firstly, using CBS terminology from the previous section, organisational flexibility can be characterised as an *act-in-context*, with the organisation as the entity choosing workable behaviour for achieving its desired goals. Secondly, we can characterise organisational flexibility *as a context* for the people working within the organisation. For an organisation to behave flexibly, it needs the people working within the organisation to be aware of and committed to pursuing what the organisation aspires to achieve, and for them to respond with flexibility and sensitivity to the organisation's situation and environment. For an organisation to expect these behaviours from

the individuals working within it, the organisation needs to provide them with an environment that reinforces such behaviours.

However, the identification, implementation and maintenance of optimal organisational characteristics (i.e. structures, strategies, processes and technology) for organisational flexibility can be inhibited, or even undermined by the internal experiences (e.g. thoughts, feelings, memories, impulses etc.) of people at all levels in the organisation (Bond, 2015). For example, an organisation may value providing high quality customer service. In an effort to provide such a service, on a consistent basis, the organisation may seek to maintain a sense of control over employees' behaviours, and seek to prevent them from making mistakes, by enforcing standardised customer service procedures (Hayes, 2010). A strategy of standardisation may, indeed, be effective in some situations, and provide the desired short-term relief of a sense of control over the employees' actions. However, rigid attachment to a process may hinder employees from responding to specific customers' needs, such that customers feel that they have not been well-served. It may also hinder employees from being open to noticing alternative, and potentially improved, ways to deliver organisationally-valued high-quality service (Hayes, 2010). Consequently, seeking to control or avoid challenging or unwanted employee behaviour, reinforced by the organisation's characteristics, can impact the organisation's ability to achieve valued aims over the long-term (Hayes, 2010). Therefore, the organisation needs to identify, implement and maintain organisational characteristics (i.e. structures, strategies, processes and technology) that simultaneously promote organisational flexibility, while also reinforcing individuals' behaviour for maintaining organisational flexibility (Bond, 2015). This interplay, between the organisation and the individuals within them, reinforces the two perspectives of organisational flexibility: an act-in-context, and as a context.

Bond (2015) notes that many organisational theorists have recognised a need to develop organisational characteristics for adapting over time, range, intention and focus (Golden & Powell, 2000), in order to pursue organisational goals. However, they have rarely recognised the importance of developing organisational characteristics to alleviate discomfort, in order pursue of the organisation's goals (Bond et al., 2016). In contrast, from a CBS perspective, organisational flexibility focuses on identifying approaches for enhancing people's relationships with their organisations, in order to improve individual and organisational effectiveness and wellbeing.

For the refinement of CBS concepts, a reticulated (i.e. networked) approach is encouraged. In this section we discuss two CBS-based models of organisational flexibility, proposed by Bond (2015) and Hayes (2010). Both models can be understood in relation to psychological flexibility, scaled-up to the organisational level; and both models use concepts that can be manipulated, in order to improve organisational effectiveness and wellbeing. However, the models are informed by different empirically-based theories of group behaviour: Bond's (2015) model is informed by organisational behaviour, and Hayes' (2010) model by economics.

4.2 Organisational Flexibility and Organisational Behaviour

Bond (2015) has proposed a model of organisational flexibility, hypothesised to predict-and-influence effectiveness and wellbeing in organisations, using organisational characteristics selected from "extant principles, models and strategies from organisational behaviour (OB)" (Bond, 2015, p. 6). OB is a field of research that seeks to explore the impact of individuals, groups and organisations on organisational effectiveness and health, with the intention of influencing their characteristics, to improve effectiveness and health (Robbins & Judge, 2011). Bond emphasises selecting only the practically-relevant OB characteristics that are consistent with CBS goals, thus maintaining focus on prediction-and-influence, and

leaving out “superfluous constructs that no OB practitioner could directly influence (e.g. motivation, meaningfulness of work)” (Bond, 2015, pp. 7–8).

From the many possible constructs, strategies and techniques from OB research, Bond has selected the following six organisational characteristics: purpose and goals, planned action, effective job design, openness to discomfort, awareness and situational responsiveness. These six characteristics are depicted in the Orgflex graphic (Figure 2), below, mirroring the Hexaflex model of psychological flexibility. When these characteristics are considered individually, OB research has shown each of them to be associated with improved organisational outcomes (Bakker & Demerouti, 2007; French & Bell, 1999; Humphrey, Nahrgang, & Morgeson, 2007; Martin, 2009). Together, as interrelated and overlapping characteristics, they aim to enhance organisational flexibility by cultivating organisational needs for flexible and varied behaviours that are sensitive to the context (i.e. organisational ‘mindfulness’), and promoting effective action in pursuit of the organisation’s aspirational aims (Bond et al., 2016). Each of the characteristics of the Orgflex, described below, serves an equivalent function to the processes in the same positions of the Hexaflex, and furthermore, are hypothesised “to promote, to varying degrees, in individual workers, the corresponding psychological process on the Hexaflex” (Bond, 2015, pp. 8–9), supporting the coherent CBS view of flexibility across levels of analysis.

4.2.1 Purpose-driven action.

Pursuing a common purpose provides people in organisations with a symbolic direction and meaning for their actions at work, and a reason to cooperate. Purpose-driven action can serve as a gauge for individuals in the organisation to evaluate whether they, each other and the holistic organisation are behaving effectively, based on the extent to which their actions are serving the organisation’s purpose.

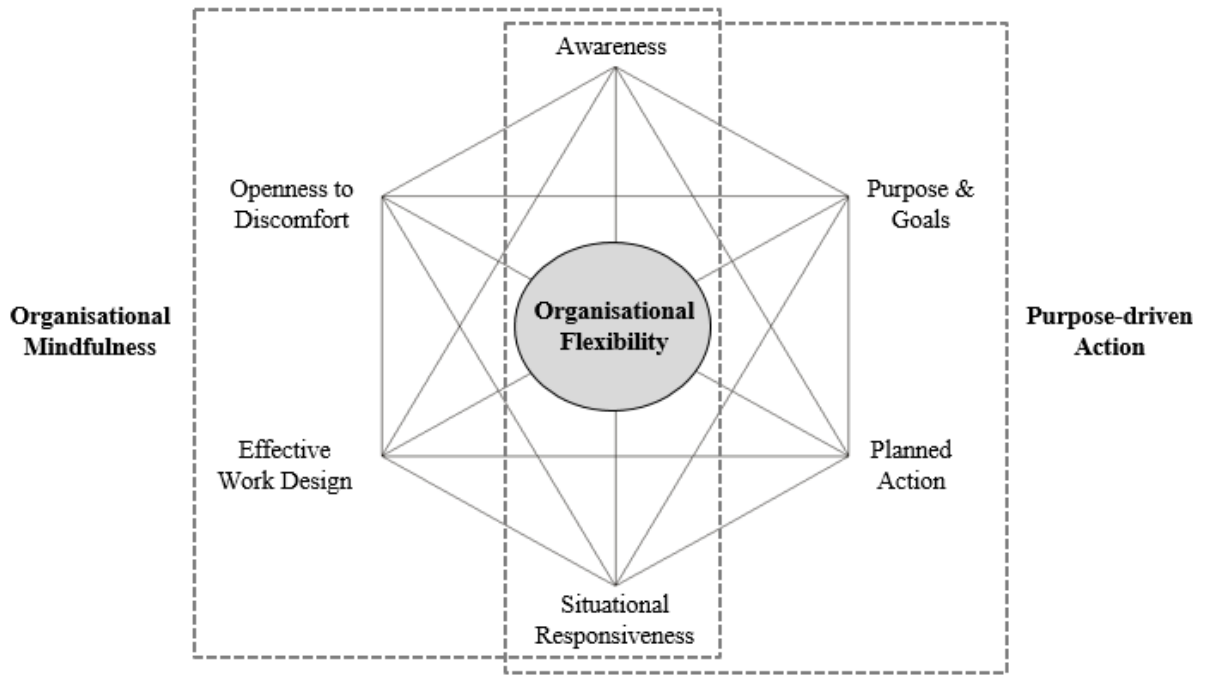


Figure 2. The Orgflex: Bond’s model of organisational flexibility.

Purpose and goals. For individuals (i.e. in this position on the Hexaflex), this process represents *values*, which serves the purpose of providing a ‘compass setting’ to guide individuals’ actions. For organisations, the characteristic of having a shared *purpose and goals* fulfils a similar role to values. This organisational ‘compass setting’ guides the organisation’s actions, by answering the question “why does this organisation exist?” (Lencioni, 2012). An organisation’s purpose may be relatively small and subtle, or grand and transformational; it may aim to impact very few lives, or very many. However, the implication of ‘purpose’ is that the contribution of the organisation is necessary, otherwise it would no longer survive (Collins & Porras, 1991). An organisation’s purpose characterises how it 1) meets a need in the community in which it operates, 2) provides goods or services that meet societal needs and 3) aspires to something greater (Dutton, Glynn, & Spreitzer, 2007; Glynn & Smith, 2007). As with individuals’ values, purpose is a directional aspiration to be constantly worked towards, rather than definitively reached, thus providing a sustaining agenda that challenges barriers to

progress and protects against competing goals (Millar, Hind, & Magala, 2012; Vallacher & Wegner, 1987). An example of a purpose is that of health care provider, Buurzorg, “to help sick and elderly patients live a more autonomous and meaningful life” (Laloux, 2014, p. 195), which serves to challenge conventional approaches to care, and protect against services that only target short-term relief for patients. By clarifying and reinforcing employees’ connection with the organisation’s purpose, the organisation provides a guide for employees’ behaviour, through coherent nested layers of goals, that foster flexibility across situations. Consequently, different organisations may have the same purpose, but their nested goals of vision and mission, through to day-to-day decisions and actions, are able to vary flexibly between organisations, and within an organisation over time, according to their circumstances (L. M. Roberts & Dutton, 2009). This guidance provides employees with a contextual reason for, and therefore meaning in, taking action in support of their organisation’s wishes. It also deters employees from inaction, impulsivity, and persistence with avoidant behaviour, through positive means, rather than through coercion (Hayes, 2010).

Planned Action. For individuals (i.e. in this position on the Hexaflex), this process represents *committed action*, which serves the purpose of providing a link between day-to-day action and individuals’ values. In organisations, the characteristic of *planned action* fulfils a similar role to committed action, by creating a link between the organisation’s day-to-day decisions and organisational purpose. Bond uses the term *planned action*, rather than the individual-level term *committed action*, in acknowledgement of the complexity involved in “planning and implementing the interdependent steps (perhaps across many departments) needed to achieve an organisational goal” (Bond, 2015, pp. 9–10). This characteristic has also been referred to using the alternative term of “Project Definition”, highlighting the need for structure in the approach, though planned action is not limited to projects, but also encompasses operational activities (Bond et al., 2016).

While there are many different approaches, across organisational literature, to managing projects and operations, they are consistent in specifying the need for planned strategies and processes to ensure that organisational goals are met. Bond advocates planning action, by specifying the project or operational goal towards which individuals, teams and the organisation work, specifying the related processes by which to achieve it, and explicitly linking the goal to the organisation's purpose. The specification of the goal guides individuals to identify potential steps forward. It can help individuals to notice where there may be potential psychological and environmental barriers towards those goals, guiding them towards choosing steps that are likely to be more workable and effective. The specification of who is involved, with what responsibilities, and how they relate to one another, provides clarity for task ownership, which helps to support individual motivation; and it provides clarity for employees' interactions with each other, which can help to minimise conflict. The specification of processes provides a way to approach the goal, while also providing the opportunity for localised responsiveness to the situation. The specification of the goal's links with purpose encourages individuals to take action that is organisationally-valued. For individuals, planning meaningful action for the organisations can help them to identify ways in which they can take meaningful action that serves their own values to.

While planning action towards goals, it is important to recognise that the internal and external environment will not remain static, and that it is inevitable and normal that problems will arise (Martin, 2009). When problems are seen as "signs of trouble, undesirable, blameworthy or even threatening to goal achievement" (Bond, 2015, p. 11), the environment is more likely to contribute to feelings of vulnerability, and is therefore more likely to elicit avoidant behaviours, inaction and impulsivity. Instead, when problems are expected and accepted, the environment is more likely to appear safe, and therefore elicit behaviours that seek to expose and address problems quickly. Consequently, for the organisation, internal and

external challenges need not prevent the pursuit of purpose-driven goals. For individuals, noticing problems and yet still taking workable action can help them to link their day-to-day actions with valued-action.

4.2.2 Organisational mindfulness.

For an organisation to take effective purpose-driven action, it needs to be sensitive to the opportunities available in the situation, and to the features of its internal and external environment that can influence action. The organisation's sensitivity to its situation and environment can be reduced when the organisational characteristics are designed to control the workforce, or prevent them from having challenging experiences. Organisations that design jobs effectively and are open to discomfort are more likely to accept the experiences of their workforce, facilitating sensitivity to the organisational environment, while in pursuit of organisational purpose.

Effective Work Design. For individuals (i.e. in this position on the Hexaflex), this process represents *cognitive defusion*, which serves the purpose of changing the way people interact with their thoughts – disentangling from them - so that they no longer have a detrimental effect. In organisations, the characteristic of *effective work design* fulfils a similar role to cognitive defusion by changing the way in which people interact with their work tasks (Bond et al., 2016). Organisations place demands on their workforce that have been shown to have an impact on people's physical and psychological health, job satisfaction, work absence and performance (Bond & Bunce, 2001, 2003; Parker & Wall, 1998; Terry & Jimmieson, 1999). However, organisational researchers have long hypothesised that the ways in which people relate to their work (i.e. work design) can limit the detrimental impact of those demands. From the OB literature, the job demands-resources model (Bakker & Demerouti, 2007) proposes that demands, which are physical, psychological, social and organisational characteristics of work, that require sustained effort or skill, are not inherently negative, but

they have a cost. However, the cost can be balanced by resources, which are physical, psychological, social and organisational characteristics of work that help to achieve work goals and stimulate personal growth. People are more able to balance their demands, when they have sufficient resources available to them. However, organisational resources are typically limited, which limits the organisation's ability to influence the outcomes through increasing people's resources. However, the organisation can provide people with opportunities for greater control.

Providing people with some control over their work environment is a well-established approach that is empirically-supported by a wide range of OB theories. For example, Karasek's (1979) demand-control model explicitly predicts that jobs with high demands only have detrimental effects if people perceive they have insufficient control over their work. By providing people with the ability to exert some influence over how they approach their work, they are better able to find ways to make it more rewarding and less threatening, for them. This has been shown to not only reduce the detrimental impact on people's health, but it also increases their work effectiveness and motivation (Ganster, 1989). Having an influence over their work environment also offers people more reason to notice their environment, and which provides them with more chance of noticing a wider variety of opportunities (or resources) within it (Flaxman & Bond, 2006). Indeed, in this way, people can find meaning and reward in their organisations as the providers of resources, through opportunities for feedback, support, learning and growth in valued directions, with less perceived threat (L. M. Roberts & Dutton, 2009). This is in contrast with work that is governed by rules, standardised routines and habits that can place a focus on the limitations (or demands) of their work environment. For organisations, reinforcing reliability, through conforming and standardised rules-based behaviour, can lead to faster results in the short-term, reinforcing the desire to implement such characteristics. However, it does not encourage context sensitivity and flexibility that are

essential for finding solutions across situations, supporting effectiveness, wellbeing and survival over the longer-term (Hayes, Brownstein, Zettle, Rosenfarb, & Korn, 1986; Törneke, Luciano, & Salas, 2008). Consequently, a strategy that provides people with some job control gives them an ability to change how they relate with their context, across situations, instead of standardisation and conformity which can limit their ability to do so. This relates with defusion, at the individual-level, where rules, habits, ideas and beliefs are not ‘bad’ in and of themselves, but having flexibility to challenge them where they are not serving valued outcomes, can lead to more effective and healthy outcomes.

Openness to Discomfort. For individuals (i.e. in this position on the Hexaflex), this process represents *acceptance*, which serves the purpose of being open to internal experiences, including challenging and unwanted thoughts. In organisations, the characteristic of *openness to discomfort* fulfils a similar role to acceptance. We can see that an organisational environment, as part of a person’s context, influences their internal experiences, including those which evoke discomfort, at times. Indeed, the identification, implementation and maintenance of organisational characteristics for flexibility can, themselves, be expected to evoke discomfort. For example, for managers to allow their employees to have some influence over their work, they may be expected to feel some anxiety. Similarly, for a project manager, expecting to find problems in the implementation of plans may provoke anxiety (Bond, 2015). For organisations to adopt the characteristics described here, and any others that are beneficial for achieving organisations’ purpose-driven goals, people within the organisations need to be willing to be uncomfortable in order to take action that serves their organisationally- and personally-valued goals. In contrast, avoiding such discomfort is likely to compromise the effectiveness and wellbeing of the organisation and its workforce. It is significant to note that the people leading the implementation of organisational characteristics for flexibility are likely to experience discomfort, as much as

anyone else. In order to provide role models for the workforce to be open to discomfort, the leaders need to exemplify the need, and demonstrate ways, to accept being uncomfortable with their thoughts and feelings, while still pursuing organisationally- and personally-valued goals. In an organisation that is willing to be open to discomfort, individuals are more likely to be able to being open to accepting their own uncomfortable thoughts.

4.2.3 Dual characteristics.

In order to engage with organisational purpose, and plans to achieve them, while also being open to discomfort and being open to various approaches for carrying out work, organisations need to be able to be alert to their own environments. The final two characteristics facilitate this.

Awareness. For individuals (i.e. in this position on the Hexaflex), this process represents *present moment awareness*, which serves the purpose of being focused on the present, in order to notice and pay attention to the internal and external environment. In organisations, the characteristic of *awareness* fulfils a similar role to present moment awareness, by describing the need for organisations to be alert to their behaviour; in this case, the behaviour within the internal organisational system (Bond et al., 2006). Within OB literature, much of the focus for systems awareness is placed on human resource (HR) management, through the development of policies and practices that aim to understand what is happening within the organisation, or that develop employees' awareness of their actions, in terms of how they relate with the shared purpose of the organisation. For example, HR departments may implement purpose-linked, nested goal setting processes; performance reviews for feedback to and from the individual and organisation; and provide rewards that are explicitly related to valued action. However, maintaining awareness is needed beyond HR, throughout the organisation, in order to develop and maintain flexible individuals and groups at all levels. Various organisational research areas, from organisational learning to design

thinking can provide further guidance for such extended open awareness, consistent with organisational flexibility. For example, employees can be encouraged to engage in pre-emptive analysis and discussion to identify potential problems in organisational plans; they can be provided with opportunities to question organisational assumptions and beliefs (Vogus, 2011); and they can use ‘decision tracking’ to record decisions and their anticipated outcomes, such that they can subsequently reflect on the consequences and impact of their decisions on the organisation’s purpose-driven goals, to use as feedback for future decision-making (Martin, 2009). Together with effective job design and openness to discomfort, encouraging organisational awareness helps the organisation to be more sensitive to, and thus more open to a wider range of purpose-related opportunities available to the organisation, in the situation. For individuals, it also encourages a sensitivity to their environment, helping them to identify and choose workable action in line with their own values.

Situational responsiveness. For individuals (i.e. in this position on the Hexaflex), this process represents *self-as-context*. From this perspective people willingly observe how they see themselves (e.g. “I am the best”, “I am not good enough”, “I feel afraid” etc.), without those thoughts overly determining their actions. Consequently, they are able to take action that is more consistent with what they value, in a given situation (Hayes et al., 2012). In organisations, the characteristic of *situational responsiveness* fulfils a similar role to self-as-context. Organisations are able to be more situationally responsive when they are able to notice the organisation’s conceptualisation of itself, without being rigidly attached to that perspective, so that the organisation can flexibly choose action, in the situation, that is consistent with pursuing the organisation’s purpose. An alternative label for this characteristic is ‘multiple alternatives’, highlighting the variety of possible perspectives for organisational responding (Bond et al., 2016).

An organisation's conceptualisation of itself (i.e. its identity) is typically reflected through the organisation's brand, in terms of how it presents itself to the public, and through its culture, in terms of the shared values, assumptions, and norms that are held by, and influence, its workforce (Schneider, 1990; Schneider, Ehrhart, & Macey, 2011). An organisation's brand and culture represent a reflection of a past and present narrative (e.g. how we want you to see us, how things have been done, and how we do things here) and can deter an organisation from being open and flexible to future opportunities (e.g. the way things could be done), and can impede learning from environmental feedback from customers, suppliers, competitors, regulators and unions, etc. Indeed, a strong brand or culture can suppress diversity, by encouraging people to adapt to 'the' way of working, through explicit or implicit rules, such that people are less open to voicing opinions or developing ideas, and instead they reinforce rigidity (Lencioni, 2012). Consequently, people 'non-consciously collude' in identifying, implementing and maintaining rigid work characteristics, in order to minimise discomfort (Bion, 1948). For example, unnecessarily complex approval processes may be implemented to avoid the discomfort of finding problems, but in doing so, they can stifle valued processes such as innovation and creativity. In contrast, situational responsiveness can be supported, by the workforce being open to discomfort and by designing work more effectively, to enable employees to be open to noticing their environments, for taking action towards achieving purpose-driven goals.

Furthermore, the ability to notice the organisation in relation to its environment can be predicted to have an impact for both the organisation and employees. Such an ability can help people to identify steps to achieving purpose-driven goals for the organisation. Also, when individuals are able to notice their organisational environment, they are likely to be more willing and able to notice the environment as a context to their own lives and their own personally-valued action. Consequently, as a context to people's lives, work is likely to be

more meaningful to them when they are able to notice opportunities to take action that are not only valued by the organisation, but can also be perceived as valued action, for them - “even if their only related values [with the organisation] are working in a healthy environment and earning an income to support their families” (Bond, 2015, p. 15).

These six Orgflex characteristics have been selected based on their ability to provide guidance for organisations to implement locally-workable techniques for enhancing flexibility. However, Bond (2015) makes it clear that these may not be the only characteristics that can enhance organisational flexibility, and he makes note of Hayes’ (2010) model, that uses an alternative perspective.

4.3 Organisational Flexibility and Ostrom’s Design Principles for Group Efficacy

Hayes (2010) has proposed a model of organisational flexibility, which, instead of using characteristics from OB, is based on eight design principles of collective action (Ostrom, 1990) and group efficacy (M. Cox, Arnold, & Tomás, 2010). These design principles, from Ostrom’s Nobel prize-winning work in economics, are proposed to serve as a practical guide for influencing group effectiveness. A background to these design principles is provided for context, followed by a brief description of each of the principles, and subsequently how they relate with the CBS view of organisational flexibility.

Ostrom’s design principles were originally specified for groups managing common pool resources (CPRs), such as irrigation systems, forests and fisheries. Previous economics literature, such as the classic paper “The Tragedy of the Commons” (Hardin, 1968), had predicted that CPRs would invariably result in tragically unequal access, overuse and/or depletion, due to individuals or smaller groups exploiting the CPRs for their short-term self-interest, at the expense of the larger group (usually over the longer term; Wilson, Ostrom, & Cox, 2013). Ostrom’s work countered this position, by demonstrating that when certain conditions are met, groups can sustainably manage CPRs in a way that supports long-term

survival and avoids the tragedy, even without privatisation or top-down regulation (Wilson et al., 2013). The eight design principles that describe those conditions are presented, in their brief form, here (Wilson et al., 2014, p. 406):

1. *Group identity.* Members of the most successful groups have a strong sense of group identity and know the rights and obligations of membership, along with the boundaries of the resource they are managing.
2. *Proportional costs and benefits.* Having some members do all the work and others receive the benefits cannot continue over a long term. In the most successful groups, the expectation is that everyone does his or her fair share and those who go beyond the call of duty receive appropriate recognition. When leaders receive special privileges, it is because they have special responsibilities for which they are accountable.
3. *Consensus decision-making.* People hate being bossed around but will work hard to implement a consensus decision – to do what we want, not what they want. In addition, the best decisions often require knowledge of local circumstances, that we have and they lack, making consensus decision making doubly important.
4. *Monitoring.* Even when most members of a group mean well, the temptation to receive more than one's share of the benefits and to contribute less than one's share of the costs always exists. In addition, at least some members might try to game the system actively. If lapses and transgressions are undetectable, the group enterprise is unlikely to succeed.
5. *Graduated sanctions.* Friendly, gentle reminders are usually sufficient to keep people in solid citizen mode, but there must also be the capacity to apply stronger sanctions, such as punishment or exclusion, if transgressions continue.
6. *Fast and fair conflict resolution.* When conflicts arise, they must be resolved quickly, and in a manner that the parties consider fair. This typically involves a hearing in which

respected members of the group, who can be expected to be impartial, make an equitable decision.

7. *Local autonomy*. When a group is nested within a larger society, such as a farmer's association dealing with the state government, the group must have enough authority to create its own social organization and make its own decisions, as outlined in 1–6.
8. *Polycentric governance*. When groups are nested within a larger society, relationships with other groups and higher-level entities (such as state and federal regulatory agencies) must reflect the same principles outlined above for single groups.

These design principles have been identified as relevant processes for adaptability across situations and time, in support of group survival (Wilson et al., 2013). As such, they can be seen as being relevant to describing a concept of group-level flexibility. Indeed, Hayes (2010) has proposed that the design principles be viewed through a CBS lens to represent organisational flexibility. To understand this view, it can be useful to evaluate the design principles using the CBS goals of predicting-and-influencing effectiveness and wellbeing, with precision, scope and depth.

In terms of prediction-and-influence, the design principles describe conditions that *predict* group-level effectiveness, which have been supported through empirical evaluation across more than 90 studies (Cox et al., 2010). Furthermore, by manipulating the conditions using the design principles, they have been shown to *influence* groups' effectiveness, with examples from educational contexts (Embry, 2002) to neighbourhood development projects (Oakerson & Clifton, 2011) and from government agencies to private organisations (Wilson et al., 2014). In terms of predicting-and-influencing human development and wellbeing, the design principles are considered to be important for supporting nurturing environments and 'prosocial' behaviour. Prosociality describes people committing effort towards shared goals

through cooperation with others, for the benefit others, while also offering opportunities for individual self-development (Wilson, 2008).

In terms of precision, scope and depth, a review (Cox et al., 2010) of the design principles provided support for their *precision* in so far as being robust to empirical testing, across contexts; but also agreed with a critique that the design principles are likely to be incomplete. In terms of *scope*, the design principles have also been identified as generalisable hallmarks for successful groups in “nearly any situation where people must cooperate and coordinate to achieve shared goals” (Wilson et al., 2013, p. 522). This proposal is supported by the notion that by focusing on the design principles as the processes of change, they can be implemented using a variety of locally-workable techniques that encourage sensitivity to groups’ unique environments and situations. For example, the techniques may differ according to group size, the heterogeneity of people within the groups, the location and types of governance, and the particular challenges a group faces (Wilson et al., 2014, 2013). In turn, this context sensitivity supports groups’ flexibility in pursuing their shared goals. While the question of *depth* has not been empirically tested, the polycentric design principle implies its scalability, to higher levels of governance in CPRs (Cox et al., 2010), and to developing nurturing environments in much larger scale communities (Biglan, 2015; Wilson et al., 2014). In relation to the lower level (i.e. at the individual level), Hayes has proposed the relationship between the design principles and psychological flexibility. To illustrate the relationship, Hayes presented (2010) each of the design principles on the Hexaflex (Figure 3), highlighting a general relationship between each of them and the processes that support individual-level psychological flexibility.

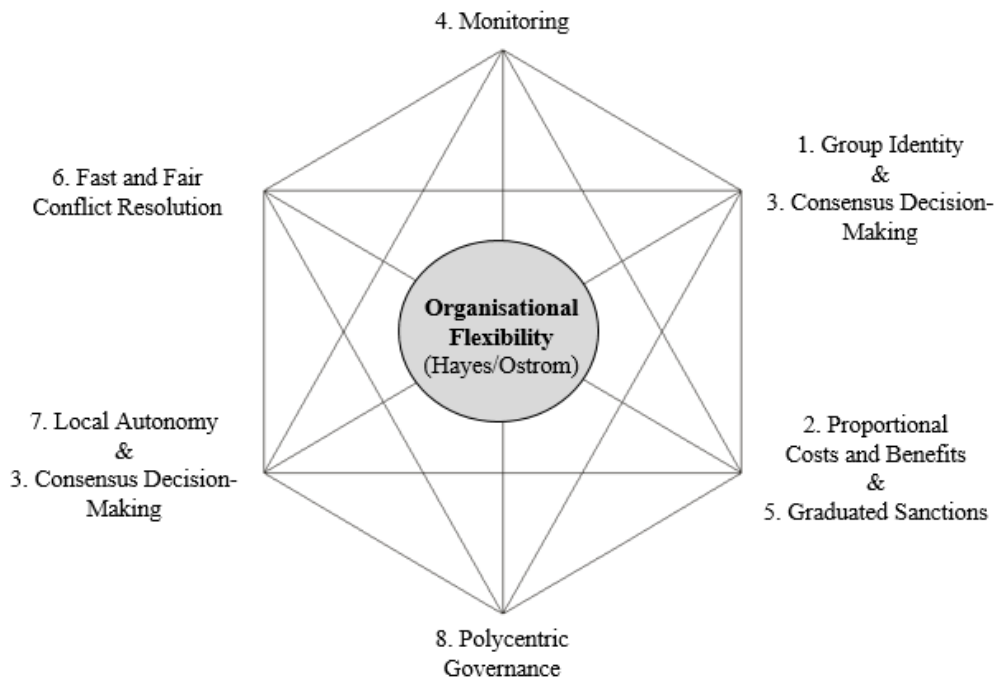


Figure 3. The Orgflex: Hayes’ model of organisational flexibility (Ostrom’s design principles)

At a practical level, Hayes’ (2010) model/Ostrom’s (1990) design principles are already being used by CBS practitioners. This includes the use of protocols, developed as a ‘prosocial framework’ for interventions in organisations, such as government agencies, and in communities. For example, the principles were applied by the organisation Prosocial World (‘PROSOCIAL World’, n.d.), to support local communities in Sierra Leone to limit the transmission of Ebola during the outbreak that started in 2014, by helping to prevent the achievement of localised short-term relief of individuals and groups, being at the expense of the wellbeing of the wider community (Stewart, Ebert, & Bockarie, 2017). Consequently, the development of this model is progressing, with an explicit intention of promoting prosociality at the group level, in order to improve the impact of organisations, not only on the internal environment (i.e. employees), but on the external environmental as well (Biglan & Embry, 2013; Wilson et al., 2014).

4.4 Relating the CBS Organisational Flexibility Models

Both models of organisational flexibility discussed in this section are guided by the same foundations and purpose: they both seek to improve individual and organisational effectiveness and wellbeing, by enhancing organisational flexibility, in line with CBS goals. In terms of their approaches, both have proposed models, using empirically-based and theoretically-relevant principals/characteristics for enhancing organisational flexibility. In the Hayes model, consilience was identified between Ostrom's design principles and CBS's theoretical explanation of group-level flexibility. In Bond's model, there was an explicit aim to identify and select only practically-relevant and manipulable characteristics, from OB research, for influencing organisational mindfulness and purpose-driven action, in order to enhance organisational flexibility. This, latter, approach offers clear opportunities for evaluating the 'precision' of the model. Bond's model is also explicit in the hypothesised coherence between the processes targeted for enhancing psychological flexibility in ACT, and the characteristics targeted for enhancing organisational flexibility, offering further opportunities for evaluating the 'depth' of flexibility across levels of analysis (Bond, 2015).

In terms of the models' goals, the Hayes/Ostrom model is clear in its prosocial aims. In this way, it can be understood to be taking workable action for the CBS goal of positive, intentional change for human effectiveness and wellbeing. Bond's model aims to cultivate organisational mindfulness and pursuit of purpose-driven goals, to improve individual and organisational effectiveness and wellbeing. In doing so, it too can be understood to be taking workable action for this CBS goal. Bond's approach may also address wider 'scope', through its potential applicability across a wide range of organisations, whose goals may or may not be explicitly prosocial.

CBS promotes a 'reticulated' (i.e. a networked) approach to research, encouraging the development and sharing of complimentary and competing concepts, model and techniques,

where they provide workable opportunities towards achieving CBS goals. Consequently, Bond and Hayes pursuing alternative strategies to evaluating the concept of organisational flexibility, in line with CBS goals, is encouraged. In pursuit of this CBS goal, Hayes' (2010) model/Ostrom's (1990) design principles are already being used in research and practice. The current research is taking the opportunity to pursue the CBS goal, by evaluating Bond's (2015) model.

4.5 In Summary

The concept of organisational flexibility, from a CBS perspective, reflects an organisation's mindful and purpose-driven action. It has been conceived of as a functional twin of psychological flexibility. Where psychological flexibility has been shown to predict individual effectiveness and wellbeing, this section has discussed organisational flexibility as hypothesised to predict individual and organisational effectiveness and wellbeing. Where ACT has been shown to improve individual outcomes of effectiveness and wellbeing, by increasing psychological flexibility, this section has discussed two CBS-based models that have been developed to improve individual and organisational effectiveness and wellbeing, by increasing organisational flexibility. Bond's (2015) model is based on six manipulable OB characteristics for enhancing flexibility: purpose and goals, planned action, effective job design, openness to discomfort, awareness and situational responsiveness. Hayes' (2010) model uses Ostrom's (1990) design principles. The current research seeks to evaluate Bond's (2015) model of organisational flexibility, and in doing so help to progress CBS's reticulated pursuit of its goals.

5 Organisational Flexibility: Mainstream Perspectives

The aim of this section is to explore how organisational flexibility is represented in mainstream literature, in order that the CBS perspective can be compared with it, for conceptual clarity. To achieve this, this section seeks to describe mainstream organisational flexibility, and explore how it is contrasted with organisational control. Next, this section explores a range of principles, models and strategies for focusing on either flexibility or control, or as ways to balance them. Finally, this section returns to Bond's model of organisational flexibility, to clarify the similarities and differences between the mainstream and CBS perspectives.

5.1 Organisational Flexibility vs Organisational Control

Organisational flexibility isn't a new concept for predicting organisational effectiveness (Hart, 1937; Steers, 1975); however, organisational literature is yet to reach agreement on a common definition, or theoretical cohesion, to explain organisational flexibility (de Haan, Kwakkel, Walker, Spirco, & Thissen, 2011; Dunford et al., 2013; Golden & Powell, 2000; Hatum & Pettigrew, 2006). The various definitions of flexibility diverge in terms of timescales, range, intention and focus (Golden & Powell, 2000; Quinn & Rohrbaugh, 1983), and have been both conflated with and contrasted with similar concepts, such as adaptability, adaptivity, agility, resilience and robustness (de Haan et al., 2011). Where definitions of flexibility appear to be broadly consistent is in expressing an organisational capacity for responsive practices to support adaptation in a changing environment (de Haan et al., 2011; Quinn & Rohrbaugh, 1983), and in contrast with organisational control, as defined by a capacity for reliable, efficient practices to align with organisational goals (Quinn & Rohrbaugh, 1983). With this lens, organisational flexibility and control are seen as competing strategies that form a "basic dilemma of organisational life" (Quinn & Rohrbaugh, 1983, p. 370). Across fields of research, this dilemma has been discussed under various guises,

including: exploration and exploitation (March, 1991; Tushman & O'Reilly, 1996); adaptation and alignment (Gibson & Birkinshaw, 2004); innovation and stability (Christensen & Christensen, 2003); differentiation and integration (Lawrence & Lorsch, 1967, 1986); productivity and safety (Roberts, Bea, & Bartles, 2001); and validity and reliability (Martin, 2009); as well as explicitly contrasting flexibility with control, stability, efficiency and reliability (De Leeuw & Volberda, 1996; Golden & Powell, 2000; Phillips & Tuladhar, 2000; Quinn & Rohrbaugh, 1983). Despite the variety of perspectives and terminologies used, the dilemmas of these competing strategies can be seen to share fundamental characteristics, discussed here as organisational control and organisational flexibility.

5.1.1 Organisational control.

Organisational control can offer organisations an increased sense of certainty (Ghoshal & Moran, 1996). When an organisation identifies an approach for achieving a desired outcome, it can come to expect that *consistently* applying the approach will *consistently* achieve the desired outcome. Specifying and standardising such an approach can allow the organisation to focus its resources and effort with greater precision and consistency, and avoid the spread of resources and effort across alternative approaches. Doing so reduces the likelihood of variance, and therefore the likelihood of errors. Consequently, such a strategy can be seen as a way to increase the predictability of an outcome, while minimising costs and increasing efficiency (Lavie, Stettner, & Tushman, 2010). The resources and assets, including the organisational knowledge, gained by identifying and deploying, or 'exploiting', reliable and efficient processes have been shown to generate predictable short-term benefits in terms of productivity and prosperity, in the prevailing environment (Lavie et al., 2010; March, 1991; Raisch, Birkinshaw, Probst, & Tushman, 2009). In order to maintain such strategies, work is often divided, simplified and standardised, and hierarchies and bureaucracies are put in place to monitor and prevent individualistic, opportunistic or discretionary behaviour (Ghoshal &

Moran, 1996). This Tayloristic (1911) approach increases the specialisation of tasks and opportunities for their automation, while reducing the organisation's dependence on specific individuals' knowledge, skills or abilities, further creating a greater sense of reliability, and increased efficiency (Parker, 2014). Thus, a strategy of control, with its short-term rewards, offers internal and external stakeholders a sense of certainty in their ability to apply the approach, to achieve desired outcomes.

However, an organisation that focuses excessively on control exposes itself to vulnerability. When a change occurs in the organisation's environment, applying the same processes, in the same way, will not predict the same desired outcomes in the long run (Zedeck, 2011). Furthermore, a Tayloristic approach to management is strongly associated with an unmotivated, disengaged and psychologically unhealthy workforce, which can be expected to have an impact on performance (Hackman & Oldham, 2010; Herzberg, Mausner, & Snyderman, 1959) and has been seen to be ineffective for fostering initiative, creativity, learning and leadership (Ghoshal & Moran, 1996). Thus, a strategy of control is unlikely to be reliable, efficient or effective over time and across situations, especially in a changing or uncertain environment. However, even in a stable environment, control is likely to lead to employee dissatisfaction and turnover. Indeed, "an organization that engages exclusively in exploitation [i.e. control] will ordinarily suffer from obsolescence" (Levinthal & March, 1993, p. 105).

5.1.2 Mainstream organisational flexibility.

In contrast, flexibility offers organisations an opportunity to respond to changes in the environment. To do so, the organisation needs to be able to identify and implement alternative processes for predicting and achieving (existing or new) desired outcomes, within the changing environment. To identify such processes, an organisation may pursue a variety of approaches to determine which are better at predicting the desired outcomes. Such a pursuit

may be based on inference from theory or evidence, or through trial and error, in order to determine which processes are locally workable for the specific organisation, in its environment. In this way, flexibility enables an organisation to expand its knowledge, resources and assets, by ‘exploring’ processes and outcomes, through variation, selection and retention of what works (Parker, 2014; Tushman & O’Reilly, 1996). This approach is considered important for creativity, innovation and entrepreneurial activity, and critical for long-term thriving and survival of the organisation, but it is also key for providing individuals with an opportunity for self-expression, learning and development, and supporting psychological wellbeing (Parker, 2014).

However, this perspective of organisational flexibility can also be seen as costly, time-consuming and error-prone, as well as being imperfect for consistently predicting specific desired outcomes across every situation. Furthermore, with insufficient organisational support, openness and trust, the unpredictable nature of such change can increase individuals’ psychological strain, rather than promote their expression, learning, development and wellbeing (Humphrey et al., 2007; Parker, 2014). Consequently, “an organization that engages exclusively in exploration [i.e. flexibility] will ordinarily suffer from the fact that it never gains the returns of its knowledge” (Levinthal & March, 1993, p. 105). These conclusions, that neither organisational flexibility nor organisational control should be deployed exclusively, and yet are both are critical for survival, have driven a breadth of research for managing the tension between them. An overview of this research is provided, using a variety of principles, models and strategies to illustrate how organisational flexibility is perceived.

5.2 Managing the Tension between Flexibility and Control

For managing the tension between organisational flexibility and control, contingency theory (Galbraith, 1973; Lawrence & Lorsch, 1967) promotes an ‘either/or’ approach. This theory, which has been dominant since the 1970s, essentially proposes organisational control

as an effective response in stable conditions, and organisational flexibility in uncertain conditions (Ghoshal & Moran, 1996). An example of contingency-based research describes organisations as either exploring or exploiting, by differentiating structurally or temporally. From this perspective, using structural differentiation, a parent organisation chooses to ‘hive-off’ an innovative business unit to act independently; whereas, using temporal differentiation, an organisation chooses to switch from flexibility to control (and vice versa), when the levels of certainty change in the environmental conditions (Andriopoulos & Lewis, 2009; March, 1991; Smith & Lewis, 2011). However, using this approach, organisations tend to struggle to transfer learning between the differentiated states, and in practice, tend to remain biased towards the greater certainty, sunk costs and short-term rewards of strategies for control (Phillips & Tuladhar, 2000; Tushman & O’Reilly, 2013; Zucker, 1989).

Instead of an either/or approach, organisational ambidexterity research proposes that organisations need to focus on *balancing* the exploration of new possibilities with the exploitation of existing capabilities, to sustain performance over time (March, 1991; Raisch & Birkinshaw, 2008; Tushman & O’Reilly, 1996). Again, structural and temporal approaches are proposed. A structural approach to ambidexterity typically refers to sub-units of an organisation (e.g. divisions, departments, teams, etc.) being selected to focus on either flexibility or control, using different “competencies, systems, incentives, processes and cultures” (O’Reilly & Tushman, 2007, p. 22). For example, a research and development (R&D) department might be designed with a decentralised, organic structure, to encourage focus on exploring product or service innovations; while other departments might be designed with a centralised, formal structure, to maintain focus on consistency and efficiency in the production of existing products or services (Drucker, 1985; O’Reilly & Tushman, 2007). In contrast, a temporal approach to ambidexterity seeks to flexibly determine *when* a sub-unit or individual performs a controlled set of standardised routines (Tushman & O’Reilly, 2013). An

example of a sequential approach is seasonal flexibility, where for most of the year an organisation focuses its attention on exploration, developing new products or services, but when demand is predicted to be high, it changes focus to exploitation, selling the products or services. The sequencing of switches between control and flexibility may be more or less rapid, but the organisation is expected to be prepared to switch. To maintain the balance of flexibility and control across the organisation, dynamic and adaptive meta-routines are required as mechanisms for coordinating and integrating resources, assets, and learning between the sub-units, and minimising disruption costs over time (O'Reilly & Tushman, 2007; Teece, 2007; Tushman & O'Reilly, 1996). Leaders are expected to be responsible for identifying and maintaining the adaptivity of the routines, based on their abilities to 'learn to learn' (Teece, 2007).

Outside the organisational ambidexterity literature, alternative structural and temporal practices can be found for balancing flexibility and control. Structural examples can often be found in task-based approaches, which separate operational or project tasks into small, iterative routines. The routines provide control, while the quick succession of feedback from each task enables flexibility in responding to situational needs and environmental changes (Andriopoulos & Lewis, 2009; O'Reilly & Tushman, 2007). To maintain the balance, knowledge management and adherence to the routines are considered key. The practical application of task-based balancing models can be found in examples such as Agile (Goldman, 1995; Meyer, 2015) and Design Thinking (Martin, 2009).

An example of an alternative temporal approach, can be found in high-reliability organising, which uses rapid sequencing to switch between approaches. Classic research identified high-reliability organisations (HROs) as operating in dynamic, complex environments, and having an intolerance for errors and accidents. Examples of HROs have included air traffic control systems, nuclear power plants, accident and emergency teams, and

space shuttles (Parker, 2014). For an HRO to be effective, it is expected to act in order to avoid the inevitability of errors and accidents (K. H. Roberts et al., 2001). To do so, HROs are prepared to delegate action, switching dynamically to whomever has the relevant expertise in a specific situation. This approach requires that, under certain conditions, responsibility must be able to change flexibly and rapidly; however, the actions themselves, are expected to be carried out in a highly-specified and controlled way. A significant challenge for HROs is an over-reliance on reliability (Leveson, Dulac, Marais, & Carroll, 2009; Marais, Dulac, & Leveson, 2004). Marais et al. (2009; 2004) argue that when the workforce is rewarded for adhering to routines, and punished for not doing so, then they are more likely to choose a reliable routine over a more appropriate (e.g. safe) option in the specific situation, regardless of their expertise.

While HROs have typically been researched in extreme environmental contexts, highly-reliable organising is also proposed as having wider applicability across organisational contexts. It does so by presenting a strategy for reducing reliance on work that reinforces closed-minded or mindless action, performed on autopilot (Levinthal & Rerup, 2006; Weick, Sutcliffe, & Obstfeld, 1999). This aim of reducing mindless action has led to HRO research becoming foundational for ‘collective mindfulness’ research (Weick et al., 1999). Indeed, mindful organising and highly-reliable organising are related to such an extent that both concepts share the same measures (Sutcliffe, Vogus, & Dane, 2016). Mindful organising is defined as “the collective capability to discern discriminatory detail about emerging issues and to act swiftly in response to these details” (Sutcliffe et al., 2016, p. 56), encouraging locally-applicable, real-time decisions and action. Like HROs, mindful organising expects routines to be deployed judiciously, such that in specific contexts (such as new or ambiguous situations) the organisation is free to focus attention and resources on tasks that need it. Such organisations need to make an ongoing effort to maintain mindfulness because, over time,

organisations learn from ever-more situations, increasing the likelihood of establishing routines that are able to cover an increasing range of activities, tipping the balance away from mindful, situational attention (Levinthal & Rerup, 2006).

The recognition of a need for mindful organising can also serve to highlight the psychological challenges involved in managing the tension between flexibility and control, across units and time. A paradox theory approach (Schad, Lewis, Raisch, & Smith, 2016; Smith & Lewis, 2011) suggests taking a perspective that seeks to ease the psychological pressure of balancing the tension. Paradox theories suggest that when a tension is seen as a dilemma, there is a pressure for it to be “solvable through rational analysis and logic” (Lewis & Smith, 2014, p. 8). As tension between flexibility and control will inevitably persist, managing the contradiction as a dilemma can be expected to provoke anxiety and defensiveness at the individual-level, resulting in inertia or mindless commitment to previous behaviours (Smith & Lewis, 2011). At the collective-level, it can result in the reliance on structures, strategies, processes, and technologies that reduce people’s exposure to new or difficult tasks, and avoid the risks of unknown or uncontrolled inputs, processes and outcomes (Bion, 1948; Lyth, 1990; Menzies, 1970). In contrast, when organisations are seen as systems, with ongoing inherent *paradoxes*, managers are more able to see the tension between flexibility and control, less as a dilemma, and more as an opportunity to accept *both* flexibility *and* control as appropriate responses. Consequently, the expectations of a rational solution can be released, reducing defensive behaviours. Examples of a paradox perspective can be found in the organisational ambidexterity literature, in particular, contextual ambidexterity.

Contextual ambidexterity aims for collective responsibility in balancing the tension between organisational flexibility and control (Gibson & Birkinshaw, 2004). It proposes to do so by encouraging individuals within an organisation “to make their own judgments as to how best to divide their time between the conflicting demands for alignment [i.e. control] and

adaptability [i.e. flexibility]” (Raisch & Birkinshaw, 2008, p. 211), rather than the tension being managed by leaders, or by prescribing structures or strategies. For individuals to judge effectively, this approach recognises the need to create a context which transcends the ‘either/or’ perspective associated with defensive thoughts and behaviours. For such a context, a key task of managers is to inspire the workforce to have faith in seeing flexibility and control as complimentary approaches to long-term organisational performance, by role-modelling, rewarding and recognising four interdependent behavioural attributes: discipline, stretch, support and trust that are proposed for adaptability (Ghoshal & Bartlett, 1994; Gibson & Birkinshaw, 2004).

An additional contextual capability that is recommended for managing defensiveness is purposeful adaptation (Barnard, 1938). This concept explains that, for changing behaviour, individuals and organisations need a higher reason and a direction to target their actions. It is proposed that this can be achieved by providing people with a shared purpose. Having a shared purpose offers organisations clarity about which environmental signals to respond to and which to ignore. It also allows organisations to create a social context of commitment, cooperation and trust, guiding the coordination of actions, without a need for short-term incentives or threats. (Ghoshal & Moran, 1996).

In summary, the mainstream literature presents organisational flexibility as a capability for responding to a changing environment, and as essential for organisational learning, adaptation and its long-term survival. It is contrasted with organisational control, as a capability for reliable and efficient goal alignment, which is also essential, for organisations’ short-term prosperity and survival. However, despite the need for both strategies to survive, their competing demands place pressure on leaders and employees to identify and effectively maintain the resources and assets between them. When the pressure is between choosing either flexibility or control, people are inclined to take a defensive stance, leading them to

take the seemingly reliable path of control, or inertia. Similarly, when the pressure is to change from one to the other, without sufficient guiding reason and direction, commitment, trust and cooperation, people are inclined to take a defensive stance.

5.3 Relating the CBS and Mainstream Perspectives

The discussion, above, summarises how organisational flexibility is represented in mainstream literature. We now return to discuss how organisational flexibility is framed from a CBS perspective, in order to relate it with the mainstream perspectives, and thus further clarify the concept, as evaluated in the current research.

Returning to the definition, CBS sees organisational flexibility as an organisation's ability to be aware of and open to noticing the features of its environment and, based on the opportunities available in the situation, take appropriate action in pursuit of its purpose. This perspective can be seen as similar to the mainstream literature, in that it encompasses responsive practices for supporting adaptation, in relation to the environment. However, the perspective differs from the mainstream literature, in that the CBS definition does not explicitly contrast organisational flexibility with control, but rather it contrasts flexibility with inflexible or rigid behaviours that are insensitive to the situation and context (including the organisation's learning history, and its internal or external environment), or that don't work towards the organisation's purpose-driven goals. Consequently, from a CBS perspective, organisations can pursue reliable and efficient routines, for short-term rewards, that are typically associated with control in mainstream literature, so long as the actions are coherent for pursuing the organisation's purpose. They can also pursue differentiation, for delayed rewards, that are typically associated with mainstream organisational flexibility. The two options need not be traded-off. This perspective, like the paradox theories, offers organisations the ability to be flexible in choosing which options are available. To determine which of the options may be effective, an organisation is encouraged to be open to

considering its workability, in relation to the situation and environment, for pursuing the organisation's purpose.

Pursuing organisational flexibility in this way identifies several further similarities and differences with the mainstream approaches. Firstly, like contextual ambidexterity, the CBS approach does not preclude or prescribe approaches for balancing flexibility and control, and thus may be seen to include structural or sequential approaches, or not. However, unlike ambidextrous strategies, the CBS approach does not have a goal of *balancing* flexibility and control. The goal from a CBS perspective is to select approaches that are workable, in relation to the situation and environment, for pursuing the organisation's purpose.

Pursuing organisational purpose highlights a second comparison, this time with purposeful adaptation, providing a higher reason and direction for action, combined with freedom to do so in locally-relevant ways. CBS adds workability to this. Taking workable action towards purpose-driven goals is likely to be more efficient for achieving purpose-driven goals, than taking action mindlessly, impulsively, or based on rules that distract resources and effort from the organisation's purpose-driven goals, in the given context. Through this lens, both successes and errors can be seen as more efficient approaches to pursuing purpose, when compared with taking routine action that no longer aligns with the organisation's purpose. This shows us that reliability is not necessarily efficient or effective. The consistent message provided by organisational flexibility is to question whether the action is workable for pursuing organisational purpose, in the current situation, given the environment.

A third comparison can be found in the recognition of individual and social defensiveness. The CBS perspective explicitly recognises defensiveness within the model of organisational flexibility, relating the impact of organisational characteristics for organisational flexibility, with psychological processes for individuals' psychological

flexibility. This recognition encourages the use of organisational characteristics that are designed to help people to accept their challenging and unwanted thoughts and feelings, so that they are less likely to persist with behaviours that no longer work for achieving valued outcomes. In contrast, while paradox theories recognise the defence mechanisms, the individual-level processes are not coherently embedded within the model, which continues to ask “what is the role of cognition and behaviour in creating or avoiding anxiety? Are such individual defences contagious; do they impact collective, organizational-level defences, such as strategic persistence?” (Schad et al., 2016, p. 39).

The CBS perspective also provides theoretical and philosophical coherence. It provides justification as to why organisational flexibility should provide prediction-and-influence for organisational effectiveness and wellbeing, with a precise definition, which can be applied across contexts, and across levels of analysis and domains, in ways that are lacking in the mainstream literature. This background has been designed to provide conceptual clarity for developing a measure of organisational flexibility.

5.4 In Summary

The concept of organisational flexibility, from a mainstream perspective, describes an adaptive capability for responding to a changing environment, which is typically evaluated in terms of its ability to predict organisational goals, and in contrast, or in balance with organisational control. This differs from the CBS perspective of organisational flexibility, which describes the selection of action based on its workability for achieving the organisation’s purpose-driven goals, in the context (and which may or may not encompass action that is considered to be adaptive and/or ‘controlling’). From the CBS perspective, organisational flexibility is to be evaluated based its ability to improve individual and organisational effectiveness and wellbeing.

6 Conceptualising the Construct for Measuring Organisational Flexibility

The aim of this section is to discuss ways to conceptualise the construct of organisational flexibility, in order to measure it appropriately. To achieve this, the section starts by introducing abstract, latent constructs as a way to conceptualise, and facilitate the measurement of behaviour. Then, it turns to measuring *organisational* behaviour, highlighting the complexity of measuring organisations as hierarchical, clustered, entities. Ignoring the hierarchical nature of organisations can lead to conceptual misinterpretation and statistical miscalculation in research. This section discusses levels of theory, measurement and analysis, for conceptualising constructs, as a way to avoid such issues.

6.1 Measuring Behaviour

To measure any entity or phenomenon requires a unit or score to quantitatively express the size, amount, degree or extent of it (Edwards & Bagozzi, 2000). When the entity or phenomenon is objective, such as an organisation's size or profit, we can measure it directly using quantitative units, such as a number of employees, a currency unit etc. However, to measure behaviour, such as organisational flexibility, that is subjective and abstract in nature, is more complex as it is less directly quantifiable. In such cases, it is common to use an instrument for people to subjectively report their abstract thoughts about behaviour, that would otherwise be hidden (or latent), as a way to uncover, and therefore indirectly observe (i.e. measure) them (Clark & Watson, 1995; Hinkin, 1998; MacKenzie, Podsakoff, & Podsakoff, 2011). In order to identify an abstract, latent behaviour, a label is constructed and applied to symbolically represent it. In the current research, to refer to the organisational behaviour of interest, a construct has been defined and labelled as 'organisational flexibility'. (However, it is noted that from a CBS perspective, labelling a behaviour as 'organisational flexibility' is a pragmatic approach to facilitating shared understanding, rather than the representation of a latent 'truth' to be uncovered).

In order for us to share an understanding of a construct's meaning, and to enable the development of an appropriate instrument for reporting on it, the construct needs to be clearly, precisely and fully defined to reflect the theoretical frame of the behaviour to which it refers. Without sufficient reference to the theoretical frame, we risk confusing the boundaries of what the construct is and isn't expected to relate to, what characteristics sufficiently represent it, and where there may be overlaps with other constructs (Cronbach & Meehl, 1955; Loevinger, 1957; Netemeyer, Bearden, & Sharma, 2003). In the current research, the theoretical frame is provided by Bond's model of organisational flexibility, and its conceptual similarities with, and differences from, the construct of psychological flexibility and alternative perspectives of organisational flexibility. The theoretical frame of organisational flexibility positions it as *organisational* behaviour. Understanding, measuring and evaluating organisational behaviour is typically more complex than the behaviour of independent individuals, and therefore warrants further discussion.

6.2 Organisational Behaviour

Organisations, by their nature, are hierarchical. A hierarchy describes the structure of entities that are nested, or clustered, within larger entities (Robson & Pevalin, 2015). For example, individuals that are nested in teams, that are nested in departments, that are nested in organisations, that are nested in industries, etc., (Klein & Kozlowski, 2000). Each nested layer can be thought of as a distinct level, however, they can typically be expected to interact, given the patterns of social reinforcement that exist in social groups. Such relationships can be both bottom-up, with people's behaviours and characteristics providing factors that can influence their cluster (at whatever level), and top-down, with the clusters' behaviours and characteristics providing factors that can influence the people within them (Costa et al., 2013; Heck & Thomas, 2015). Constructs can be understood as having a natural, theoretical level. However, this perspective is complicated by the ability to observe (i.e. measure) a construct

from different levels, and the ability to analyse hypothesised relationships with other constructs across levels. Ignoring levels of theory, measurement and analysis can lead to the conceptual misinterpretations and statistical mismeasurement (Chan, 1998; Glick, 1985; Hox, 2010; Klein, Dansereau, & Hall, 1994; Rousseau, 1985). To avoid these issues, the levels of theory, measurement and analysis are explained, and discussed in relation to the measurement of organisational flexibility.

6.3 Levels of Theory and Analysis

6.3.1 Natural levels of theory.

The natural level of theory of a construct refers to the focal entity that ‘owns’ the behaviour that the research is trying to explain (Klein et al., 1994). In the current research, organisational flexibility describes the behaviour of an organisation, both acting *in its context*, and *as a context* experienced by people working within it. Both the act-in-context and act-as-context can be understood as the same concept viewed from different perspectives. From both perspectives, organisational flexibility can be understood as being the property of the organisation, i.e. an organisational-level construct. This provides the primary level for evaluating organisational flexibility in predicting-and-influencing individual and organisational effectiveness and wellbeing.

In the current research, for testing this hypothesis, effectiveness and wellbeing are interpreted based on the CBS pursuit of valued goals, i.e. goals (or outcomes) that are *valued by* individuals and organisations. They are not interpreted as referring directly to individual and organisational levels of theory, however, we can expect a degree of consistency between the two. For example, an individually-valued outcome of job satisfaction has a natural level of theory at the individual level. Similarly, an organisationally-valued outcome of organisational performance has a natural level of theory at the organisational level. However, it is also possible to interpret these outcomes as having value at different levels. For example,

organisations may value ways to improve the job satisfaction of their workforce; and individuals may value noticing and contributing to their organisation's performance. Such examples generate an interest in conceptualising outcome constructs across levels. For example, in organisations interested in job satisfaction, they may seek to reach the whole workforce, reducing the variance in individuals' job satisfaction, and increasing the collective (i.e. organisational-level) job satisfaction. For an individual who is keenly interested in their organisation's performance, their perceptions of their organisation's performance may have a greater influence on them, relative to the influence it has on other individuals in the organisation: when the organisation's performance is high, perhaps their job satisfaction is higher. Therefore, it may be of interest to conceptualise a naturally organisational-level construct, at the individual level, to understand how much it varies between individuals. Consequently, we can assume that the hypothesis that organisational flexibility predicts-and-influences *individually-valued* and *organisational-valued* effectiveness and wellbeing, will include *individual-level* and *organisational-level* constructs of effectiveness and wellbeing. Furthermore, if these levels are not taken into consideration, conceptual issues are likely to arise in terms of interpreting effects to the wrong level.

6.3.2 Conceptual misinterpretation: fallacies.

Two specific issues are common when conceptualising and analysing data across levels. The first issue, known as the *ecological fallacy*, describes inappropriately generalising group characteristics to specific individuals, without acknowledging the variability within a group (Heck & Thomas, 2015; Robson & Pevalin, 2015). For example, in an organisation that has performed poorly, the ecological fallacy would be to assume that all of its staff are low individual performers. While it is possible that this is the case, it is also possible that any individual within the organisation is a high-, mid- or low-level performer, among low performers who brought down the organisation's average score; and assuming outcomes for

any individual in the organisation, based on the organisation's aggregated performance would be inappropriate. In the current research, this fallacy provides a warning against inappropriately attributing the same value of organisational flexibility to everyone in an organisation, and using it to predict individual-level outcomes, without sufficient understanding of the variability within the organisation.

The second issue, known as the *atomistic fallacy*, describes inappropriately generalising individual characteristics to the group, when context is not taken into account (Heck & Thomas, 2015; Hox, 2010). For example, in an organisation that has a female Board member, Jane, who has been identified as a low performer, the atomistic fallacy would be to assume that all female staff Board members are low performers. While it is possible that this assumption is correct, other scenarios are possible. For example, Jane could be the lowest performer on a high-performing, all-female Board, or she could be the highest performer on an exceptionally low-performing Board. Therefore, it would be inappropriate to use the individual level (Jane's performance) to represent the group (the performance of all female staff), without considering the context (Robson & Pevalin, 2015). In the current research, this fallacy warns against the attribution of one person's perceptions of organisational flexibility to everyone in the organisation, and predicting organisational-level outcomes based on it, without sufficient understanding of the context. Clarifying how constructs are conceived, for measurement, can help to avoid the conceptual issues arising from theorising and analysing constructs across levels, and can be used to inform the development of a measure of organisational flexibility.

6.4 Levels of Measurement

6.4.1 Global, contextual and structural measurement constructs.

To discuss levels of measurement, it can be useful to conceptualise an organisational-level construct as being global, contextual or structural (Hox, 2010). A *global*, organisational-

level construct refers to a phenomenon that only exists at the organisational level, without reference to other levels. Global constructs are measured only at the organisational level, and only one source is expected. For example, an organisation's profit can be understood as being a global, organisational-level phenomenon. A *contextual*, organisational-level construct refers to a phenomenon from the organisational-level, that is applied to all the individuals within the organisation. Contextual constructs are measured at the organisational level, and disaggregated to the individual level, such that all individuals in the organisation are associated with the same value. If analysing the data at the individual level, the data would be unanimous. For example, the organisation's profit (or profit-per-head) could be conceived of as an individual-level construct. A *structural*, organisational-level construct refers to a phenomenon at the organisational level, that originates at the individual level, where the combined thoughts, behaviours or characteristics of individuals in an organisation are used to reflect the organisation (Schnake & Dumler, 2010). Such a construct is operationalised by measuring it at the individual level, and aggregating it to the organisational level (Hox, 2010). If analysing the data at the individual level, typically, a degree of variance can be expected between individuals. For example, organisational absenteeism describes an organisational level phenomenon, based on an aggregation of individuals' absences; however, the individuals' absences can be expected to vary (e.g. in terms of frequency and/or duration) within the organisation.

In the current research, organisational flexibility describes behaviour, which is interpreted subjectively, and therefore can be understood as originating in the thoughts of individuals. This indicates a structural construct. However, for an organisational-level construct to be measured at the individual level requires justification: (a) the data need to support requisite levels of consensus and variance, within and between organisations, to

justify aggregation; and, (b) the conceptualisation of the construct at the individual and organisational levels needs to be meaningful, theoretically.

6.4.2 Consensus and variance within and between organisations.

To support aggregation, the data used to measure the construct need to meet requirements for consensus/variance. For a structural construct to be understood as representing an organisation, it can be expected to reflect a degree of *consensus* (i.e. a lack of variance) between individuals, *within* an organisation. Such consensus provides an indicator of the organisation's influence on those working in it. In addition, a structural construct can also be expected to reflect a degree of *variance* (i.e. a lack of consensus) *between* organisations. Such variance indicates that the distribution of responses within the organisation is not simply a reflection of responses across the wider population. For example, if the spread of individual responses within an organisation were the same as the responses of individuals picked at random, then the data wouldn't be showing support for an organisational level construct. If data is measured at the individual level, and aggregated to the organisational level, without sufficient justification in terms of consensus and variance, there is a risk that its use in analysing the organisation and its relationships, will be inappropriately interpreted and generalised.

Variance in organisational flexibility between organisations. In the current research, understanding organisational flexibility as the behaviour of an organisation, acting in its context, reflects the organisation as potentially having some behavioural similarities with other organisations, due to a degree of shared context (e.g. organisations in the same industry and geography sharing trends in HR and management practices etc.). This indicates some degree of consensus between organisations can be expected. However, mostly, an organisation's flexibility can be expected to be different to other organisations, due to their

unique historical and situational, internal and external environments. This indicates substantial variance between organisations can be expected.

Consensus in organisational flexibility within organisations. Understanding organisational flexibility as a unique organisational context, experienced by people working within it, reflects the organisation as being a source of shared characteristics. These can be expected to provide an influence for the perceptions of individuals within the organisation. This indicates some degree of consensus, between individuals within the organisation. However, individuals' perceptions of their organisation's behaviour will also be influenced by their unique contexts, including factors from their personal history of education and work, their social expectations at work, their relationships with their colleagues, their experience in their current role, etc. These unique experiences can be expected to influence people differently in terms of how they relate to their organisation, and therefore how they perceive their organisation's level of flexibility. This indicates some degree of variance can be expected between individuals, within an organisation. On balance, the expectation is that organisational flexibility will demonstrate a sufficient degree of consensus within organisations, and variance between organisations, to justify aggregation. However, data must be assessed to confirm the levels of consensus/variance and to establish support for aggregation, in order to justify the use of individual-level data to measure organisational-level flexibility.

6.4.3 Individual and shared perceptions of organisational flexibility.

In terms of theoretical rationale for conceptualising organisational flexibility at the individual, as well as the organisational levels, we return to the two perspectives of organisational flexibility as the behaviour of an organisation, both acting in its context, and as a context experienced by people working within it. The latter perspective of organisational flexibility can be understood as describing people's perceptions of their working context, i.e.

individual perceptions of organisational flexibility. This provides us with a way of meaningfully conceptualising individual-level organisational flexibility, and with an opportunity to evaluate the extent to which individuals' perceptions of their organisation's flexibility vary, within and between organisations. It also provides the opportunity to evaluate the extent to which individuals' perceptions of their organisation's flexibility vary in relation to other constructs. In other words, to understand how well individuals' perceptions of their organisation's flexibility predict-and-influence their own effectiveness and wellbeing.

If data provides sufficient support for aggregation, based on consensus within organisations and variance between organisations, in terms of individuals' perceptions of organisational flexibility organisations, then the aggregation of individuals' perceptions can be understood as *shared perceptions of organisational flexibility*. These shared perceptions of organisational flexibility reflect organisational flexibility at its natural level. Conceiving of organisational flexibility using two constructs in this way provides us with a meaningful path – from individual's reporting their perceptions, to establishing shared perceptions – for measuring organisational flexibility at its natural level, for testing hypotheses. However, for constructs that are conceived of at multiple levels, the relationships between levels need to be taken into account, in statistical analyses.

6.4.4 Nested, non-independent data.

The relationships between individuals, within an organisation, need to be taken into account to avoid statistical mismeasurement (Heck & Thomas, 2015; Hox, 2010). The point is that for research in organisations, analyses are not simply *between individuals*; but *between individuals, within organisations*. This is because individuals who are nested within an organisation share the influence of the organisation that they are working in, which means that it cannot be assumed that their responses are independent of one another. Yet, standard statistical tests assume that responses *are* independent of each other. Using such tests on

nested data can lead to false positives (Type I errors) in the analysis of relationships between levels, and false negatives (Type II errors) in the analysis of relationships within levels (Heck & Thomas, 2015; Kreft & de Leeuw, 1998). In the current research, this statistical issue highlights the need to measure individuals' responses, within an organisation, without treating them as independent (which would assume no shared influence), and without treating them as though they are the same as each other (which would assume no variance between them). To do so, the empirical studies in this research are guided to use techniques that are specifically designed for such multilevel analysis.

6.5 In Summary

This section has discussed organisational flexibility, as an abstract, latent construct that reflects behaviour theorised at the organisational level. Due to expected variances in interpretations of an organisation's flexibility, and in order to avoid misinterpreting the data, it is proposed that organisational flexibility is conceptualised at the individual level, as well as at the organisational level, for the purposes of measurement. From a conceptual perspective, this provides us with two measurement constructs: *individual perceptions of organisational flexibility* and *(shared perceptions of) organisational flexibility*. Interpreting organisational flexibility in this way provides opportunities for assessing consensus/variance in perceptions of organisational flexibility, within and between organisations. It also provides opportunities for assessing consensus/variance in relationships between perceptions of organisational flexibility and hypothesised outcomes, within and between organisations. From an analytical perspective, data will be needed to confirm that individuals' perceptions, within an organisation, do indeed demonstrate sufficient consensus/variance to be considered 'shared'; and the non-independence of such data will need to be taken into account using multilevel analysis techniques.

7 Methods for Scale Development and Evaluation

The aim of this section is to discuss methodology for developing and validating a measure of organisational flexibility. The previous section proposed that, to measure the construct of organisational flexibility, individuals within their organisations be asked to report their perceptions of their organisation's flexibility. This section proposes that, for individuals to provide such reports, an instrument is required, that supports the consistent measurement of the same, unique construct of organisational flexibility. This section discusses the development of a scale, as an appropriate instrument. Then it discusses criteria and procedures for evaluating the scale. These methods will be used to guide the practical studies of this thesis.

7.1 Scale Development and Item Generation

In order for individuals to report their perceptions of their organisation's flexibility, it is necessary to develop an instrument to collect their responses. For the instrument to appropriately reflect the construct, it needs to be developed based on the theoretical frame that has been established. The instrument also needs to be designed to help people to interpret and quantify their perceptions of the construct, in a way that is straightforward for the individuals to relate to. The instrument most commonly used for the measuring constructs is a scale (MacKenzie et al., 2011). A scale is an instrument that is composed of a set of statements or questions (or 'items') that are created (or 'generated') to reflect the full theoretical frame of the construct. For example, Hackman and Oldham (1975) developed a scale for measuring job satisfaction, which included the statement "I am generally satisfied with the kind of work I do in this job", as one of five items in the set. The number of items generated is dependent on the ability of the items to fully and appropriately reflect the extent of the theoretical frame. For people to quantify their responses to the items, the items are coded using an ordered sequence of response options, typically expressed numerically and verbally, on which the respondents

are able to indicate their level of feeling about the construct with a score (Bryman, 2012; Hinkin, 1998). For example, an ordered numerical sequence of scores from 1 to 7, might be used to represent responses ranging from “I strongly disagree” to “I strongly agree”.

For a scale to measure an organisational-level construct, but which is designed to be measured at the individual-level, like organisational flexibility, it is important that the instrument is clear in directing respondents’ attention to the focal level of the organisation (Glick, 1985; Klein et al., 1994). For example, the item “My organisation has interesting goals” directs individuals to report on their perceptions of the *organisation’s* goals. When the scores are aggregated to the organisational level (if supported by theory and the data), the responses to this item can be understood to reflect the extent to which people share perceptions about the organisation’s goals. In contrast, an item such as “I have interesting work goals in this organisation” reflects perceptions of *individual’s own* behaviour in relation to their organisation. When the scores are aggregated to the organisational level (if supported), this construct does not represent *shared* perceptions of the organisation, but a *collective* of self-perceptions. While it is possible that these two examples might yield similar responses, this cannot be assumed. For example, a person might work in an organisation with interesting goals, but their own goals are not interesting, and so their responses to these two items would be quite different: they are not measuring the same constructs (Schneider, Ehrhart, & Macey, 2013). Once a pool of items has been generated, such that the items are believed to fully reflect the theoretical frame of the construct, the items need to be evaluated for their performance, together, as a scale for measuring organisational flexibility.

7.2 Evaluating the Scale

To ensure that a scale is able to provide a sound measure of a construct, it is typically evaluated based on the performance of the item responses, using tests of dimensionality, reliability and validity (Hinkin, 1995; Netemeyer et al., 2003). These terms refer to

interrelated properties of measurement (Netemeyer et al., 2003). *Dimensionality* refers to the instrument's ability to measure a single construct (Netemeyer et al., 2003). *Reliability*, refers to an instrument's ability to measure with consistency. *Validity* refers to the scale's ability to reflect the construct that it is intended to measure (Hinkin, 1998). In the current research, a scale for measuring organisational flexibility will need to be evaluated based on its ability to reflect these properties, at the appropriate levels of analysis.

7.2.1 Dimensionality.

For a scale to specifically represent one single construct, the items within the scale need to demonstrate sufficient homogeneity to reflect one single dimension, or factor (Netemeyer et al., 2003). Therefore, statistical tests are needed to evaluate the extent to which the items reflect a construct that is unidimensional. If tests show the items relate to multiple factors (i.e. the scale is multidimensional), then the items can be understood to be measuring multiple constructs. In some cases, a construct may be theorised as having multiple dimensions, which collectively reflect a higher-order factor representing an overarching construct. For example, Baer et al. (2008) conceptualised mindfulness with five dimensions, labelled: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience, which collectively reflect the higher-order construct of mindfulness. In such cases, the statistical analyses used to evaluate the scale are needed to assess the dimensionality of the lower-order factors, as well as their collective fit within a single superordinate dimension, or factor. However, it is necessary for any scale to demonstrate an overarching unidimensionality, as a prerequisite to reliability and validity (Netemeyer et al., 2003). This guides the current thesis to provide clarity, based on the theoretical model, for the expected dimensionality of organisational flexibility, particularly in relation to its definition as a combination of organisational mindfulness and purpose-driven

action, and the six Orgflex characteristics. With this clarity, the instrument can be developed and evaluated appropriately.

To assess the dimensionality of a construct, factor analysis is used to evaluate the underlying structure in the data. This analysis is used to identify factor(s) in the data, using estimates of the relationship patterns between items to determine those that reflect the same construct(s). Factor analysis is typically performed using two complimentary techniques: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The former is typically used first, with the aim of exploring the relationships between items, to establish a factor structure of the items (i.e. their dimensionality), and propose the structure as a statistical measurement model for reflecting the construct. The latter is typically used next, with the aim of evaluating the fit of the proposed measurement model, using a distinct sample.

7.2.2 Reliability.

For an instrument to be reliable, it is required to demonstrate internal consistency, which refers to the patterns of agreement, or interrelatedness, across multiple items in the same scale (Hinkin, 1998). An assessment of these patterns is used to indicate whether the items are consistently measuring the same construct. However, caution is required, because the number of items in a scale can also influence these assessments. A scale needs to be designed such that the number of items is sufficient to fully reflect the theoretical frame of a construct; however, any additional items may result in a misleading sense of reliability, because the reliability coefficient increases with each item added (it is calculated as a function of the number of items in a scale). Therefore, adding items that are essentially indistinguishable in meaning may artificially increase reliability, and create redundancy. Furthermore, additional items are more likely to lead to respondent fatigue, or their lack of desire to cooperate with, or complete the survey, reducing the effectiveness of the scale. It is

therefore recommended to develop scales based on the principle of parsimony, with the scale containing the least number of items necessary (Netemeyer et al., 2003; Wieland, Durach, Kembro, & Treiblmaier, 2017). Indeed, while aiming for high reliability as a necessary condition for establishing validity, “it is sometimes reasonable to remove items that are both reliable and valid if this can reduce the length of a questionnaire and thus increase the response rate” (Wieland et al., 2017, p. 5). This approach guides the current research to develop a scale that is sufficiently thorough to reflect the full theoretical frame of organisational flexibility, while emphasising the need for a parsimonious and practical scale, for use in organisations.

To assess reliability, the patterns of interrelatedness are typically analysed in terms of the average correlations between items (their covariance), the item-to-total-measure correlations, and reliability coefficients, such as Cronbach’s (1951) coefficient alpha (Cronbach & Meehl, 1955; Netemeyer et al., 2003; Nunnally & Bernstein, 1994). EFA can also be used to support reliability, by identifying items that don’t fit with the factor structure of the other items, indicating that they are not measuring the same construct. This enables items to be dropped, reducing the scale to a more parsimonious set of indicators, thereby maximising the scale’s reliability, by representing the construct as fully as possible, yet with as little redundancy as possible (MacKenzie et al., 2011).

7.2.3 Validity.

For an instrument to be considered valid, it needs to demonstrate that the scale relates with other constructs, in the way in which it is theorised to relate with them. Validity is typically assessed based on the content, construct and criterion-related validity of the scale. *Content validity* refers to the adequacy with which the items in the scale collectively span the theoretical frame of the construct. This refers to test of the items, prior to distribution in a survey, that evaluate whether the theoretical model of organisational flexibility is reflected as

fully as possible by the items in the scale. *Construct validity* refers to the extent to which the scale is able to assess the theoretically underlying attributes and characteristics of the construct (Swanson & Holton, 2005). This guides the current research to assess the relationship between the measure of organisational flexibility and the constructs and characteristics that have been defined as being related to it. *Criterion-related validity* refers to the extent to which the scale relates to theoretically-predicted outcomes, and its ability to do so in comparison with established measures within the same domain, in order to place the scale more clearly within the wider literature. Of particular interest is the scale's ability to predict outcomes, over and above the established measures (i.e. incrementally), justifying the use of the new scale, in relation to the established constructs (Hunsley & Meyer, 2003). (Netemeyer et al., 2003). This guide the current research to assess the relationship between the measure of organisational flexibility and outcomes of organisational and individual effectiveness and wellbeing, and to assess whether it is able to do so over and above established constructs. Overall, the ability to demonstrate validity is typically considered to be the ultimate test in the development and evaluation of a scale, for revealing an otherwise latent construct (Cronbach & Meehl, 1955; Netemeyer et al., 2003).

For assessing validity in the current research, correlational analyses are considered to be appropriate for evaluating the relationships between organisational flexibility and other constructs to determine their similarities. Factor analysis is considered appropriate for assessing how organisational flexibility differs from other constructs, by identifying how the items and constructs/factors inter-relate. Regression analyses are considered to be appropriate for assessing the high-level hypothesis, that organisational flexibility predicts individual and organisational effectiveness and wellbeing. Regression assesses how change in one construct relates to change in other (i.e. prediction), and the extent to which that relationship varies between cases (i.e. between individuals, within organisations; and between organisations).

7.2.4 CBS and utility.

In typical measurement research, the goal of a measure is to establish validity, in order to reveal a 'true' construct. However, CBS provides a different perspective and an additional criterion that is important for the current research to consider. From a CBS perspective, the goal of a measure is to offer utility "above and beyond any other property" (Hayes et al., 2012, p. 12). The utility of a measure can be understood based on its ability to predict-*and-influence* desired outcomes (Hayes et al., 2012; Hayes, Nelson, & Jarrett, 1987). In the current research, this criterion guides the need to not only evaluate the ability of organisational flexibility (as measured by the scale) to predict desired and intended changes in valued outcomes, but also to evaluate whether increases in organisational flexibility lead to (i.e. influence) improvements in those valued outcomes.

To assess utility, in the context of the current research, we need to be able demonstrate an ability to improve hypothesised outcomes, and to show that the improvement can be explained (i.e. mediated) by enhanced organisational flexibility (as measured by the scale). To examine this, we can make use of mediation analysis, which evaluates how an independent variable relates to a dependent variable, through a hypothesised mediator, helping to establish causal sequence (Baron & Kenny, 1986; Kazdin, 2007). To establish whether organisational flexibility is able explain change (thereby inferring cause and effect), we need to provoke the intended improvements in the outcomes, using an intervention in experimental conditions. We can then examine whether increases in the mediator (i.e. organisational flexibility) occur, which lead to the outcomes. In summary, to assess the utility of the scale, we can examine how an intervention (i.e. the independent variable) relates to outcomes of effectiveness and wellbeing (i.e. the dependent variables), through organisational flexibility (i.e. the hypothesised mediator), as measured by the scale.

7.3 In Summary

This section has aimed to discuss methods for developing and validating a scale to measure organisational flexibility. It briefly discussed the scale development process, using items to reflect aspects of the construct, and scores for people to use to report their relationship with the construct, using the items. The section has also discussed criteria and analytic procedures, in terms of dimensionality, reliability, validity and utility, to guide the evaluation of a new scale.

8 Thesis Outline

The overall goal of the current thesis is to develop and validate a measure of organisational flexibility. The aim of Chapter 1 has been to provide an outline of the philosophical goals, theoretical frame, and methodological approaches that provide motivation and direction for this research. The aim of the next chapters is to describe a series of studies that were carried out for the practical phase of this research. The current section aims to bridge the gap between the introduction and the practical phase by providing an outline of the justification and methods of each study, building on each other towards achieving the overall goal.

Chapters 2 through 5 present four empirical studies, while Chapter 6 presents a protocol study. The first study aimed to develop an initial scale, by proposing items and testing them for content validity, dimensionality and internal reliability. The items were generated based on the theoretical model, and evaluated by expert raters; then empirical data were used in EFA, which indicated an initial factor structure, in an individual-level measurement model. The second study aimed to find support for the newly proposed measurement model, and assess it at the organisational level, as well as the individual level. A series of multilevel CFAs were used to evaluate the fit of the model, using organisational samples to assess the scale's validity as an organisational-level measure. The third and fourth studies aimed to assess the construct and criterion-related validity of the scale. The organisational sample data were used in correlational, regression and factor analyses, to assess the scale based on hypothesised relationships with other specified constructs, according to the theoretical frame of organisational flexibility.

The final study aimed to progress the research towards the CBS goal of assessing the scale's utility, in an organisational flexibility-informed intervention study. However, before implementing such a full-scale organisational intervention study, it was identified that a pilot

study would provide a workable approach for assessing the suitability and practicability of the intervention. This final study developed a protocol for such a pilot study. The pilot study protocol proposed a longitudinal, quasi-experimental, mixed methods design, for assessing the ability of individual perceptions of organisational flexibility to predict-and-influence individual and organisational outcomes of effectiveness and wellbeing; and for assessing the practicability of the intervention.

Due to the close and sequential nature of this series of studies, each chapter ends with a summary and next steps. A discussion of the studies' results is reserved for the final chapter (General Discussion), where the results are addressed collectively.

Chapter 2. Study I – Item Generation & Exploratory Factor Analysis

Abstract

The aim of this study was to propose an initial scale as a model for measuring organisational flexibility. Results showed support for a seven-item, single-factor scale. An initial, over-inclusive pool of 38 items was generated based on Bond's (2015) theoretical model of organisational flexibility. Experts reviewed the items for content validity, leading to five items being removed, and 33 items retained for further analysis. To empirically assess the items, data were collected from an individual-level sample of 303 people working in diverse organisations from around the world. Bivariate correlational analysis indicated that five items related poorly ($r < .3$) with most other items (57% - 100%), and multicollinearity analysis indicated likely redundancy among 14 further items. These 19 items were removed. An EFA was performed on the remaining 14 items. Parallel analysis indicated a single factor, in line with the anticipated unidimensionality of organisational flexibility. A factor rotation was performed using the single factor, which highlighted items with low communalities ($< .35$), and led to pragmatic decisions to remove a further seven items from the scale. This resulted in a seven-item unidimensional scale, accounting for 52.32% of the variance, and indicating good internal consistency (Cronbach's $\alpha = .88$).

Introduction

This chapter describes the first of four empirical studies in the development and validation of a measure of organisational flexibility. The aim of this study was to propose a scale, as a measurement model, that would be sufficiently thorough to fully reflect the concept of organisational flexibility, and yet also sufficiently parsimonious to be practical for use in organisational settings. To achieve this, the first phase of this study was to generate items, using content that would reflect the characteristics, dimensionality and levels of organisational flexibility, and subsequently to assess their content validity. The second phase was to evaluate these items, using empirical data and statistical analysis, to determine the relationships between the items, and reduce the number of items to include only those which related sufficiently well with one another to reflect a single scale, and therefore a single concept.

Before discussing these steps, it is worth noting that scale development is often considered to be a highly subjective process (Hardesty & Bearden, 2004; Henson, 2006; MacKenzie et al., 2011; Tabachnick & Fidell, 2013). While many scale development decisions are based on statistical criteria, which use quantitative data to compare the results of calculations with cut-offs and use inferential tests, there are many decisions that also require the use of judgmental criteria. Such criteria rely on researchers' qualitative assessments and knowledge of methods, theory and practice (Wieland et al., 2017). In order to provide clarity and support for the criteria used to make decisions in the current study, this introduction reiterates the theoretical conceptualisation of organisational flexibility that guides the scale development, before briefly highlighting the analytic approach.

For a scale to provide a thorough representation of the theoretical construct of organisational flexibility, the items that are generated need to fully reflect the theory-based characteristics, dimensionality and levels of organisational flexibility. For the items to

represent the *characteristics* of organisational flexibility, they need to reflect the combination of organisational purpose-driven action and mindfulness, using statements that highlight the organisation's willingness to pursue the organisation's aspirational aims, as well as the organisation's open awareness of the internal and external environment. The items also need to cover content from the six Orgflex characteristics that Bond (2015) proposed for guiding organisations towards organisational flexibility. While the six characteristics are not expected to be the only characteristics that can enhance organisational flexibility (Bond, 2015), they can be seen as helping to provide a representative illustration of behaviours across the domain. As a recap, the six characteristics can be summarised as:

- Purpose & Goals: The degree to which the organisation is guided by its overall aspirational purpose.
- Planned Action: The degree to which the organisation intentionally makes plans to progress towards its purpose-driven goals
- Awareness: The degree to which the organisation is open and alert to noticing and experiencing its internal and external environment
- Situational Responsiveness: The degree to which the organisation is able to react and adapt to opportunities and challenges in its environment
- Effective Job Design: The degree to which the organisation supports individuals' abilities to influence their relationship with their work environment
- Openness to Discomfort: The degree to which the organisation is willing and open to identifying difficulties (issues, risks, problems etc.), and address them as expected and important parts of organisational learning and progress.

For the scale to represent the *dimensionality* of organisational flexibility, it is important to consider how the items, containing this multitude of characteristics, are expected

to combine. Indeed, this study hypothesised that organisational flexibility is a unidimensional construct, in line with the conceptualisation of psychological flexibility. This is because the concepts of purpose-driven action and mindfulness are not seen as distinct dimensions that form organisational flexibility, but rather, in combination, they are seen as enabling flexibility (i.e. for organisations to be flexible, they need to be mindful, in order to pursue purpose; and pursuing purpose provides organisations with a motivation to be mindful). Therefore, this study was not expecting the items to form two factors that represent dimensions of purpose-driven action and mindfulness, with a super-ordinate factor representing organisational flexibility. Similarly, the six Orgflex characteristics are not seen as distinct constructs or dimensions, but as mid-level concepts that function as flexible rules, supporting techniques that can be expected to help organisations to behave flexibly (Levin & Hayes, 2009). Therefore, this study was also not expecting six factors to represent the Orgflex characteristics, with a super-ordinate factor of organisational flexibility. Instead, to represent organisational flexibility, the items in this study were expected to combine to a single factor, reflecting a unidimensional scale. This unidimensional conceptualisation is congruent with that of the scales developed to measure psychological flexibility (Bond et al., 2011; Bond, Lloyd, & Guenole, 2013; Gillanders et al., 2014).

For the scale to represent the natural *level of theory* of organisational flexibility, the items need to reflect the organisational-level nature of the construct. In order to do so, it is essential that the items refer to the organisation as the focal entity, rather than referring to the individual, or the individual's relationship with their organisation (Chan, 1998). For example, "My organisation pursues its purpose-driven goals ...", rather than "I pursue my organisation's purpose-driven goals ...". Consequently, when such items are used in aggregation, they are considered to reflect shared perceptions of organisational behaviour.

In order to evaluate the items that have been generated, in terms of their ability to reflect the construct, the analytic approach needs to be considered, and the sampling approach needs to take the level of theory and measurement into consideration. In terms of the analytic approach, the current study proposes the use of exploratory factor analysis (EFA) to explore the relationships between item responses and refine the list of generated items. This technique helps to identify which items relate closely enough to be understood as measuring the same concept. The factor structure, provided by these relationships, can then be used to propose a measurement model. This technique also enables the identification of items to reject, based on those that don't relate strongly with the other items, indicating that they may be measuring a different concept (impacting dimensionality, reliability and validity). Furthermore, the technique enables the identification of items to reject, based on those which relate too strongly with other items, indicating excessive overlap in content, and therefore redundancy (impacting parsimony). In terms of the sampling approach, despite the organisational nature of the scale, it can be a useful strategy to initially evaluate the items based on a sample of independent individuals, before evaluating the scale with a multilevel sample (González-Romá & Hernández, 2017). The use of an independent, individual-level sample can help to establish consistency in patterns of item responses, to identify items that reflect the same construct, without the potentially contaminating influence of a cluster. It can also be pragmatic, due to challenges that can exist in organisational-level sampling (Egan, Bamba, Petticrew, & Whitehead, 2008; Hayes & Bennett, 1999).

In Summary

To generate items, this study is guided by the theoretical frame of organisational flexibility, in terms of its characteristics, dimensionality and level of theory. To refine and reduce the items, this study is guided by statistical and judgmental criteria for improving the scale's dimensionality, reliability, validity and parsimony.

Method

Item Generation

As a first step towards generating items, the current study sought to follow guidance for writing “good” items (Clark & Watson, 1995; Hinkin, 1998; MacKenzie et al., 2011). Items were generated with the aim of using straightforward phrasing and language, so that people would be more likely to understand and respond to the items in a way that accurately reflects their perceptions of their organisation’s flexibility. To write items with straightforward phrasing, this study aimed to exclude leading questions (e.g. “Are you extremely satisfied with your organisation’s flexibility”) to avoid bias; and to avoid ‘double-barrelled’ items (e.g. “My organisation is adaptable and high-performing”), which might represent two distinct constructs, and confuse respondents. However, this was sometimes challenging due to the combination of characteristics that reflect organisational flexibility. The phrasing also sought to allow for variance in people’s responses, by avoiding statements that everyone could be expected to respond to in a similar way (e.g. “Sometimes my organisation performs better than at other times”). To assess the items for straightforward language, this study used an online Flesch-Kincaid Grade Level readability test (‘The Flesch-Kincaid Grade Level Readability Formula’, n.d.). This test uses a formula, based on word and sentence length, to provide a score that indicates the approximate level of education needed to read the item text. In order for the measure of organisational flexibility to be practical across a wide range of organisations, the current study aimed for all items to be readable by the general public, which the Flesch-Kincaid identifies as having a reading ability that is equivalent to a Grade Level 8 (13-year olds) or below. In the current study, the length of the word ‘organisation’ resulted in items ranging from Grade Level 7.6 (12-year olds) to Grade Level 12.3 (17-year olds). Replacing the word ‘organisation’ with ‘firm’ resulted in the items ranging from Grade 3.7 (8-year olds) and Grade 8.5 (12-year olds). However, given the subject matter, and the work-

based population for this measure, it was decided to keep the word organisation, despite this shortcoming.

In order to generate the content for the items, a deductive approach was used, guided by theory (Schwab, 1980). For a scale to fully represent a construct, each item individually needs to represent an aspect of the construct, and the set of items collectively needs to represent the entirety of the construct (MacKenzie et al., 2011). In the current study, the items were generated to represent the full construct of organisational flexibility in terms of the level of theory, characteristics and dimensionality. Firstly, each item was designed to reflect the level of theory, by using the organisation as the referent (e.g., “My organisation ...”, “In my organisation ...” etc.). Based on this, respondents were expected to interpret the statements as their perceptions of their organisation’s behaviour (Chan, 1998). Secondly, each item was designed to reflect organisational flexibility by incorporating language that combined purpose-driven action and mindfulness within each statement, while still aiming to avoid being double-barrelled. A similar approach was used to develop the workplace measure of psychological flexibility (Bond et al., 2013), incorporating a combination of individuals’ commitment to values-directed actions and a willingness to experience challenging internal experiences, including items such as “I am able to work effectively in spite of any personal worries that I have” (Bond et al., 2013, p. 337). Thirdly, the set of items were designed to incorporate aspects of the six Orgflex characteristics. Because these characteristics were not expected to reflect distinct dimensions, it was necessary to avoid the scale emerging as six distinct factors. Therefore, no individual item was generated based solely on one or two of the six characteristics. Instead, the items were generated based on aspects of multiple characteristics merged within each individual item. To facilitate the development of these items in their ability to cover this breadth of content, a matrix was used (Hinkin & Tracey, 1999). The matrix included six columns to represent the six Orgflex characteristics, and a row

for each of the items (see Table 1 for example items in the matrix, and Appendix 1 for the full matrix). Each item was generated with the intention that it should cover aspects of both purpose-driven action and mindfulness, as well as including multiple characteristics. The range of items was determined based on their collective ability to cover sufficient patterns of characteristics across the theoretical frame.

Table 1
Item Content Adequacy Matrix (two examples, rated according to Flesch-Kincaid Grade Level, and by expert assessors for content validity)

Item	Flesch-Kincaid Grade Level	Purpose-driven Action		Dual Processes		Mindfulness	
		Purpose & Goals	Planned Action	Awareness	Situational Responsiveness	Effective Job Design	Openness to Discomfort
My organisation helps people to see how their work relates to and affects the organisation's goals	10.6 (4.7)	X	X	X		X	
My organisation encourages people to change the way they work together, if it helps them to be more effective	9.8 (7.3)		X		X	X	X

Note: Flesch-Kincaid Grade Level score in parentheses refers to the score when the word “organisation” is replaced by “firm”

This study followed advice to use an initial item pool that was potentially over-inclusive, based on the principle that it is preferable to drop weak items during testing, than risk insufficient content (Clark & Watson, 1995; Loevinger, 1957). However, it was also noted that the final scale, designed to be administered in an organisational setting, would need to be relatively short to avoid respondent fatigue. Based on this approach, an initial pool of thirty-eight items was proposed, with an expectation that this number would be reduced considerably during the study.

To assess the items for content validity, two experts, Frank Bond and Jo Lloyd, were asked to rate the items in terms of their clarity and their ability to represent the construct's theoretical frame. The raters were selected based on Bond's expertise in developing the model of organisational flexibility, and both their expertise as researchers in the development of scales to measure psychological flexibility: the Acceptance & Action Questionnaire (AAQ; Hayes et al., 2006), the Acceptance & Action Questionnaire-II (AAQ II; Bond et al., 2011), the Workplace Acceptance & Action Questionnaire (WAAQ; Bond et al., 2013), and the Cognitive Fusion Questionnaire (CFQ; Gillanders et al., 2014).

For the experts to verify that the content of organisational flexibility was adequately covered, they were invited to use the matrix (Hinkin & Tracey, 1999), to verify each item's ability to individually incorporate multiple characteristics of purpose-driven action and mindfulness, and for their ability to collectively cover the theoretical frame. The experts' review resulted in several items being adjusted to improve readability, and five items were removed, due to overlap with other items. Thirty-three were retained (Table 2), based on the raters agreement that the items were valid in terms of adequately covering the concept of organisational flexibility. The items were placed on a Likert-type scale, ranging from 1 (never true) to 7 (always true), with the higher scores indicating greater levels of organisational flexibility, in line with the scales measuring psychological flexibility (Bond et al., 2011, 2013).

Table 2

Pool of Thirty-Three Items Proposed for Measuring Organisational Flexibility

Item #	Item Description
OF_1	My organisation helps people to see how their work relates to and affects the organisation's goals
OF_2	My organisation encourages people to ask for feedback on how they are progressing with their goals
OF_3	My organisation takes decisions based on the organisation's vision, or long-term goals, rather than on its image or brand
OF_4	My organisation continues doing what works, while also looking for better ways to reach its goals
OF_5	My organisation reviews its goals, and is willing to adapt them if they are no longer in line with the organisation's vision
OF_6	If my organisation finds a better way to achieve its goals, it is willing to change its plans
OF_7	My organisation trusts its people to make goal-driven choices, without always having to ask for permission first
OF_8	My organisation believes that as long as a goal is achieved well, the result doesn't have to be perfect
OF_9	My organisation still pursues its goals, even if they seem big or far away
OF_10	My organisation encourages people to reflect on their progress towards their goals
OF_11	My organisation's decisions are guided by its vision, even when times are tough
OF_12	My organisation does not use people, processes and IT as excuses for not reaching its goals
OF_13	My organisation is more interested in its image or brand, than its vision ^a
OF_14	My organisation only chooses to adapt to market changes, if doing so is in line with its vision
OF_15	In my organisation, people are involved in shaping their own roles
OF_16	My organisation complains that its people, processes and IT are reasons why it doesn't achieve its goals ^a
OF_17	My organisation is keen to adapt to the latest market changes, even if they aren't in line with the organisation's vision ^a
OF_18	My organisation encourages its staff to learn from their failures, as well as their successes
OF_19	My organisation encourages people to seek diverse opinions, to help them to make better choices
OF_20	My organisation encourages people to try to improve how they work, even if it doesn't always work out
OF_21	My organisation expects managers to keep a rigid control over its people, to stop things from going wrong ^a
OF_22	My organisation encourages people to change the way they work together, if it helps them to be more effective
OF_23	My organisation encourages people to ask for feedback, to improve their work
OF_24	People in my organisation keep each other up-to-date, even when it's not convenient to do so
OF_25	People in my organisation share their work problems, in order to help each other find and apply solutions
OF_26	My organisation treats mistakes as opportunities to learn, rather than finding someone to blame
OF_27	People in my organisation use clear processes that help them to find solutions when they disagree
OF_28	My organisation is keen to hear people's views on better ways to respond to business needs
OF_29	My organisation gathers and learns from market feedback, even though doing so could lead to difficult changes
OF_30	My organisation looks for ways to improve, despite the effort that it takes
OF_31	My organisation uses feedback from its staff to learn about and improve its processes
OF_32	People in my organisation respect each other's roles and expertise, even when their views differ
OF_33	My organisation discourages people from trying new ways of working, in case it doesn't work out ^a

Notes: a. Item reversed for scoring purposes

Participants and Procedures

Procedures. The initial assessment of the items generated to measure organisational flexibility was based on participation from a general working sample. While an ideal approach might have sought data from multiple organisations, to assess the items at both the individual and organisational levels, the decision to use a general working sample for this first study was made for both pragmatic and statistical reasons. From a pragmatic perspective, obtaining organisational data can be complex and time-consuming (Egan et al., 2008). From a statistical perspective, establishing patterns of independent item responses, without organisational effects can help to clarify the items' ability to reflect the same construct (e.g. rather than the same organisation; González-Romá & Hernández, 2017). Instead, a general working sample can be considered to be relatively straightforward to access, and while it would only be able to provide data for understanding individuals' perceptions of their organisations' flexibility (individual level), such data would still be useful for an initial indication of the items' factor structure, dimensionality and reliability, and to assist with item reduction. Therefore, it was determined that this initial study would only focus on individual-level analysis, and would be followed-up with multi-level analysis in later studies. Based on that decision, a broad sample was sought to gauge perceptions of organisational flexibility across a wide variety of cultures, geographies, sectors, industries, organisational sizes and ages (MacKenzie et al., 2011). To achieve this spread, an online survey (see Appendix 2) was used to collect data from anyone over the age of eighteen, currently working in an organisation of any type, size or geography. Participants were initially recruited via email, Facebook, LinkedIn and Twitter, and using a snowball approach, they were encouraged to recruit further respondents from their international networks. While such an approach can result in a limited scope of participants, due to limited connections, it was hoped that this researcher's 15 years working in a range of sectors and countries would help to encourage a

broad sample of participants. The survey remained open for six weeks during July and August 2015.

Participants were introduced to the survey as research about “how organisations notice, react to and respond to situations”, aiming to avoid directly influencing their responses about the level of ‘flexibility’ in their organisations’ behaviours. The first section of the survey asked participants fourteen biographical questions about themselves and the organisations that they worked for, followed by the new organisational flexibility items.

Ethical considerations. The current study took ethics into consideration, following Goldsmiths’ Institute of Management Studies (IMS) ethical standards review process. This process aims to ensure the integrity of the research, in its conduct for protecting participants and organisations in the research. The following discussion aims to explain how the current study addressed these considerations, focusing on protecting participants through informed consent and confidentiality.

First, for people to provide their *informed consent* for participating in a study, they need an adequate understanding of the aspects of the research that are likely to affect their willingness to participate (British Psychological Society, 2014). For people to reach such an understanding, they need to be provided with information about the study and their role in it, have sufficient competence to understand the information, and be able to make a choice to participate, or not, without coercion (Israel, 2015). For the current study, the population targeted for participation was people working in organisations. People within such a population were considered unlikely to be especially vulnerable (i.e. children, those with learning or communication difficulties, people who are hospitalised patients, people who are in custody, and those who are engaged in illegal activities such as drug-taking). Nonetheless, to avoid vulnerable groups within this target population, participation was limited to adults (people aged 18 years old or over), who were active in the workforce at the time of

participation. Other vulnerable groups were not directly targeted in recruitment for the current study, and the likelihood of vulnerable people volunteering to participate based on the recruitment approach, that used personal emails and social media to request volunteers, was considered to be relatively low.

People who responded to the request to participate would have clicked on a link to the survey, where they were provided with a page of introductory information designed to seek their informed consent (Appendix 2.1). The page informed participants about the process of the survey, including how long it would take (“around 15 minutes”), the types of questions (“basic biographic questions about you and the type of organisation you work for”, and “questions about your views on your work and on the organisation, using simple rating scales”). Participants were informed that they could leave responses blank if they wanted to, and that they could withdraw from participating in the whole survey if they wanted to (though nobody did ask to withdraw from this study). Contact details were provided to facilitate the withdrawal process, and for any other questions. Finally, participants were asked to explicitly provide their informed consent before the system allowed them to proceed with the survey. The study design did not involve any deception, the item content was considered to be sufficiently innocuous that there was low risk of any psychological distress or discomfort, and participants were provided with a debrief at the end of the survey to further reduce the risk of confusion about the intentions of the research and their participation (Appendix 2.3).

Secondly, for people to trust the research and for the research to comply with regulation, it was necessary to ensure the *confidentiality* of participants’ data (British Psychological Society, 2014). The confidentiality of data refers to the assurance that data linked to individual participant is appropriately anonymised and cannot be traced to the participant by other parties (British Psychological Society, 2014). This requirement impacts decisions about data storage, access and retention (Israel, 2015). In the current study, data

were collected using Qualtrics, an online survey application with password protection, which was only accessible by the researcher and supervisor of this thesis. Participants were informed about this level of access, and that their data would remain confidential and not be individually identifiable. The requested data did not include personally identifiable information, other than to facilitate the process for participants to withdraw. For this process, individuals' records needed to be identifiable in order to be able to remove them, and so each participant was asked to provide a Participant ID, with any sequence of numbers or letters that they would be able to remember, and that would be unique to them. This approach was considered to provide sufficient anonymity and a lack of traceability, and is relatively standard practice for case identification in research surveys.

These procedures were presented to the IMS ethical standards review board, and were approved on 8th July 2015.

Participants. Of the 460 people who started the survey, 157 did not respond to questions beyond the biographical section, and their cases were immediately excluded from further analysis, leaving 303 cases. Of these remaining cases: participants' ages ranged from 18 to 73 ($M = 37.36$, $SD = 9.54$), and 177 (58.42%) of participants were female. Most participants (261; 86.14%) identified as Caucasian, 11 identified as mixed-ethnicity (3.63%), nine identified as South Asian (2.97%), five as East Asian (1.65%), four as Middle Eastern (1.32%), three as African (0.99%), two as Latino/Hispanic (0.66%), and eight identified as other ethnicities (2.97%). Most participants (265; 87.46%) had received some level of higher education, while 29 (9.57%) had reached A level or equivalent, and nine (2.97%) had reached GCSE level or equivalent. Participants came from 25 different countries, with the majority from the UK (190; 62.71%), 33 people came from the USA (10.89%), thirteen from Australia (4.29%), eight from each of Hong Kong, Hungary and Singapore (2.64%), seven from Sweden (2.31%), six from Spain (1.98%), and five (1.65%) from the UAE, three participants

(0.99%) or fewer came from each of the remaining 16 countries. Two hundred and seventy-one (89.44%) participants were in full-time work; the rest were part-time. Two hundred and sixty-seven (88.12%) described themselves as employed, 28 (9.24%) were self-employed and eight (2.64%) were voluntary staff.

They worked across a range of 15 industry sectors (Financial Services 17.49%, Information/Communication 14.52%, Education and Professional Services 13.86% each, Health/Social Services 12.87%, Wholesale/Retail Trade 7.59%, Leisure/Hospitality 5.94%, Construction 2.64%, Manufacturing 2.31%, and the remaining six industries each represented 1.98% or less). Most of the organisations were international in their market focus (193; 63.70%), 14.52% were national and 21.78% were local/regional. Most participants worked in the private sector (219, 72.28%), with 18.81% in the public sector and 8.91% the tertiary sector. One hundred and fifty-six participants (51.49%) worked in large organisations (more than 1,000 employees), 38 participants (12.54%) worked in medium-sized organisations (between 251 and 1,000 employees) while 109 (35.97%) worked in small organisations (fewer than 250 employees). Most people worked in organisations that had been established more 50 years ago (155; 51.16%), 35 people (11.55%) worked for organisations that were between 26 and 50 years old, 60 people (19.80%) worked in organisations that were between 11 and 25 years old, 27 people (8.91%) worked for organisations between 6 and 10 years old, and 26 people (5.85%) worked for organisations that were less than five years old.

Results

The main aim of this analysis was to identify the factor structure of the items generated, in anticipation of finding an underlying unidimensional structure representing organisational flexibility. To achieve this, a common factor analysis (Floyd & Widaman,

1995) was conducted on the 33 organisational flexibility items. An alpha level of .05 was used for all statistical tests.

Missing Data and Data Screening

First, the 303 participant responses (cases) were screened to confirm sufficient coverage and distribution of responses across the 33 items. In terms of the cases, 287 (94.72%) had no missing data, 13 (4.29%) had between one and three items with missing data, and three cases (0.99%) had a larger number of items with missing data (11, 15 and 28 items). In terms of the items, only two had no data missing, 29 items had missing data on between one and four cases, one item had missing data across six cases (1.98% of cases), and one item had missing data on eight items (2.64% of cases). In order to determine how to handle the missing data, the sample was tested to understand whether there was a systematic relationship between the items that had missing data, or whether these data were missing completely at random (MCAR). To assess the randomness, Little's MCAR test was used and produced a non-significant result ($p = .134$) which implied that no systematic pattern existed in the missing data. With this result, and with a relatively small number (5.28%) of cases containing missing values, it was decided to replace the missing data using Expectation Maximisation, which is considered to be an "especially appropriate for techniques that do not rely on inferential statistics, such as exploratory factor analysis" (Tabachnick & Fidell, 2013, p. 106).

The data were then examined to determine their factorability, using standard criteria to assess sampling adequacy, distribution and the relationships between items. In terms of sampling adequacy, an item-to-response ratio of 1:10 is often used as a rule of thumb in factor analysis (Nunnally, 1978; Schwab, 1980), which highlighted a potential risk in the current study, due to this study's ratio (33:303) falling slightly below this target. However more recent research suggests that 150 responses are normally sufficient if the interitem

correlations are reasonably strong (Guadagnoli & Velicer, 1988), and having over 300 responses is considered to be good (Comrey & Lee, 1992; Tabachnick & Fidell, 2013). For further comfort, overall sampling adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) measure. The result was $KMO = .96$ (Kaiser, 1974), which is well above the minimum recommended value of .50, indicating an acceptable sample size. Furthermore, each item was assessed for sampling adequacy, using the diagonal elements of the anti-imaging correlation matrix. Again, a minimum KMO value of .50 was used as a cut-off to support inclusion in the factor analysis (Field, 2012). All items easily met the criteria for inclusion, with twenty-eight items above .90, and the remaining five items (item numbers: 8, 13, 14, 17 and 21) ranging between .72 and .89. It was therefore determined that these 303 cases would provide sufficient sampling adequacy to perform an EFA on these items.

In terms of distribution, across all 33 items, the full range of values had been used (Min = 1, Max = 7), with means and standard deviations in credible ranges (Table 3). Although normal distributions are not a requirement for factor analysis, the items were judged to be roughly normally distributed, using histograms and tests for skew and kurtosis (Tabachnick & Fidell, 2013). Across all cases and items (9,999 data scores), four extreme univariate outliers were identified, accounting for 0.04% of all scores; 45 were identified as possible outliers (0.45%), while the 9,550 remaining scores (99.51%) were within the normal range, suggesting that these extreme and possible scores were within the expected range for this size of population (Field, 2012).

In terms of the relationships between items, the correlations were assessed. Firstly, Bartlett's test of sphericity was used to identify whether, overall, the sample demonstrated patterned relationships among the items (Yong & Pearce, 2013). The significant result indicated that the relationships are not too small ($\chi^2(528) = 7065.63, p < .001$), and thus suitable for factor analysis (Field, 2012). Secondly, a correlation matrix was produced to

assess the patterns of relationships between the individual items. It was expected that reasonable correlations between items would be found between all items in the scale, in order to reflect the unidimensionality of organisational flexibility. To identify reasonable inter-item correlations, a criterion of $r > .30$ was used (Nunnally & Bernstein, 1994). The results (Table 3) showed that, of the thirty-three items, twenty-eight correlated moderately or strongly with at least twenty-five other items (75.76%), indicating their relatedness. The remaining five items met the criteria with far fewer items, indicating a lack of relatedness: Item 17 didn't meet the criterion with any other item, Item 14 with one other item (3.03%), Item 8 with two other items (6.06%), Item 21 with eight other items (24.24%) and Item 13 with 14 other items (42.42%). It was noted that three of these items (Items 13, 17 and 21) used reversed scoring. Before determining whether to drop these five problematic items, all the items were assessed for their shared variance. A non-rotated factor analysis was used to identify items with a minimum squared multiple correlation (SMC) of .32, equating to approximately 10% of the overlapping variance with the other items (Tabachnick & Fidell, 2013). Three items were below this minimum level: Item 8 (SMC = .30), Item 14 (SMC = .27) and Item 17 (SMC = .30), suggesting that they did not share sufficient variance within the other items proposed for the scale (Field, 2012). The other two problematic items had relatively low SMC values (Item 13: SMC = .47; Item 21: SMC = .44). Given the expectation that the items should share a patterned relationship, it was decided that the five problematic items should be excluded from further factor analysis.

Table 3
Correlations: Thirty-Three Organisational Flexibility Items (N = 331)

Item	1	2	3	4	5	6	7	8	9	10	11
OF_1	-										
OF_2	.70***	-									
OF_3	.55***	.51***	-								
OF_4	.55***	.49***	.56***	-							
OF_5	.58***	.58***	.59***	.72***	-						
OF_6	.54***	.52***	.54***	.68***	.78***	-					
OF_7	.58***	.54***	.52***	.55***	.55***	.60***	-				
OF_8	.18*	.22***	.14*	.21***	.20***	.26***	.35***	-			
OF_9	.36***	.35***	.38***	.46***	.50***	.45***	.39***	.27***	-		
OF_10	.60***	.73***	.50***	.49***	.61***	.54***	.52***	.21***	.49***	-	
OF_11	.52***	.47***	.58***	.57***	.63***	.55***	.46***	.07	.56***	.59***	-
OF_12	.39***	.32***	.39***	.44***	.44***	.36***	.38***	.10	.33***	.34***	.45***
OF_13	.23***	.25***	.52***	.37***	.32***	.32***	.22***	.02	.21***	.21***	.36***
OF_14	.22***	.19***	.21***	.14*	.19**	.14*	.09	.07	.17**	.24***	.33***
OF_15	.37***	.39***	.33***	.40***	.35***	.42***	.53***	.32***	.28***	.37***	.37***
OF_16	.35***	.33***	.40***	.40***	.42***	.39***	.37***	-.02	.25***	.34***	.42***
OF_17	-.04	-.08	.08	-.05	-.08	-.15*	-.10	-.15**	.04	-.02	.10
OF_18	.52***	.56***	.51***	.60***	.59***	.61***	.63***	.26***	.43***	.58***	.52***
OF_19	.48***	.61***	.50***	.53***	.53***	.54***	.58***	.21***	.40***	.62***	.52***
OF_20	.50***	.53***	.45***	.54***	.52***	.59***	.60***	.24***	.40***	.57***	.47***
OF_21	.16**	.11	.21***	.17**	.10	.12*	.36***	.15**	.16**	.10	.17*
OF_22	.43***	.45***	.40***	.55***	.56***	.62***	.55***	.27***	.38***	.48***	.44***
OF_23	.57***	.74***	.50***	.54***	.61***	.57***	.56***	.22***	.35***	.66***	.51***
OF_24	.48***	.51***	.45***	.50***	.52***	.54***	.47***	.21***	.33***	.52***	.48***
OF_25	.49***	.46***	.45***	.50***	.52***	.57***	.53***	.20***	.30***	.47***	.46***
OF_26	.56***	.50***	.50***	.56***	.57***	.59***	.65***	.29***	.43***	.51***	.56***
OF_27	.48***	.49***	.48***	.52***	.54***	.46***	.50***	.17**	.31***	.48***	.46***
OF_28	.57***	.52***	.52***	.61***	.63***	.64***	.62***	.29***	.41***	.54***	.52***
OF_29	.48***	.52***	.36***	.49***	.60***	.62***	.52***	.23***	.35***	.49***	.46***
OF_30	.49***	.49***	.44***	.61***	.63***	.68***	.58***	.22***	.50***	.49***	.56***
OF_31	.60***	.61***	.53***	.61***	.64***	.65***	.60***	.26***	.41***	.62***	.55***
OF_32	.53***	.50***	.46***	.55***	.61***	.58***	.54***	.14*	.40***	.54***	.60***
OF_33	.43***	.40***	.45***	.50***	.48***	.50***	.55***	.19***	.31***	.36***	.46***
M	4.30	4.17	4.51	5.00	4.74	4.96	4.44	4.12	5.18	4.6	4.84
SD	1.30	1.50	1.46	1.25	1.42	1.27	1.38	1.42	1.23	1.47	1.36

*p <= .050, **p <= .010, ***p <= .001
 Bold indicates $r < .3$, to aid pattern identification

Table 3

Continued

Item	12	13	14	15	16	17	18	19	20	21	22
OF_12	-										
OF_13	.28***	-									
OF_14	.14*	.09	-								
OF_15	.34***	.19**	.14*	-							
OF_16	.54***	.44***	.06	.37***	-						
OF_17	.08	.27***	.21***	-.08	.17**	-					
OF_18	.38***	.33***	.21***	.51***	.40***	-.13*	-				
OF_19	.35***	.29***	.17**	.47***	.34***	-.11	.68***	-			
OF_20	.33***	.23***	.19***	.51***	.31***	-.17**	.73***	.74***	-		
OF_21	.26***	.32***	-.04	.34***	.36***	.17**	.22***	.27***	.16**	-	
OF_22	.26***	.23***	.12*	.41***	.27***	-.14*	.63***	.59***	.60***	.12*	-
OF_23	.33***	.31***	.11	.36***	.39***	-.08	.63***	.64***	.58***	.16**	.59***
OF_24	.29***	.25***	.13*	.37***	.37***	-.06	.53***	.45***	.47***	.16**	.48***
OF_25	.38***	.26***	.11	.45***	.39***	-.09	.61***	.51***	.53***	.22***	.52***
OF_26	.50***	.32***	.20***	.50***	.45***	-.07	.70***	.60***	.63***	.35***	.52***
OF_27	.42***	.27***	.10	.35***	.42***	-.11*	.56***	.49***	.48***	.13*	.44***
OF_28	.45***	.31***	.16**	.53***	.43***	-.11	.68***	.63***	.64***	.32***	.57***
OF_29	.37***	.17**	.02	.37***	.32***	-.21***	.51***	.58***	.54***	.14*	.50***
OF_30	.37***	.25***	.09	.41***	.39***	-.15**	.59***	.61***	.59***	.20***	.58***
OF_31	.45***	.36***	.07	.46***	.45***	-.10	.64***	.61***	.60***	.29***	.57***
OF_32	.41***	.34***	.18**	.45***	.47***	.04	.56***	.54***	.52***	.32***	.46***
OF_33	.42***	.38***	.07	.41***	.48***	.01	.48***	.46***	.53***	.38***	.52***
M	4.23	4.53	4.12	4.35	4.68	4.32	4.75	4.51	4.6	4.14	4.56
SD	1.58	1.4	1.33	1.37	1.63	1.39	1.36	1.45	1.31	1.52	1.24

*p <= .050, **p <= .010, ***p <= .001

Bold indicates $r < .3$, to aid pattern identification

Table 3

Continued

Item	23	24	25	26	27	28	29	30	31	32	33
OF_23	-										
OF_24	.58***	-									
OF_25	.58***	.74***	-								
OF_26	.59***	.58***	.69***	-							
OF_27	.55***	.55***	.63***	.66***	-						
OF_28	.56***	.51***	.58***	.70***	.62***	-					
OF_29	.55***	.41***	.47***	.56***	.47***	.68***	-				
OF_30	.57***	.49***	.54***	.62***	.52***	.69***	.76***	-			
OF_31	.68***	.56***	.64***	.69***	.59***	.74***	.65***	.67***	-		
OF_32	.58***	.54***	.58***	.67***	.55***	.60***	.51***	.61***	.68***	-	
OF_33	.47***	.44***	.48***	.57***	.48***	.56***	.45***	.52***	.58***	.53***	-
M	4.46	4.12	4.41	4.21	3.87	4.44	4.47	4.85	4.32	4.78	4.94
SD	1.53	1.27	1.37	1.51	1.36	1.43	1.4	1.29	1.47	1.29	1.35

*p <= .050, **p <= .010, ***p <= .001

Bold indicates $r < .3$, to aid pattern identification

The remaining 28 items were then assessed for the opposite problem, that of being too closely related, which could indicate redundancy among items. To do so, the determinant of the correlation matrix was used to identify multicollinearity (where two or more independent items are highly correlated). A rule of thumb for the determinant is that it should have a score above .00001 (where 0 indicates a singular relationship between items, and 1 indicates unrelated items; Field, 2012). The resulting determinant score of 2.660^{-11} indicated a potential issue with multicollinearity. To identify the problematic items, the correlation matrix was checked for bivariate relationships greater than .80, as a cut-off for excluding an item (Field, 2012). However, there were no bivariate correlations found to be greater than $r > .78$ or $SMC > .76$, suggesting that the multicollinearity was likely to be multivariate (Nunnally & Bernstein, 1994). As a further step to identify the problematic items, their variance inflation factor (VIF) was assessed. The VIF quantifies the extent to which an item's variance is increased due to its dependence on other items. A VIF score of 10 is considered to be an extreme case of multicollinearity, however, scores as low as 3 are often considered to identify

bias (Tabachnick & Fidell, 2013). The VIF was assessed, taking each of the items in turn, as dependent variables. The results consistently showed that fourteen items had VIF scores greater than 3, and the highest VIF score was around 4.10. As these results did not provide adequate clarity for identifying any individually problematic items to remove, it was initially decided to tentatively proceed with the factor analysis. However, even after item reduction, the final solutions proposed by the factor analysis continued to demonstrate multicollinearity issues, with the determinant still well below the .00001 criterion. Such issues can result in problems with reliability, larger standard errors, non-significance, and changes in the signs and magnitude of regression coefficients (Blalock, 1963; Farrar & Glauber, 1967). It was, therefore, decided to follow the recommendation that problematic items should be removed, where doing so can also be justified from theoretical standpoint (e.g. due to redundancy, based on over-inclusive item generation; Clark & Watson, 1995). The wording of the fourteen items with $VIF < 3$ was reviewed against the item generation matrix for content coverage, and were retained. The other fourteen items with $VIF > 3$ were removed from further analysis. The determinant score was reassessed, and the result (.003) was well within the threshold for avoiding multicollinearity.

Exploratory Factor Analysis

With the 14 remaining items, a common factor analysis was conducted. To decide how many factors to extract, parallel analysis (Horn, 1965) was chosen, as it is reported to be one of the most accurate methods (Hayton, Allen, & Scarpello, 2004; Zwick & Velicer, 1986). However, it was noted that this method has been shown to overestimate the number of factors (Glorfeld, 1995; Harshman & Reddon, 1983). Parallel analysis proposes that the number of factors selected for extraction is based on the number of eigenvalues that have values greater than those produced by random, uncorrelated data, using the same number of observations and variables as the original data set. With these data, the parallel analysis proposed three

factors; with one clearly dominant factor and two very small factors, with 0.03 difference between the eigenvalues and those produced by the random, uncorrelated data (Appendix 3). An examination of the scree plot (Figure 4) emphasised the trivial size of the last two factors, and it was decided to proceed with a single factor in the exploratory factor analysis, particularly in light of the hypothesised unidimensionality of the construct.

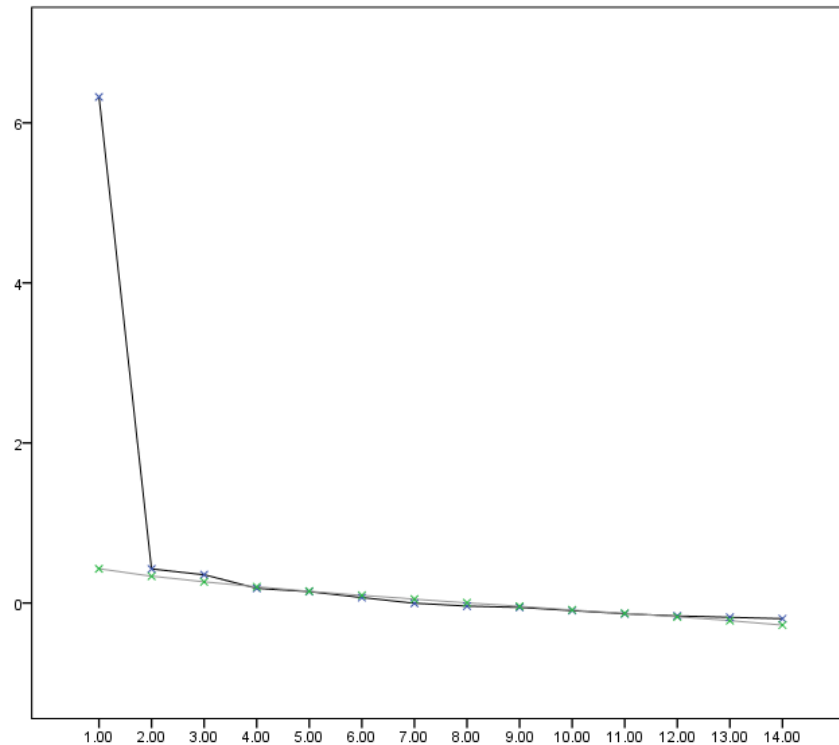


Figure 4. EFA: Scree plot and eigenvalues of parallel analysis. This figure presents the empirical data (black line) plotted against the random data (grey line).

An oblique rotation (Direct Oblimin) was used, based on the expectation that any factor would be a significantly correlated element of a higher order factor (i.e. organisational flexibility; Nunnally, 1978). On inspection of the results, factor loadings were all relatively strong ($>.50$), however the variance explained by the fourteen items was 45.04%, which is below the recommended 50% cut-off (Streiner, 1994). Four items (Items 9, 12, 15 and 16) had communalities below .35, resulting in an average value of the extracted communalities (.45) being lower than recommended (MacCallum, Widaman, Zhang, & Hong, 1999). Removing these four items and re-running the factor analysis improved the communalities to an average

of .51, with no single item communality below .46 (Ferguson & Cox, 1993). However, this single 10-item factor still only accounted for 50.52% of the variance explained by the factor. Furthermore, the internal consistency of the 10 items was found to be very high (Cronbach's $\alpha = .91$), possibly indicating redundancy (Streiner, 2003). A composite score of the items was used to create a new 10-item scale, based on this factor structure, and the descriptive statistics highlighted an extreme skew ($z = -3.25$), which could indicate problems with the generalisability of the scale. In order to improve the scale, the three items that performed least well on the factor were removed, resulting in a 7-item scale (Table 4), which increased the variance explained to 52.32%, removed the extreme skew and resulted in a high, but less concerning Cronbach's alpha (.88). The content of the items was also deemed to sufficiently cover the breadth of characteristics, based on the item generation matrix.

Table 4
EFA: Factor Loadings from Principal Axis Factoring (N = 303)

Item #	Item Description	7-item scale	
		Factor loading	SMC
OF_4	My organisation continues doing what works, while also looking for better ways to reach its goals	.78	.60
OF_32	People in my organisation respect each other's roles and expertise, even when their views differ	.73	.53
OF_7	My organisation trusts its people to make goal-driven choices, without always having to ask for permission first	.74	.54
OF_11	My organisation's decisions are guided by its vision, even when times are tough	.74	.54
OF_1	My organisation helps people to see how their work relates to and affects the organisation's goals	.73	.53
OF_3	My organisation takes decisions based on the organisation's vision, or long-term goals, rather than on its image or brand	.71	.50
OF_22	My organisation encourages people to change the way they work together, if it helps them to be more effective	.64	.41
	Variance Explained	52.32%	
	Scale Mean	31.53	
	Scale <i>SD</i>	7.11	
	Cronbach's α for Scale	.88	
	Skew (<i>z</i> -score)	-2.48	
	Kurtosis (<i>z</i> -score)	-0.61	

Note: SMC = squared multiple correlations (i.e. communalities)

Biographical Effects and Group Differences

A final step in this study sought to identify the influence of any individual or organisational biographical factors on individuals' perceptions of their organisation's flexibility. During data collection, participants had been asked about themselves and their organisations. These biographical data were examined for relationships with the new 7-item scale, using correlations for continuous data, and ANOVAs and t-tests for ordinal data, to identify any significant differences between groups.

In terms of the personal biographical responses, no significant differences were found in the level of organisational flexibility reported between groups of genders, ethnicity, education level, work country, employment status, work schedule or seniority. In terms of age, there was no significant correlation with the organisational flexibility scale; however, when age was analysed in groups, the eight respondents over 60 years old ($M = 39.50$, $SD = 7.07$) reported their organisations as being significantly more flexible $t(294) = -3.25$, $p \leq .001$, compared to all other age groups ($M = 30.39$, $SD = 6.96$). In terms of organisational biographical responses, a similar experience was found, in that no significant differences in the level of organisational flexibility were reported between organisations' countries, markets, sectors, industries, size or age. It was noted that, across these analysis, there were unequal group sizes, and some very small groups, which were likely to have influenced sampling adequacy. However, overall, no significant biographical effects or group differences were identified as having an influence on individuals' perceptions of their organisation's flexibility.

Summary & Next Steps

This first study in the development and validation of a measure of organisational flexibility aimed to propose a new measurement model that would fully, and yet parsimoniously, reflect the concept organisational flexibility. An initial pool of 38 items was generated to reflect the theoretical frame of organisational flexibility. Thirty-three of the items were accepted by experts for providing sufficient content validity, and were subsequently evaluated in an empirical study, with an individual-level sample of 303 working adults. Results provide support for an initial seven-item, single-factor scale, in line with the hypothesised unidimensional nature of organisational flexibility.

However, due to the individual-level design and sampling approach of this initial study, the results reflect *individual* perceptions of organisational flexibility. These results are useful for proposing the initial model, as they indicate consistency among independent individuals in the way that they respond to the items, supporting the unidimensionality and reliability of the scale. However, in order to establish the scale as a measure of organisational flexibility, it is necessary for it reflect *shared* perceptions of organisational flexibility. To establish such a scale requires evidence of consensus between individuals, within organisations, and evidence of variance between organisations. This requirement guides the next study in this series.

Chapter 3. Study II - Confirmatory Factor Analysis

Abstract

The aim of this study was to confirm the seven-item, single-factor scale, developed in Study I as a model for measuring organisational flexibility, in a multilevel context. Data were collected from a sample of 331 employees, across 31 organisations, and the fit of the proposed factor structure was evaluated in a multilevel confirmatory factor analysis (MCFA), between individuals within their organisations, and between organisations. The results indicated that the model fit the data well (including CFI = 0.97, RMSEA = 0.05, SRMR-within = 0.03 and SRMR-between = 0.08). Factor loadings were higher at the organisational level (ranging from .82 to .99) than at the individual level (ranging from .41 to .61), supporting a stronger model at the organisational level. A composite scale, created based on the model, indicated good internal consistency (Cronbach's $\alpha = .89$), congruent with Study I. It also indicated a moderate organisational influence (ICC = 28%) on the perceptions of organisational flexibility, further supporting the multilevel nature of the scale. These results were considered to have provided good support for the scale, in order to proceed with validity and utility assessments using the confirmed multilevel, seven-item, unidimensional Organisational Flexibility Scale (OFS).

Introduction

This chapter describes the second of four empirical studies in the development and validation of a measure of organisational flexibility. The aims of this study were two-fold. Firstly, to seek confirmation of the measurement model proposed in Study I; that is, the factor structure model, which relates the latent construct of organisational flexibility with the seven items proposed to measure it. Secondly, to seek confirmation of the measurement model between organisations (i.e. at the organisational level), as well as between individuals, within organisations (i.e. at the individual level). To clarify the aims of this approach, in contrast with the previous study, this introduction reiterates the need to assess shared perceptions of organisational flexibility within organisations, relative to other organisations, and discusses the use of multilevel confirmatory factor analysis as an appropriate technique for assessing the measurement model.

In Study I, the level of analysis was at the individual level, with the items and factor structure of the OFS assessed in terms of *individuals'* perceptions of organisational flexibility. However, given that organisational flexibility is an organisational-level construct, the OFS needs to be validated as a measure of *shared* perceptions of organisational flexibility. As discussed previously (in Chapter 1, Section 6.4), measuring shared perceptions intuitively implies assessing the level of consensus among responses *within organisations*; however, it is also necessitates assessing the level of variance *between organisations* to demonstrate that the distribution of responses isn't simply a reflection of the wider population. In statistical analysis, it is normal to assess consensus in terms of variance (i.e. a lack of variance). Therefore, to assess the OFS as a measure of shared perceptions of organisational flexibility, this study needs to assess the variance in perceptions of organisational flexibility *between organisations* (i.e. at the organisational level), as well as the lack of variance *within organisations* (i.e. at the individual level), to understand the level of influence (or

organisational-level effect) that an organisation has on the perceptions of individuals working within the organisation, in terms of organisational flexibility. Where an organisational-level effect is identified, multilevel analysis is needed to take the clustering into account, and avoid statistical mismeasurement (Chapter 1, Section 6.4.4). The need for multilevel analysis impacts the approach to confirming the measurement model.

To confirm a measurement model, factor analysis is used to evaluate the patterns of relationships between items, and assess how they reflect the underlying construct. Building on Study I, which used *exploratory* factor analysis (EFA) to propose a factor structure, the typical next step is to use *confirmatory* factor analysis (CFA) to validate the proposed factor structure (Dyer, Hanges, & Hall, 2005; Nunnally & Bernstein, 1994). CFAs are used to assess the patterns between items, using a structural equation model (SEM), which also provides regression coefficients to represent the relationships between the factor and items, along with their residual error terms (Heck & Thomas, 2015; Hox, 2010). In cases where multilevel analysis is needed, multilevel confirmatory factor analysis (MCFA) is used to enable the assessment of the factor structure at both levels, despite the data being collected from individuals (Dyer et al., 2005; Hox, 2010). MCFA is able to do this by partitioning the variance into parts: between individuals *within* an organisation (i.e. the individual-level, accounting for clustering) and *between* organisations (i.e. the organisational-level). Such partitioning simultaneously provides separate estimates for both levels, adjusted for correlated error terms and different degrees of freedom (Robson & Pevalin, 2015). MCFA are typically performed in several steps, using competing models as benchmarks to compare against the fit of the proposed model.

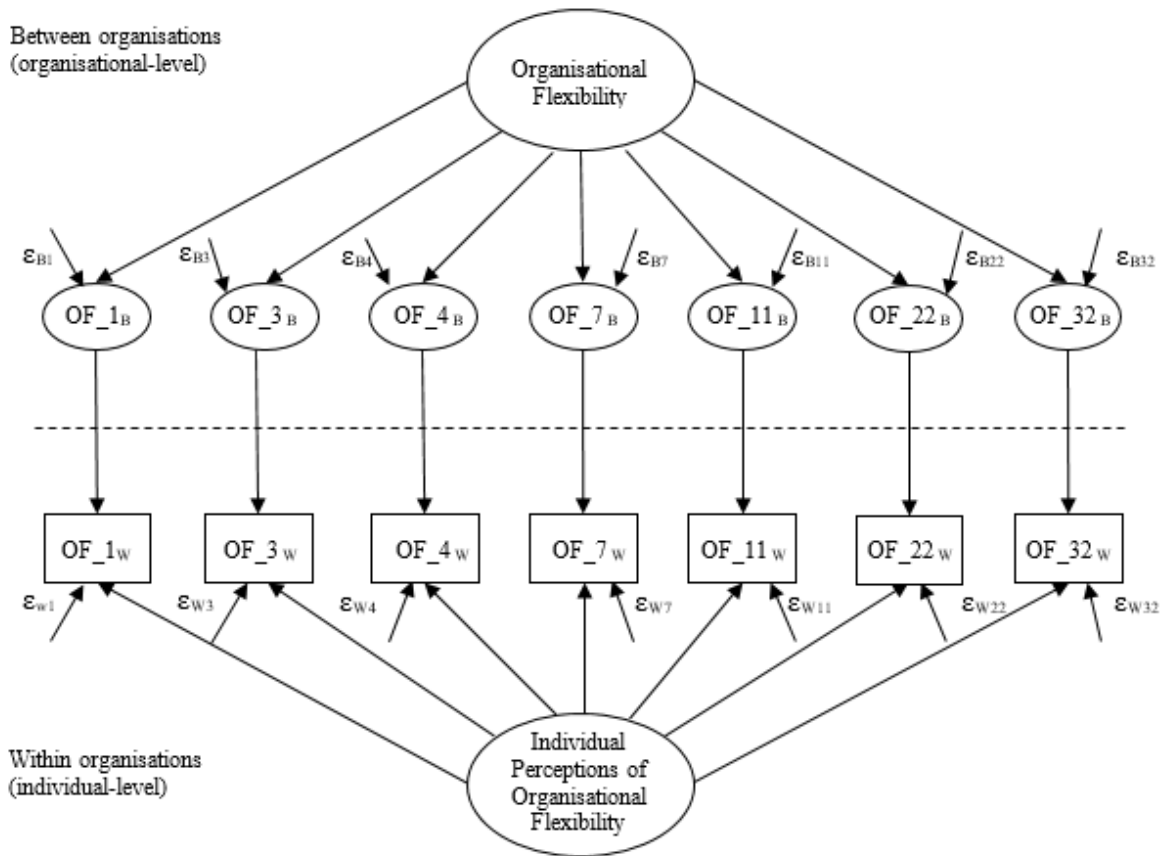


Figure 5. MCFA: Path diagram of proposed measurement model for unidimensional, multilevel organisational flexibility scale.

In SEM, it is common to use a path diagram to describe the measurement model. To illustrate the proposed measurement model in the current research, Figure 5 presents a path diagram with the hypothesised relationships between the items and the factors at the individual and organisational levels of analysis, to be assessed in the MCFA. The lower half of the diagram represents the traditional factor structure at the individual level, with the seven observed items (i.e. those which were directly reported by participants) represented by rectangles, and labelled with a suffix *w*, to indicate scores within organisations. This suffix helps to highlight that these are *not independent* individual-level perceptions, as they account for clustering, reflect the perceptions of individuals-within-their-organisation. These item responses are shown as loading onto the single factor of individual perceptions of their organisations' flexibility, represented by an ellipse (denoting that it is not directly observed).

The upper half of the diagram represents the factor structure at the organisational level. The proposed factor structure at the organisational level is equivalent to the factor structure at the individual level, as there was no theoretical indication for the existence of distinct factor structures at each level. At the organisational-level, the seven items are not directly observed, but represent the organisational mean for each item. Because they are not directly observed, they are represented by ellipses; and they are labelled with a suffix, B, to indicate scores between organisations (i.e. at the organisational level). These organisational means are proposed to load onto the aggregated, organisational-level factor of organisational flexibility. At both levels, a random measurement error is associated with each item, labelled ϵ , together with the relevant level label and item number. The factors are connected to the items with one-way arrows, which are designed to indicate the theoretical direction of influence (i.e. that the construct influences people's responses to the items). The model also connects the two levels, with one-way arrows denoting the influence on individual-level, according to the organisation that the individual works in.

To assess this measurement model, data is required from multiple organisations. These multilevel data can then be used in an MCFA to assess the fit of the model. In the case that the model is shown to fit the data well, we can assume to provisionally have an organisational flexibility scale (OFS), to test for validity and utility.

In Summary

A multilevel factor analysis is proposed for confirming the measurement model of the OFS, using multilevel data. The factor structure needs to be assessed between individuals within their organisations, and between organisations.

Method

Participants and Procedures

In multilevel research, an ideal sampling approach ensures that all groups have an equal chance of being included in the sample, and all individuals within each group have an equal chance of being included in the sample (Heck & Thomas, 2015). However, this ideal is often unworkable in organisational research. In the current study, to pursue a workable sampling approach, organisations were recruited based on the researcher's acquaintance with an employee within each organisation; and on the organisation being primarily English-speaking. In terms of ideal sample size in multilevel research, a common rule of thumb is to source 30 units at each level of analysis (e.g. 30 organisations, each with 30 employees; total sample = 900; Maas & Hox, 2005). However, again, it is acknowledged that there are often practical challenges with multilevel sampling that can lead to this target not being met. Indeed, a review of 99 multilevel studies across 13 peer-reviewed journals found that over 20% did not adhere to this rule (Bell, Morgan, Schoeneberger, Kromrey, & Ferron, 2014). In terms of a workable target sample size for the current research, a general consensus suggests that the number of groups in the sample is more important than the sample size within the groups (Maas & Hox, 2005; Snijders, 2005) and that more than twenty groups is typically appropriate for a multilevel estimation (Robson & Pevalin, 2015). This study aimed to exceed this minimum of twenty organisations, and to either recruit all individuals within each organisation, or a random sample (depending on organisational agreement). However, it was acknowledged that organisational constraints could be expected, and therefore a degree of compromise in the sampling process was anticipated. In order to recruit an adequate number of organisations, two sampling methods were used, described as 'formal' and 'informal' approaches.

Formal sampling approach. Using the formal approach, organisations were recruited by contacting a senior member of staff (e.g. CEO or senior HR manager, depending on the organisation's size), and providing them with print and video material informing them about the research (Appendix 4). Seventy-four organisations were contacted, and 19 (27%) agreed to participate using this approach. On agreeing to participate, the member of staff was designated with the role of 'Key Contact' and asked to complete an online survey of biographic and performance information about the organisation (Appendix 5). The aim of the Key Contact survey was to obtain objective organisational data, as well as subjective performance data from an informed source. This approach was based on the recommendation that, in addition to self-report measures, data are collected from multiple sources, including: objective organisational data; archival records; and views from a knowledgeable key informant in relatively consistent roles across the organisations, to provide some control for potential sources of bias (Glick, 1985). These multiple sources can then be 'triangulated', for greater confidence in the results (Wall et al., 2004). In this study, the Key Contact also provided the initial communication with their organisation's employees about participation in the research (using internal communications methods, appropriate to each organisation). All employees were subsequently sent an email, from the researcher, containing instructions and a link to the online survey (Appendix 6). While the surveys were voluntary, in order to obtain adequate sample sizes, follow-up emails were sent at weekly intervals for two weeks, to encourage employees who hadn't responded. Across the 19 organisations which participated using the formal method, 436 employees were emailed and 323 (74%) responses were received. Within each organisation, the number of respondents ranged from 1 to 51, and the response rates ranged from 7% to 100%. To support anonymity in reporting results,

organisations that had been recruited using the formal approach were labelled with an “A” (e.g. “AA”, “AB”, “AC” etc)¹.

Informal sampling approach. Using the informal approach, participants were recruited using a snowball sampling technique. First, a personal acquaintance was contacted and asked for their support. Having agreed to participate, each acquaintance was provided with an email, containing a link to the online survey. They were then asked to recruit as many, and as diverse a range of colleagues as possible, from within their organisations, to participate in the study, by sharing the link with them to complete in their own time. These acquaintances were not necessarily well-informed senior employees and so they were not asked to perform the role of Key Contacts (i.e. no separate organisational survey was used). Therefore, in order to obtain biographical information about the organisations, questions were added to the beginning of the online surveys. Additional online sources were also used to verify this informal data and to collect objective performance data, where available. Twelve organisations were recruited using this informal method, with 94 employees responding. To support anonymity in reporting results, organisations that had been recruited using the informal approach were labelled with a “B” (e.g. “BA”, “BB”, “BC” etc).

Ethical Considerations. As with Study 1, the design of the current study took ethics into consideration, following Goldsmiths’ Institute of Management Studies (IMS) ethical standards review process, to ensure the integrity of the research and its conduct for protecting the participants and organisations in the research. In this study, the ethical considerations mirrored those in Study 1 (Appendix 6). In addition, the current study considered the involvement of the organisation. In the informal sampling approach, individuals were asked to encourage their colleagues (from within the same organisation) to participate in the research. In the formal sampling approach, people were informed by the Key Contact within their

¹ One organisation, labelled “AK”, was due to participate using the formal process, but moved to the informal process. The data were assessed as coming from the informal group; however, the label was not changed.

organisation about the research, who encouraged them to participate. In both cases, this study reassured individuals that their participation was voluntary, and that they could request that their data be deleted (indeed, one individual did exercise this right), such that they did not feel coerced into participating by their recruiter. Furthermore, individuals were reassured that their data would be anonymous, and that any data shared with their organisation would be in aggregate and not identifiable to them. In addition, it was necessary to clarify to the Key Contacts that the organisation itself would remain anonymous and the organisational data would remain confidential (Appendices 4 and 5).

These procedures were presented to the IMS ethical standards review board, and were approved on 24th April 2016.

Participants. The full sample of 31 organisations (i.e. those from both the formal and informal approaches) ranged in size from a start-up business with a single employee, to long-established multinationals with hundreds of thousands of employees (Appendix 7). Twenty-two (70.97%) of the organisations were headquartered in the UK; six organisations (19.35%) were headquartered in the USA; and one organisation (3.23%) was headquartered in each of Australia, Canada and Norway. Nineteen (61.29%) were trading in international markets; eight (25.81%) were focused on their national market; and four (12.90%) on the local/regional market. Most (26; 83.87%) were private sector companies; two (6.45%) were public sector and three (9.68%) were tertiary sector organisations. Most organisations were in professional/financial services or information/communications (22; 70.97%), though two (6.45%) of those described themselves as being simultaneously in both construction (architecture/engineering) and professional services; four (12.90%) of the organisations were in wholesale/retail, four (12.90%) were in health and education, and 1 organisation (3.23%) was in public administration.

Across these organisations, 417 surveys were started. However, 79 respondents did not respond to any of the organisational flexibility items, and a further seven respondents completed less than 25% of the organisational flexibility items, and less than 60% of items across the rest of the survey. These 86 cases were removed from further analysis, leaving 331 cases. This final sample included 172 women (51.65%) and 159 (47.75%) men; one person (0.30%) identified as 'other' (with no further description) and one person (0.30%) did not respond to this question. The respondents' ages ranged from 20 to 64 ($M = 35.90$; $SD = 9.30$). They worked in 13 different countries, with the majority (268; 80.48%) working in the UK, followed by 26 (7.81%) from the USA, 19 (5.71%) from Spain, and seven (2.10%) from Norway, and 12 (3.60%) were spread across the remaining ten countries (Australia, Belgium, Canada, Greece, Ireland, Italy, Norway, Mexico, Thailand and the UAE), and one person (0.30%) didn't respond to this question. Most respondents (307; 92.19%) were in full-time work (the rest were part-time), and most (310; 93.09%) described themselves as employed, while twenty-one (6.30%) described themselves as self-employed, and two (0.60%) as volunteers. The majority of participants (259; 77.78%) had worked for their organisations for five years or less, 40 (12.01%) had worked for their organisations for between six and ten years, 25 (7.51%) between 11 and 20 years, and eight (2.40%) for over 20 years. One hundred and fifty people (44.44%) described themselves as being an intern or employee without a management or supervisory role; 163 (48.95%) had some kind of management responsibilities (from supervisor to senior manager); and twenty (6.01%) were business heads or CEOs. The majority of participants had higher education (81.38%), while 48 (14.41%) had further education qualifications (A Level or equivalent), twelve (3.60%) had attained GCSEs or equivalent qualifications, and one person did not respond to this question.

The participants from the formal and informal approaches were compared, to test for any inadvertent effects on participation, due to the sampling strategy. In terms of the

organisational characteristics, only the year of establishment had a significantly different mean between those in the informal group ($M = 1935.08$; $SD = 17.23$, Range: 1849 to 2011), $t(29) = -4.17$, $p = .001$, and those in the formal group ($M = 1999.95$; $SD = 52.17$, Range: 1940 to 2014), which represented a large effect size, $r = .61$. In terms of the individual characteristics, two characteristics had significantly different means: gender and length of service. Participants were more likely to be female in the informal group ($M = 1.68$, $SD = 0.47$), $t(330) = 3.21$, $p = .002$, compared with the formal group ($M = 1.48$, $SD = 0.51$), representing a small effect size, $r = .25$; and participants' length of service was longer in the informal group ($M = 7.56$, $SD = 8.09$) compared with the formal group ($M = 3.09$, $SD = 3.62$), $t(330) = 4.65$, $p \leq .001$, representing a small effect size, $r = .17$. Despite the large organisational effect size of the age of organisations and the small effect sizes identified between the individual characteristics, the small number of differences and their anticipated impact were considered insufficient cause for concern. However, they were noted, particularly for review in later analysis of biographical effects and group differences.

The 331 responses were spread across the 31 organisations, such that the average organisational cluster size in the sample was 10.74 ($SD = 11.43$). While this average cluster size is typically acceptable in multilevel analysis (Maas & Hox, 2005), in neither sampling approach were the organisations or employees selected with equal probability of being included, nor were they selected in proportion to the larger population. A way to address this is through the use of statistical weighting, however there is no commonly established procedure in multilevel analysis for applying weights (Asparouhov, 2006; Heck & Thomas, 2015). This study aimed to trial a weighting strategy at the individual-level, based on the sample size within each organisation, relative to the total number of employees within the organisation; though, not at the organisational-level, due to the strategic difficulties in

determining the population against which to apply the weighting. However, this strategy, of only weighting one level, was also noted as being sub-optimal (Asparouhov, 2006).

Data Analysis Plan

A data analysis plan was devised to evaluate support for the measurement model of organisational flexibility, proposed in Study I. Following data screening, bivariate correlations were assessed, between the seven items. Throughout this study, the correlation coefficients were interpreted as $r \geq .10$ indicating a small effect, $r \geq .30$ moderate and $r \geq .50$ a large effect (Cohen, 1988). Then organisational effects (or influence) on individual responses were assessed using intraclass correlations (ICC) and design effects (*deff*). Then, the main analysis used of a series of four competing confirmatory factor analyses, to confirm the fit of the measurement model.

Bivariate correlations. To assess for relationships between items, bivariate correlations were expected to be significant and positive, at both the individual and organisational levels: the former in support of the results of Study I, and the latter in support of the organisational nature of the construct.

Organisational effects. ICCs were used to identify consensus within organisations, and variability between organisations, for supporting organisational flexibility as an organisational-level construct, and to justify multilevel analysis. An ICC is interpreted as the amount of variance within an organisation that can be explained by the organisation (i.e. the organisational effect). More explicitly, it is measured by the variance between organisations (σ^2_b), relative to the sum of the variance between and within (σ^2_w) organisations:

$$ICC = \sigma^2_b / (\sigma^2_b + \sigma^2_w)$$

A low ICC score indicates low variance (high consensus) between organisations, relative to broader variance (less consensus) within an organisation, implying an organisation with little effect (or influence) on the way its people respond; and indicating an individual-

level, rather than organisational-level scale, with little warrant for multilevel analysis. A high ICC score indicates broader variance (low consensus) between organisations, relative to the lack of variance (high consensus) within an organisation, implying a greater organisational influence. ICC scores can range from zero to one, and are typically expressed as percentages. To justify multilevel analysis, a typical rule of thumb is that an ICC score of .10 (10%) indicates of a ‘non-trivial’ organisational influence (Lee, 2000; Robson & Pevalin, 2015); 20%-30% a moderate influence, and 30%-40% a high influence (Hoffman, Bynum, Piccolo, & Sutton, 2011; Kreft & de Leeuw, 1998). In the current study, for organisational flexibility to be considered an organisational-level construct, each item’s ICC should be non-trivial, to reflect sufficient consensus within organisations, and variance between organisations.

To further justify multilevel analysis, in addition to the ICC, it is recommended that the sample size is taken into account (Heck & Thomas, 2015; Snijders, 2005). To do so, the design effect (*deff*) can be assessed to provide an estimate of the extent of the sample’s deviation from simple random sampling.

$$deff = 1 + (\text{average cluster size} - 1 \times ICC)$$

Where “design effects are less than 2, there is little systematic variation between groups, and one could retain a single-level analysis of the data” (Heck & Thomas, 2015, p. 419).

Confirmatory factor analysis. This study used a series of competing CFA and MCFA, to test the relative goodness of fit of the proposed measurement model of the OFS in comparison with three alternative models. The statistical analyses were performed using Mplus v7.4 (Muthén & Muthén, 2017). In Mplus, the default estimation method (Muthén’s limited information parameter estimator: MULM) is designed to assess balanced data. However, in the current study, to manage the imbalance in sample sizes, it was decided to use full maximum likelihood estimation (MLR estimation) instead, as it is considered to yield

reasonable estimations in less-than-ideal sampling conditions, as well as being generally robust to non-normality and non-independence of observations (Heck & Thomas, 2015; Hox, 2010). The syntax for each step in the series is presented in Appendix 9.

Each of the competing models was tested for fit using several standard criteria. This included using the chi-square (χ^2) goodness-of-fit statistic, for which non-significance is seen as an indicator of a well-fitting model. It also included several fit indices: the comparative fit index (CFI), the root mean square error of approximation (RMSEA) and the standardized root-mean-square residual (SRMR). Guidance from Bollen (1989) and Hu and Bentler (1998) suggest that values of $\geq .95$, $\leq .06$ and $\leq .08$, respectively, are indicative of good model fit. However, it was noted that these standard criteria were designed for single-level data with relatively large sample sizes, which may operate sub-optimally with nested data (Heck & Thomas, 2015). These criteria apply the goodness-of-fit analysis to the entire model, yet for MCFA, the individual-level data is likely to dominate, as it is the largest part of the model (Hox, 2010). Therefore, in multilevel research, it is currently recommended to avoid strict application of the guidelines (Dyer et al., 2005; Hox, 2010), but to focus on the fit indices in terms of relative fit between models (Heck & Thomas, 2015), as well as favouring parsimony over complexity in the models (Myung, 2000).

Model 1: baseline. As an initial baseline, an individual-level only (i.e. within organisations) model was tested (Figure 6). In this model, the seven items were assessed for covariance in reflecting a single factor. This model was similar to that proposed in Study I, in that it assumed that the item responses to be independent of one another, which, in the current study meant ignoring the nested nature of the data. This first step is recommended as good practice for initial investigation, given that it is a simpler model with a larger sample at the lower level (Hox, 2010). The individual-level model could be expected to fit the data

relatively well, in line with Study I. However, due to the clustered nature of the data, biases can be expected.

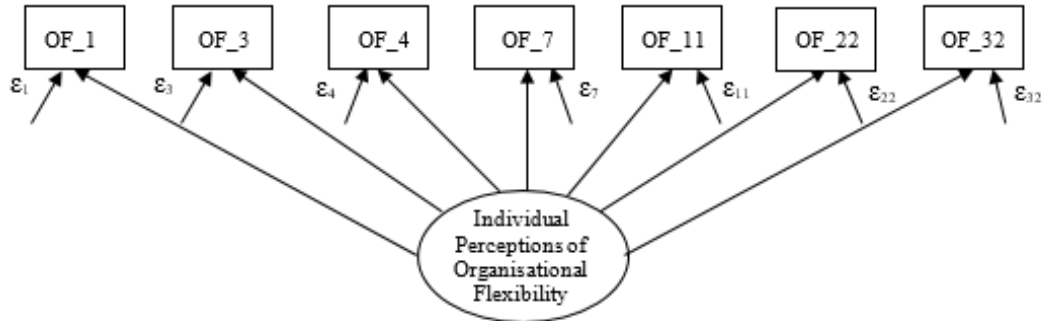


Figure 6. CFA: Individual-level only model

Model 2: independence model. The second comparison was designed to test the simplest multilevel model: the independence model (Figure 7). This model specifies the seven-item factor structure at the individual level; and at the organisational level, it specifies the variance of each of the items, but no covariance between items, implying no organisational-level factor. If this model were to fit the data well, it would suggest that organisations vary in their responses to the items, but that organisational flexibility may not be a coherent organisational-level concept. It was anticipated that the proposed OFS model should fit the data significantly better than the independence model.

Between organisations
(organisational-level)

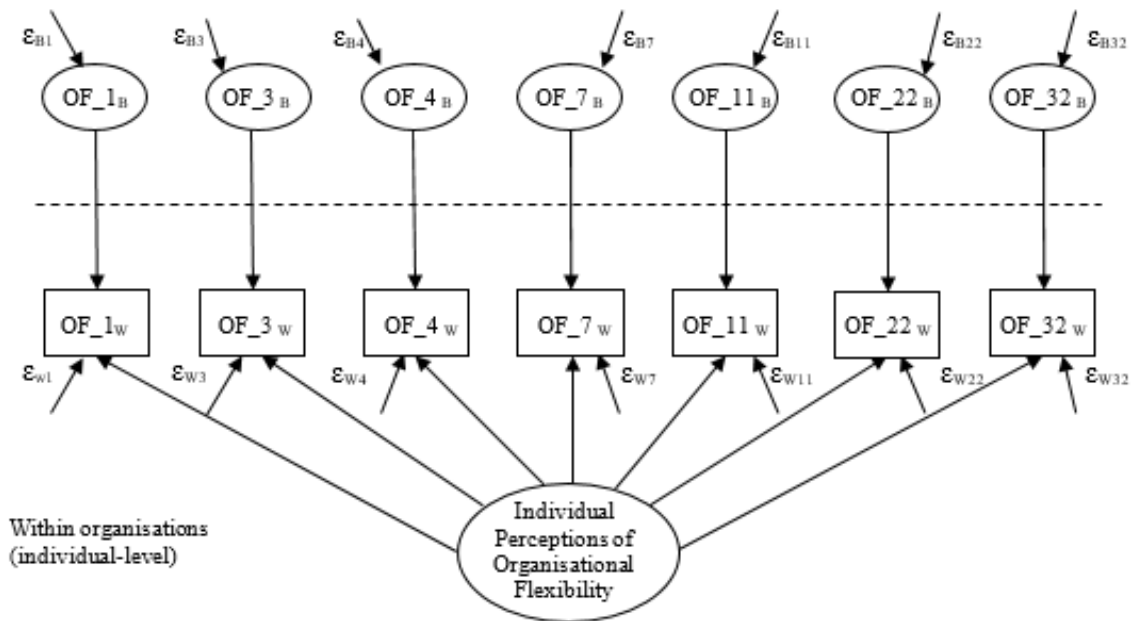


Figure 7. MCFA: Independence model

Model 3: Saturated model. The third comparison was designed to test the ideal-fitting model: the saturated model. This model specified all possible paths between the items at the organisational level, using unconstrained relationships between each pair of items, represented by two-way arrows in Figure 8 (Hox, 2010). However, in specifying all possible paths, complexity is added to the model with a large number of additional parameters (i.e. specified relationships). The saturated model should fit the data perfectly. It was anticipated that the proposed OFS model should not fit the data significantly better than the saturated model.

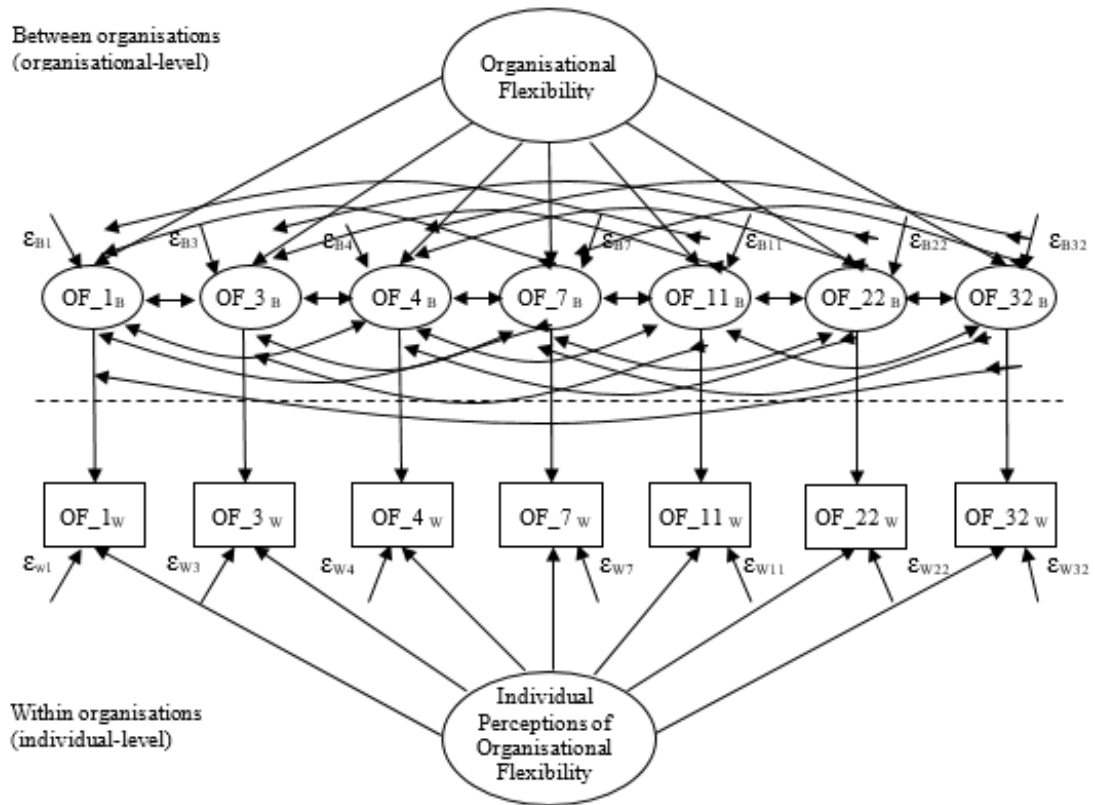


Figure 8. MCFA: Saturated model

Model 4: Proposed OFS model. The final model tested the proposed OFS model (illustrated in the introduction, Figure 5). This model specifies a single factor reflected by the seven observed items, at the individual level, and a single factor reflected by the seven organisational-mean items, at the organisational level.

Results

Missing Data and Data Screening

The seven items of the proposed OFS were screened for missing responses. Six of the 331 cases (0.02%) had one or more items missing, though no item had data missing on more than four cases. The sample was tested to determine whether there was any systematic relationship between the items that had missing data, or whether these data were missing

completely at random (MCAR). To conduct this test, Little's MCAR test was used and produced a non-significant result ($p = .520$) which implied that no systematic pattern existed in the missing data. With this result, and such a low percentage of cases containing missing values, it was decided that replacing the missing data using Expectation Maximisation was appropriate (Tabachnick & Fidell, 2013).

The data were inspected for their distributions, to gain familiarity with the items, and to assess their support for statistical techniques. None of the seven items was significantly kurtic, indicating an expected level of responses at the extreme ends of the scale, in relation to the mean responses. However, a significantly negative skew was noted across six of the seven items (OF_1: $z = -4.31$; OF_3: $z = -5.09$; OF_4: $z = -3.57$; OF_11: $z = -5.51$; OF_22: $z = -4.60$ and OF_32: $z = -6.36$), indicating more frequent high scoring item responses than expected. The same tests for skew and kurtosis were run for each organisation, separately. Just one organisation ("BC") showed a significant skew on one item (OF_32: $z = -3.72$), indicating that within most of the organisations, a more symmetrical pattern of distribution could be found for the items. Meanwhile, three organisations ("AJ", "AS" and "BC"), showed significant positive kurtosis affecting one item each, indicating more responses than expected around the mean (OF_11: $z = 3.72$; OF_11: $z = 5.14$; OF_32: $z = 7.60$); and 10 organisations, showed significant negative kurtosis affecting between one and four items each, indicating more responses than expected at the extremes. None of the impacted items were found in organisations with a sample size greater than 10. These data indicate an overall sample with more higher-than-average responses, but no evidence of clustered responses; however, within the organisations, the responses were not more frequently higher (or lower) than average, but were more clustered. The lack of normality was noted, to be taken into consideration in the statistical procedures.

Bivariate Correlations

The seven items were reviewed for bivariate correlations, at both the individual and organisational levels (Table 5). At both levels, all items significantly and positively correlated with one another. At the individual level, the effects were all moderate to large effects, in line with those in Study I. At the organisational level, the effect sizes were all very large, supporting the organisational nature of the scale. The results also provided sufficient support to proceed with factor analysis.

Table 5
Correlations: Organisational Flexibility Items, Within and Between Organisations (N = 331)

	OF_1	OF_3	OF_4	OF_7	OF_11	OF_22	OF_32
Items	Within (individual level)						
OF_1	26% 3.55	.49***	.46***	.47***	.42***	.39***	.43***
OF_3	.87***	18% 2.74	.56***	.43***	.59***	.37***	.41***
OF_4	.91***	.96***	18% 2.77	.49***	.54***	.46***	.49***
OF_7	.74***	.71***	.74***	16% 2.57	.54***	.45***	.48***
OF_11	.89***	.89***	.90***	.69***	26% 3.57	.51***	.48***
OF_22	.85***	.68***	.78***	.90***	.77***	24% 3.31	.42***
OF_32	.68***	.84***	.81***	.86***	.64***	.70***	27% 2.67
Mean	5.23	5.30	5.52	4.93	5.35	5.20	5.51
S.D.	1.21	1.23	1.14	1.37	1.35	1.30	1.25

Notes. Intraclass correlations percentages (ICCs) and design effects (deff) are shown, in bold, on the diagonal. Upper triangle (above the diagonal) represents correlations within organisations (individual level), and lower triangle (below the diagonal) represents correlations between organisations (organisational level).

*p < .050, **p < .010, ***p < .001

Organisational Effects

The ICCs of the seven items were assessed, and indicated that between 16% and 27% of the variance in responses (presented on the diagonal of Table 5) could be explained by the organisation. These results suggest a moderate level of consensus within organisations, relative to the variance between organisations, providing support for the organisational effects. They also show support the organisational nature, of the items, indicating that

multilevel analysis is warranted. Next, the design effects of the seven items were assessed and, despite prior concerns about the sample size, were all larger than 2.0 (presented on the diagonal of Table 5). These results showed further support for the use of multilevel analysis.

Confirmatory Factor Analysis

The four competing CFA and MCFA were tested. The weighting strategy was trialled, but rejected, due to no notable difference found in the results between those that did or didn't use the employee-level weighting. Instead, the strategy relied on the use of the MLR estimation to handle the imbalanced samples. Comparative results are presented for each of the four models, in Table 6.

Model 1: Individual-level only model. The results of this baseline model indicated acceptable fit based on the standard criteria, particularly given the potential for bias in the clustered data. The CFI (0.98) was greater than the minimum criterion (≥ 0.95), the SRMR-within (0.03) was less than the maximum criterion (≤ 0.08), and the RMSEA (0.06) was equal to the maximum criterion (≤ 0.06). The seven items loaded relatively well on the factor structure, with significant factor loadings ranging from .67 (OF_22) to .80 (OF_11). The chi-square goodness-of-fit statistic ($\chi^2 = 29.89$, $p = .008$) indicated significance.

Table 6
CFA: Comparing Measurement Models of Organisational Flexibility

Hypothesised Model	χ^2	$\chi^2\Delta$	df	CFI ($\geq .95$)	RMSEA ($\leq .06$)	SRMR (within) ($\leq .08$)	SRMR (between) ($\leq .08$)
Model 1: Individual-level only	29.89**		14	0.98	0.06	0.03	n/a
Model 2: Independence	88.80***	58.91***	35	0.92	0.07	0.06	0.71
Model 3: Saturated	32.47**	56.33***	14	0.97	0.06	0.03	0.05
Model 4: Proposed OFS	47.05*	14.58	28	0.97	0.05	0.03	0.08

Notes: df = degrees of freedom, CFI = comparative fit index, RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual.

$\chi^2\Delta$ is the change in chi-square statistic, relative to the preceding model.

* $p < .050$, ** $p < .010$, *** $p < .001$

Model 2: Independence model. The results of this, the simplest multilevel model, fit the SRMR-within (0.06), within the recommended range, scoring less than the maximum criterion (≤ 0.08). However, the CFI (0.92) was out of range (≥ 0.95), as was the RMSEA (0.07) out of range (≤ 0.06). Furthermore, the SRMR-between score (0.71) was well outside the range (≤ 0.08). The chi-square statistic ($\chi^2 = 88.80, p \leq .001$) was significant, indicating a poor fit; but when the fit was compared with the individual-level only model, using the difference in their chi-square statistics, it was a significantly better fit ($\Delta\chi^2 = 58.91, p \leq .001$). The proposed OFS scale was expected to provide a better fit than this model.

Model 3: Saturated model. The results of this, the ideal-fitting multilevel model, appeared to provide a good fit. The CFI (0.97) was within the recommended range (≥ 0.95), as was the RMSEA (0.06) within range (≤ 0.06), and both SRMR scores (within: 0.03; between: 0.05) were also within range (≤ 0.08). The chi-square statistic ($\chi^2 = 32.47, p = .003$) was significant; but a significantly better fit than the independence model ($\Delta\chi^2 = 53.33, p \leq .001$). However, this model has a large number of parameters (as illustrated in Figure 8), relative to the number of organisations in the sample. To calculate these estimates, MPlus needed to apply an adjustment, due to ‘model nonidentification’. Nonidentification is to do with inadequacy in the amount of data, relative to the number of parameters, resulting in insufficient degrees of freedom and too many equations in the analysis (Heck & Thomas, 2015). Therefore, despite the good fit, the model estimates should be considered with caution. The proposed OFS scale was expected to provide a fit that would not be significantly different from this model.

Model 4. Proposed OFS Model. The CFI (0.97) was within the recommended range (≥ 0.95), as was the RMSEA (0.05) within range (≤ 0.06), and both SRMR scores (within: 0.03; between: 0.08) were also within range (≤ 0.08). The chi-square statistic ($\chi^2 = 47.05, p = .014$) was significant; but a significantly better fit than the independence model ($\Delta\chi^2 =$

41.75, $p \leq .001$), indicating a significant improvement on the ‘simplest’ model. In addition, it did not differ significantly from the saturated model ($\Delta\chi^2 = 14.58, p \leq .407$) indicating that it was not significantly different from the ‘ideal’ fit.

The proposed OFS model is illustrated (Figure 9, below), to show the factor loadings and residual error at both levels of analysis. The factor loadings were all significant ($p \leq .001$), with scores ranging from .62 to .77 at the individual level, and from .82 to .99 at the organisational level, showing strong support for the organisational-level nature of the scale. In terms of reliability, Cronbach’s alpha, indicated a good and consistent score ($\alpha = .89$; congruent with Study I), and a composite scale ICC of 28%, which indicates moderate variance in the responses between organisations, supporting the multilevel nature of the scale.

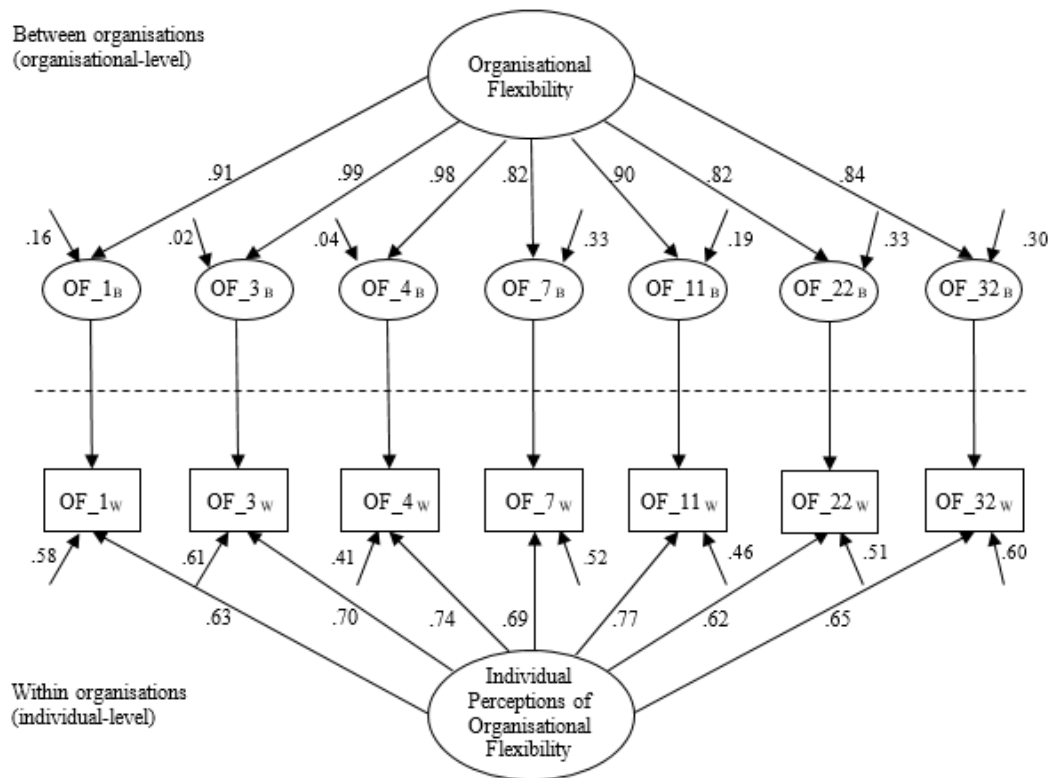


Figure 9. MCFA: Confirmed measurement model for organisational flexibility scale (standardised estimates).

Biographical Effects and Group Differences

In line with Study I, a final step in this study sought to identify any influence of individual biographical factors on individuals' perceptions of their organisation's flexibility, or organisational biographical factors on shared perceptions of organisational flexibility. These biographic data were examined for relationships with the composite organisational flexibility scale, using correlations for continuous data, and ANOVAs and t-tests for ordinal data, to identify any significant differences between groups.

In terms of the personal biographical responses, no significant differences were found in the individuals' perceptions of their organisations' flexibility between groups of age, genders, ethnicity, education level, work country, employment status, work schedule, seniority or length of service. In particular it was noted that, unlike in Study I, there were no significant differences $t(327) = -.45, p = .650$ in organisational flexibility between respondents over 60 years old ($M = 38.33, SD = 4.59$), compared to all other age groups ($M = 37.05, SD = 6.88$).

In terms of organisational biographical responses, there was a similar experience: no significant differences were found in shared perceptions of organisational flexibility between the organisations' countries, markets, sectors, industries, size or age (assessed at the organisational level). Nor were there any significant mean differences in organisational flexibility between the informal and formal groups, despite the three findings of differences in characteristics between the two groups. These findings expand on those from Study I, by supporting the implication that individual and organisational biographical differences do not influence individual or shared perceptions of organisational flexibility.

Summary & Next Steps

This second study in the development and validation of a measure of organisational flexibility aimed to find support for the unidimensional, seven-item OFS, proposed as a measurement model in Study I, at the organisational level. The OFS was evaluated, with a multilevel sample of 331 participants across 31 organisations. Results provide support for the model as a good fit for measuring a reliable, multilevel, seven-item, single-factor construct, relative to competing models. Within organisations, results of a confirmatory factor analysis were similar to Study I, with factor loadings that support the use of the OFS for measuring responses at the individual level, and a good reliability score (Cronbach's $\alpha = .89$). In addition, and of particular importance to the aim of this study, results of the factor analysis, between organisations, showed factor loadings with strong support for the use of the OFS for measuring responses at the organisational level. Furthermore, results of intraclass correlations (28%) support consensus between individuals, within an organisation, and variance between organisations, which infers that the organisation provides a moderate influence over individuals' perceptions of organisational flexibility, within their organisations, supporting theoretical expectations about the extent of consensus and variance.

At the current stage, the scale can be describe as having items with content validity items, that load well onto a single factor, at the individual and organisational levels, supporting a reliable, unidimensional, multilevel organisational construct. However, a supported measurement model is still insufficient support for the practical application of an organisational flexibility scale. To establish the OFS as a measure of organisational flexibility, further evidence is required, based on its ability to reflect the theoretical frame of organisational flexibility. This requirement guide the next steps in this series.

Chapter 4. Study III - Construct Validity

Abstract

The aim of this study was to assess the construct validity of the Organisational Flexibility Scale (OFS). A sample of 331 employees, across 31 organisations, was used to test hypotheses for nomological, convergent and discriminant validity. Support was found for each of the hypotheses. Nomological validity was supported based on the relationships between the OFS and psychological flexibility ($r = .20$), at the individual level. Convergent validity was supported by very strong relationships between the OFS and organisational learning at the individual level ($r = .67$) and organisational level ($r = .97$). Organisational learning was composed of three subscales, each of which supported the relationship with the OFS: shared vision (individual level: $r = .64$; organisational level: $r = .97$), open-mindedness (individual level: $r = .36$; organisational level: $r = .79$) and commitment to learning (individual level: $r = .53$; organisational level: $r = .92$). Discriminant validity was supported using a series of multilevel factor analyses (MCFA) to demonstrate that the OFS reflected an independent construct from organisational learning and its three subscales.

Introduction

This chapter describes the third of four empirical studies in the development and validation of a measure of organisational flexibility. In this thesis, the validity assessments are separated into two studies: tests for construct validity and tests for criterion validity. The current study aimed to test construct validity. Construct validity refers to a measure's ability to reflect the construct that it is intended to measure (Hinkin, 1998; Swanson & Holton, 2005). This study tested three types of construct validity: nomological, convergent and discriminant. Nomological validity refers to the extent to which a measure supports hypothesised relationships with constructs that are from the same theoretical network; convergent validity refers to the extent to which a measure demonstrates positive relationships with other conceptually similar measures; and discriminant validity refers to the extent to which a measure demonstrates difference from constructs that are similar, but theoretically distinct (Netemeyer et al., 2003). In the current study, two constructs are used to assess these types of validity: psychological flexibility and organisational learning. This introduction discusses the two constructs in turn, and how they are hypothesised to relate to organisational flexibility.

Psychological Flexibility

To assess the nomological validity of the OFS, it was necessary to consider constructs from the same theoretical network, which could be expected to relate to organisational flexibility, in order to test their relationship. Due to the novelty of organisational-level analysis in CBS research, there are no known organisational-level measures within the CBS literature for appropriately assessing the construct validity of the OFS. However, at the individual level, there is an obvious candidate for assessing the construct validity of the OFS: psychological flexibility. Psychological flexibility has provided the theoretical and practical basis for the model of

organisational flexibility. Indeed, psychological flexibility is described as being the functional twin of organisational flexibility (Bond, 2015). The implication of them being ‘twins’ is that both concepts function in the same way, at different levels of analysis. In other words, they both function as flexible behaviours, based on a combination of mindfulness and valued action; with psychological flexibility’s natural level of theory is at the individual level, and organisational flexibility’s at the organisational level. Based on this relationship, coherence is anticipated to be found between them. Their relationship is explored, briefly, to clarify how they function in similar and in different ways, in terms of mindfulness and valued action.

Mindfulness. In terms of mindfulness, psychological flexibility reflects the extent to which individuals are open to and aware of their own environments, whereas organisational flexibility reflects the extent to which the individuals, in their workplace context, share an openness to and awareness of their organisational environment. For an individual, it is likely that the skills required to be open and aware of their own environment, overlap with the skills required for them to be open and aware of their organisation’s environment. This suggests a potential relationship between psychological and organisational flexibility. However, organisational flexibility does not refer to the individual’s skills and ability to be mindful, it refers to their perceptions of the skills and abilities of the collective within the organisation. For example, it is possible for an individual who is especially mindful, to work in an organisation that they believe is not at all mindful. In this instance, their psychological flexibility and their perceptions of their organisation’s flexibility can be expected to be different. This suggests that the potential relationship between psychological flexibility and organisational flexibility is unlikely to be strong.

Valued action. In terms of pursuing valued action, psychological flexibility refers to the individual's ability to pursue their own values, whereas organisational flexibility refers to the organisation's ability to pursue its purpose. For an individual, it is possible that they may choose to work in an organisation that they perceive as sharing similar values to them; and for an organisation, it is possible that it recruits individuals that it perceives as sharing similar values to it. Once again, this suggests a potential relationship between psychological and organisational flexibility. However, for an individual, pursuing personally-valued goals may differ considerably from pursuing the organisation's purpose. For example, an individual may value providing for her family, and in line with this, she may seek additional financial reward from her organisation; whereas the organisation, in pursuit of its purpose, may seek to minimise or reduce its costs, including those of its staff. This example aims to show that individuals' pursuit of their own values do not *necessarily* relate to the pursuit of shared goals, nor to an alignment with the organisation's purpose. This, once again, suggests that the potential relationship between psychological flexibility and organisational flexibility is unlikely to be strong.

Overall, this discussion suggests that there is likely to be a relationship between these functional twins, though it is unlikely to be a strong one, due to the different levels of the focal entities and the different intentions of the entities. The current study therefore aims to evaluate the relationship between the OFS and psychological flexibility. The relationship is assumed to be at the individual level (i.e. individual perceptions of organisational flexibility relating with psychological flexibility), because there is no known theoretical basis for conceive of psychological flexibility as a group-level construct (i.e. collective psychological flexibility).

Hypothesis 1: Organisational flexibility relates positively, to a small-to-moderate extent, with psychological flexibility, at the individual level

Organisational Learning

Convergent validity. To assess the convergent validity of the OFS, it was necessary to identify constructs that could be expected to relate to organisational flexibility, conceptually, in order to test their relationship. Again, the novelty of Bond's (2015) model of organisational flexibility has meant that no known constructs exist for measuring the same concept. As discussed in the Introduction (Chapter 1, Section 5), mainstream organisational flexibility refers to a different conceptualisation of flexibility, that is not considered to be sufficiently closely related to evaluate Bond's (2015) model. However, organisational level constructs can be found that share some aspects of Bond's (2015) model of organisational flexibility, in terms of characteristics that relate to organisational mindfulness and purpose-driven action, and that reflect the perspectives of organisational flexibility as both an organisational behaviour, and a context for individuals' behaviour. In the current study, organisational learning was selected as such a construct.

Organisational learning refers to an organisational behaviour, and an organisational context, that enables adaptation as the environment changes, through the identification of opportunities and use of knowledge towards achieving organisational goals (García-Morales, Llorens-Montes, & Verdú-Jover, 2006; Senge, 1991; Sinkula, Baker, & Noordewier, 1997). Organisational learning is characterised by a shared vision, open-mindedness and a commitment to learning (Sinkula et al., 1997). This characterisation reflects some aspects of Bond's (2015) model of organisational flexibility. 'Shared vision' (organisational learning) is described as guiding the direction of the organisation's learning, and creating alignment for people in the organisation to understand the organisation's expectations (Marsick & Watkins, 1999). This reflects some aspects of the characteristic of 'purpose and goals' (organisational flexibility).

‘Open-mindedness’ (organisational learning) is described as a willingness to question routines and assumptions, and an openness to noticing different options in the environment for responding adaptively (Marsick & Watkins, 2003; Sinkula et al., 1997). It recognises the need to diagnose organisational ‘blindness’ to the environment and organisational ‘amnesia’ as hinderances to forming a shared understanding of what works (Snyder & Cummings, 1998). This reflects some aspects of ‘awareness’, ‘openness to discomfort’ and ‘situational responsiveness’ (organisational flexibility). ‘Commitment to learning’ (organisational learning) is described as a commitment to interpreting the changing environment, in order to generate new knowledge which can be used to for organisational aims (Marsick & Watkins, 2003; Sinkula et al., 1997). This reflects some aspects of ‘awareness’, ‘planned action’ and ‘situational responsiveness’ (organisational flexibility).

The concept of organisational learning is considered fundamental as a mediator in strategies of both adaptability in changing environments (i.e. mainstream ‘organisational flexibility’), and reliability and efficiency in aligning with organisational goals (i.e. ‘organisational control’), whether the strategies are managed independently or in balance with each other (de Haan, 2011; March, 1991). Like organisational flexibility, organisational learning is not tied to a specific strategy. Also, like organisational flexibility, it has also been shown to predict outcomes of effectiveness and wellbeing (Easterby-Smith & Lyles, 2011b). The natural level of theory of organisational learning is at the organisational level (Kim, 1997); and yet, as a subjective perception (like organisational flexibility), some variance can be expected between individuals’ perceptions of their organisation’s ability to learn. Understanding organisational learning in this way highlights the need and opportunity to measure organisational learning at both the individual and organisational levels.

Overall, from the perspective of the current study, this definition and these characteristics of organisational learning appear to reflect a construct that can be expected to relate sufficiently well with organisational flexibility, for the purposes of testing convergent validity of the OFS. The current study therefore aims to evaluate the relationships between the OFS and overall organisational learning, and each of the three component characteristics of organisational learning: shared vision, open-mindedness and commitment to learning, at both the individual and organisational levels of analysis.

Hypothesis 2: Organisational flexibility relates positively and strongly to organisational learning (and each of the characteristics of organisational learning: shared vision, open-mindedness and commitment to learning), at the individual and organisational levels

Discriminant validity. Despite the hypothesised relationship between these constructs, they have theoretical and philosophical differences, which mean that they are not expected to be identical. Organisational flexibility is conceived of with prediction-and-influence as its goal. As such, the model of organisational flexibility is characterised by behaviour that can be manipulated for mindful and purpose-driven action. It also places a focus on characteristics that alleviate people's defensive responses to the organisational processes, in order to maintain flexibility (Bond, 2015). While organisational learning may appear to share some characteristics with organisational flexibility, it does not share these theoretical and philosophical aims. Its focus is on predicting outcomes of performance (Easterby-Smith & Lyles, 2011b), and not on the manipulable mechanisms that explain how to influence the outcomes. "With very few exceptions, work on organizational learning has not led to research-based guidelines for increasing the effectiveness of organizational learning" (Huber, 2011, p. 108). For example,

research suggests that motivation and individual learning (Berson, Nemanich, Waldman, Galvin, & Keller, 2006) are approaches to achieving organisational learning, and yet, themselves, are outcomes that cannot be directly manipulated. In contrast, we can directly influence the organisational flexibility characteristic of ‘planned action’. Furthermore, while organisational learning recognises the need to diagnose people’s defensive responses (e.g. ‘blindness’ and ‘amnesia’) in order to facilitate progress towards the organisations goals (Snyder & Cummings, 1998), it does not focus directly on alleviating them (Bain, 1998). Such differences between organisational learning and organisational flexibility indicate that, despite the similarities between aspects of these constructs, they can be expected to function differently. Therefore, we should be able to distinguish between them. This guides the current study to test that the OFS is distinct from the organisational learning constructs, at both the individual and organisational levels.

Hypothesis 3: Organisational flexibility demonstrates sufficient difference from organisational learning (and each of the characteristics of organisational learning: shared vision, open-mindedness and commitment to learning), for them to be considered distinct constructs, at the individual and organisational levels

In Summary

Psychological flexibility is theoretically related to organisational flexibility, at the individual level. Organisational learning (and its characteristics: shared vision, open-mindedness and commitment to learning) are constructs that are conceptually related to organisational flexibility, at the individual and organisational levels; and yet they are also expected to be sufficiently distinct to be able to distinguish between them. This study seeks to assess the relationships between these constructs and the OFS, to assess the validity of the scale.

Method

Participants and Procedures

The participants in this study were the same sample as those in Study II (for a full explanation, see Participants and Procedures section in Study II methods, p124). The data for Study III were collected at the same time as Study II, as part of a single survey. In summary, the surveys provided 331 responses from 31 organisations, where the sample size within each organisation ranged from 1 employee to 51 employees, with an average cluster size of 10.74 ($SD = 11.43$).

Measures

Psychological flexibility (Appendix 8.1): Psychological flexibility was assessed using the Work-related Acceptance and Action Questionnaire, (WAAQ; Bond et al., 2013). This measure is designed specifically to assess psychological flexibility as it relates to the workplace. This 7-item scale was used with a 7-point Likert rating (1-‘never true’ to 7-‘always true’), including statements such as “*I can still work effectively even if I am nervous about something*”. In the present study, a Cronbach’s alpha coefficient of .91 was reported for this measure.

Organisational Learning (Appendix 8.1): Shared vision (OL-SV), open-mindedness (OL-OM), commitment to learning (OL-CL), and the composite scale of organisational learning (OL), were measured using 11 items (Sinkula et al., 1997). The scale uses a 5-point Likert rating (1-‘strongly disagree’, 5-‘strongly agree’), including statements such as: “*There is a commonality of purpose in my organisation*” (OL-SV), “*We are not afraid to reflect critically on the shared assumptions we have made about our customers*” (OL-OM), “*The basic values of this organisation include learning as key to improvement*” (OL-CL) In the present study, Cronbach’s alpha, for the composite scale was .87, and for the 3 subscales, was .85, .48 and .84, respectively.

It is noted, here, that the reliability for the open-mindedness scale was low, which could impact results. Removing unreliable items from the scale was considered, however, open-mindedness is a 3-item scale, and three items is typically considered a minimum number of items required for reliability (Clark & Watson, 1995). The least reliable item was a reversed item “*We rarely collectively question our own bias about the way we interpret customer information*”. Based on this analysis, it was decided to proceed, applying cautious interpretation of the results related to open-mindedness and overall organisational learning.

Data Analysis Plan

Following data screening, to assess the construct validity of the OFS in terms of its nomological, convergent and discriminant validity, the data were analysed for their support of the three hypotheses. Throughout this study, the correlation coefficients were interpreted as $r \geq .10$ indicating a small effect, $r \geq .30$ moderate and $r \geq .50$ a large effect (Cohen, 1988); and the intraclass correlations (ICCs) were interpreted as $ICC > 0\%$ indicating some organisational effect, $ICC > 10\%$ as low (Lee, 2000; Robson & Pevalin, 2015), $ICC > 20\%$ as moderate, and $ICC > 30\%$ as high (Kreft & de Leeuw, 1998).

Interclass correlations. To assess the extent to which perceptions of organisational learning can be understood to be shared (i.e. at the organisational level), ICCs were used to assess the organisational effect on organisational learning (and the subscales, representing the characteristics).

Nomological validity. To assess the nomological validity of the OFS, MPlus was used to perform correlations between organisational and psychological flexibility, at the individual level (Hypothesis 1).

Convergent validity. To assess the convergent validity of the OFS, MPlus was used to perform multilevel correlations between organisational flexibility and organisational learning, and its three characteristics: shared vision, open-mindedness and commitment to learning (Hypothesis 2).

Discriminant validity. To assess the discriminant validity of the OFS, this study used the organisational learning constructs again (Hypothesis 3). Discriminant validity was assessed using a series of three sets of competing MCFAs, to evaluate whether organisational flexibility better reflected a distinct, independent construct from the organisational learning constructs. In each of the three sets of competing models, the OFS was compared with the shared vision, open-mindedness, and commitment to learning scales, individually and combined as an overall organisational learning scale (Chen, Gully, & Eden, 2001). The fit of each model was assessed based on the chi-square (χ^2) statistic, together with several fit indices: the comparative fit index (CFI), the root mean square error of approximation (RMSEA) and the standardized root-mean-square residual (SRMR). Bollen (1989) and Hu and Bentler (1998) suggest that values of $\geq .95$, $\leq .06$ and $\leq .08$, respectively, are indicative of good model fit.

Independent factors (models 1a, 1b, 1c and 1d). The first set of models was expected to have the best fit, supporting the discriminant validity of the OFS, by demonstrating its independence from the organisational learning scales. The models evaluated the OFS as having an independent factor structure from each of the factor structures of (a) shared vision, (b) open-mindedness, (c) shared vision, and (d) overall organisational learning. An MCFA was performed for each pairing. The first three MCFAs used two-factor models, pairing the OFS and shared vision (Model 1a; illustrated in Figure 10), the OFS and open-mindedness (Model 1b), and the OFS and commitment to learning (Model 1c). The latter two pairings are not shown in the Figure

10 illustration, but reflect the same factor structure. Then, a four-factor model MCFA was performed, paring the OFS and all three subscales, together (Model 1d; illustrated in Figure 11).

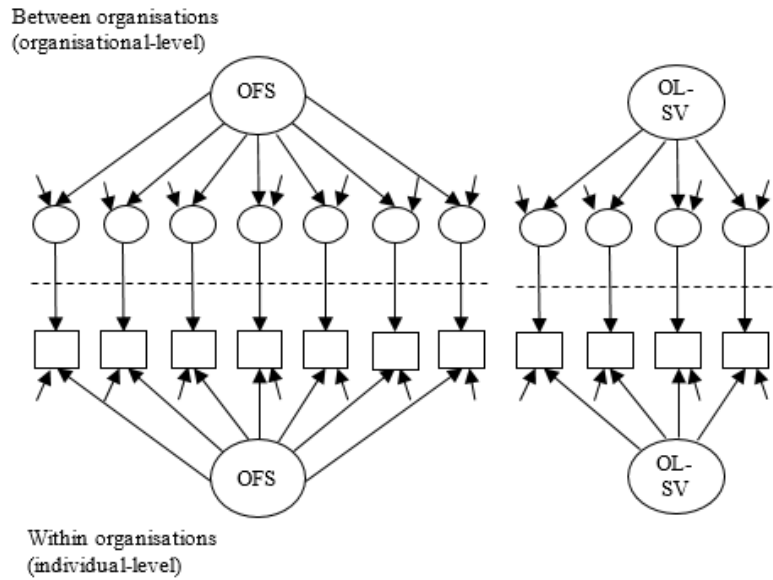


Figure 10. Discriminant validity Model 1a: Two-factor independence model: organisational flexibility and shared vision as independent factors.

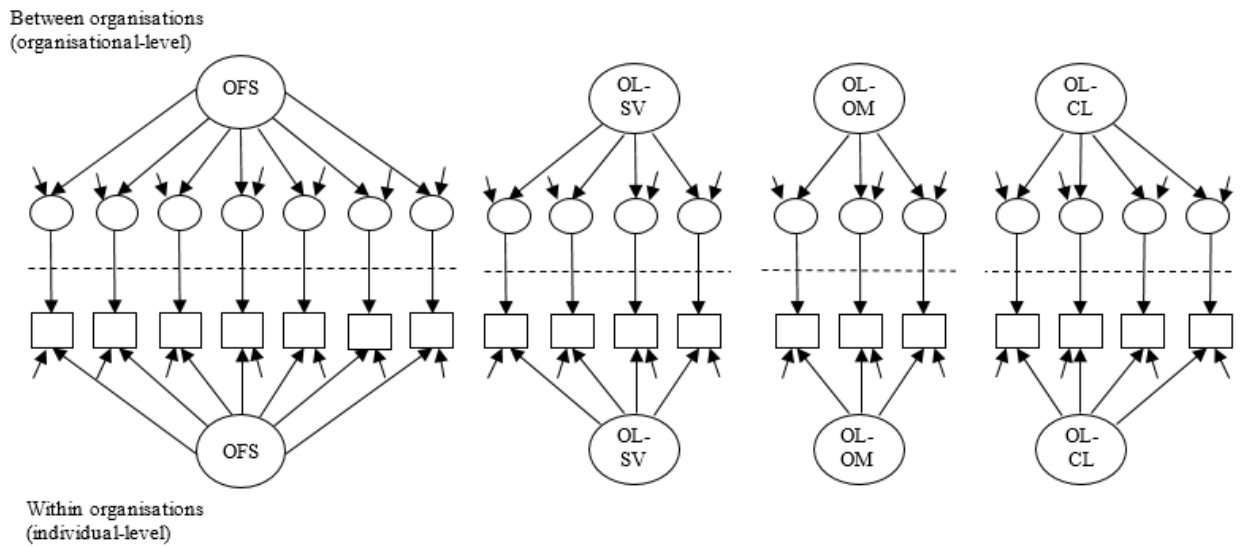


Figure 11. Discriminant validity Model 1d: Four-factor independence model: organisational flexibility and all three of the subscales of organisational learning as independent factors

Equal factors (models 2a, 2b, 2c and 2d). This set of models was designed to evaluate the OFS as though the construct of organisational flexibility were the same as each of the organisational learning constructs. This set of models used the same two-factor and four-factor structures as in the first set of models, except that this time the correlations between the paired factors were set to 1 (i.e. forcing the assumption that the factors are equal). Using a similar approach to the first set of models, the assessments were separated into: OFS and shared vision (Model 2a; illustrated in Figure 12), the OFS and open-mindedness (Model 2b), and the OFS and commitment to learning (Model 2c). Then, a four-factor model MCFA, pairing the OFS and all three subscales, together (Model 2d). These models were expected to fit the data less well than the first set, because the OFS and the organisational learning scales are not expected to be the same as each other, but independent of each other.

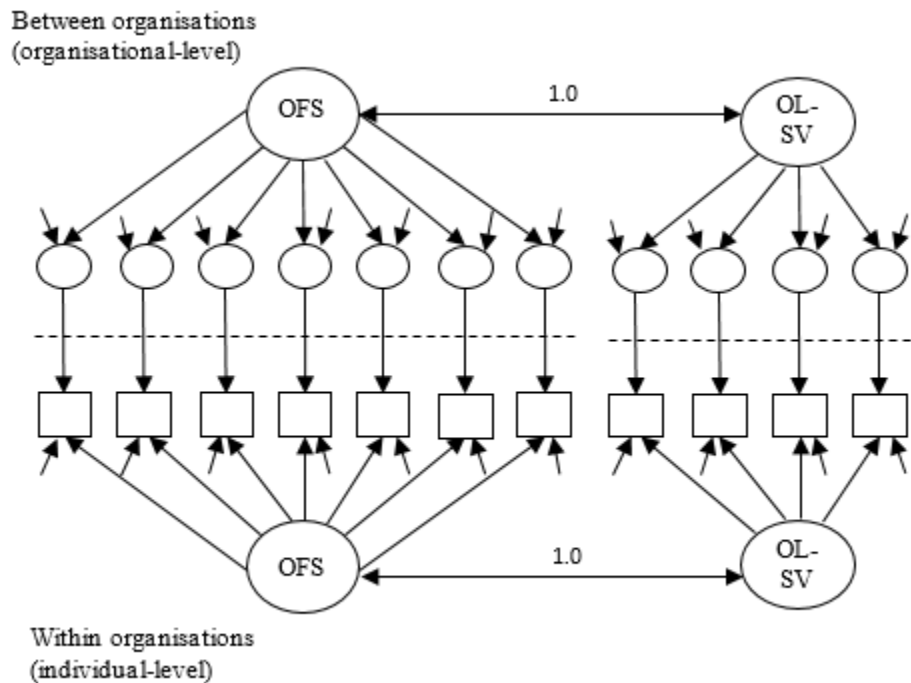


Figure 12. Discriminant validity Model 2: Two-equal-factors model, with organisational flexibility and shared vision as equal factors

Single factor (models 3a, 3b, 3c and 3d). This set of models was designed to evaluate the OFS by combining the OFS items with the items of each of the organisational learning scales, as though they reflected a single scale. In this set of models, single-factor models were assessed, in which all of the OFS items were combined with organisational learning items to load onto one factor (illustrated in Figure 13). Using a similar approach to the previous sets of models, the assessments were separated into: OFS and shared vision (Model 3a), the OFS and open-mindedness (Model 3b), and the OFS and commitment to learning (Model 3c). Then, a four-factor model MCFA, pairing the OFS and all three subscales, together (Model 3d). This set of models was expected to fit the data less well than the models in the first set, because the OFS and organisational learning items are not expected to reflect a single construct, but distinct constructs.

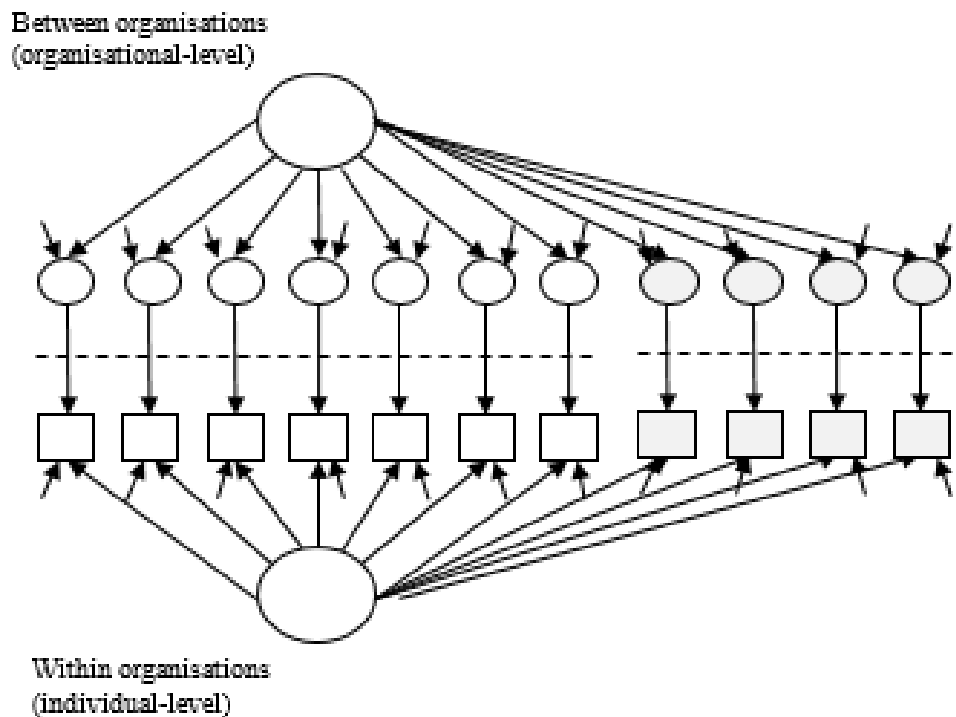


Figure 13. Discriminant validity Model 3: Single-factor model, with organisational flexibility and shared vision items (highlighted in grey, for clarity) combined

Results

Data Screening

The two scales were screened for missing data. None had cases with more than 2.70% data missing. To test for any systematic patterns of missing data, Little's MCAR test was used and produced a non-significant result for all scales ($p > .158$), indicating no systematic patterns. With this result and missing data sufficiently below the 5% criteria, the missing data were replaced using Expectation Maximisation (Tabachnick & Fidell, 2013). The scales were inspected for normality, and significant negative skew ($p < .001$) was found across all the scales, except psychological flexibility and open-mindedness. This implied that the overall sample responded with a higher mean than would be anticipated from a normal distribution. The tests were repeated for each organisation, separately. Only two of the 31 organisations reported any significant skew, and each was across different scales (Organisation "AJ": shared vision; "AO": organisational learning and commitment to learning). Three organisations also reported significant kurtosis, across different scales ("AJ": shared vision; "AO": organisational learning and commitment to learning; "BH": organisational learning). These results indicated relatively symmetrical patterns of distribution across the scales, within most of the organisations, despite the overall sample's indications of skewness and kurtosis.

Intraclass Correlations

The ICCs for organisational learning and its characteristics were assessed, to provide the relative variance in outcomes between organisations, as indicators of the extent to which perceptions of organisational learning can be understood to be shared (i.e. at the organisational level). The ICCs (Table 7) indicated that considerable variance was attributable to the organisation for perceived organisational learning (37%), shared vision (31%), open-mindedness

(17%) and commitment to learning (32%), providing strong support for the aggregation and multilevel analysis of organisational learning and its characteristics.

Nomological Validity

To assess for nomological validity (Hypothesis 1), the direction and strength of the correlations between organisational flexibility and psychological flexibility were examined (Table 7). The OFS related significantly and positively with psychological flexibility ($r = .20, p = .002$), supporting the hypothesis that individual perceptions of organisational flexibility (as represented by the OFS) relate to psychological flexibility.

Table 7
Construct Validity of Organisational Flexibility. Correlations with Psychological Flexibility and Organisational Learning, Within and Between Organisations (N = 331)

Variables	Within (individual level)					
	1	2	3	3a	3b	3c
1. Organisational Flexibility	28%	.20***	.67***	.64***	.36***	.53***
2. Psychological Flexibility	-	-	.12*	.16**	.14*	.01
3. Organisational Learning	.97***	-	37%	.83***	.65***	.85***
3a. Shared Vision	.97***	-	.94***	31%	.35***	.51***
3b. Open-Mindedness	.79***	-	.90***	.77***	17%	.41***
3c. Commitment to Learning	.92***	-	.97***	.84***	.86***	32%
Mean	37.05	36.03	41.05	14.84	10.55	15.66
SD	6.85	6.58	7.23	3.40	1.81	3.44

Notes: Intraclass correlations (ICCs) in bold on the diagonal. Coefficients above the diagonal represent intercorrelations between individuals within an organisation, and below the diagonal represent intercorrelations between organisations.

p <= .050, **p <= .010, ***p <= .001

Convergent Validity

To assess for convergent validity (Hypothesis 2), the direction and strength of the correlations between organisational flexibility and organisational learning and its characteristics were examined (Table 7). As hypothesised, all correlation estimates were positive and significant. Individuals' perceptions of their organisation's flexibility related significantly, and relatively strongly with their perceptions of organisational learning, overall and across each of the characteristics, ranging from open-mindedness ($r = .36, p \leq .001$) to overall organisational learning ($r = .67, p \leq .001$). As hypothesised, at the organisational level, shared perceptions of organisational flexibility related very strongly with shared perceptions of organisational learning, overall and across each of the characteristics ranging from open-mindedness ($r = .79, p \leq .001$) to shared vision ($r = .97, p \leq .001$) and overall organisational learning ($r = .97, p \leq .001$). The relationship between the OFS and open-mindedness stood out as being weaker than the other organisational learning scales (at both levels), and it was noted that the open-mindedness scale had been previously identified as having low reliability, based on the Cronbach's alpha. Despite this, the relationship with the OFS was still considered to be strong. Indeed, the relationships between organisational flexibility and organisational learning, at the organisational level, were strong enough to suggest that the measures could be assessing the same construct. Therefore, while these results support Hypothesis 2, and the convergent validity of the OFS, the similarity between these constructs also reinforced the need to assess the discriminant validity between these scales.

Discriminant Validity

To assess the discriminant validity of the OFS, the series of three sets of competing models were used to determine its independence from the organisational learning scales (see Appendix 10 for MPlus syntax). Results indicated that none of the models was an ideal fit (Table 8). For example, none of the models had scores above the minimum criterion for CFI ($\geq .95$), or scores below the maximum criterion for SRMR-between ($\leq .08$). However, in each set of comparisons, those in the first set of models (1a, 1b, 1c and 1d) were the best fitting models across all of the fit indices, and fit significantly better than the other models, according to the chi-square differences ($p \leq .001$), compared with the second and third sets of models (2a, 2b, 2c, 2d, 3a, 3b, 3c, 3d). Furthermore, the tests for the second and third sets of models resulted in no RMSEA scores below the maximum criterion ($\leq .06$); and for the second set of models there were no SRMR-within scores below the maximum criterion ($\leq .08$). In contrast, the tests for the first set of models resulted in three of the four RMSEA scores meeting the .06 criterion (with the fourth, shared vision, was just outside the cut-off, with a score of .07), and all of the SRMR-within scores for the first set of models were below 0.8. These results supported Hypothesis 3, by indicating that the OFS was better at reflecting an independent construct, than being the same as, or part of, the organisational learning construct and its characteristics.

Table 8
Discriminant Validity of Organisational Flexibility, Compared with Organisational Learning

Hypothesised Model	Deviance statistic	Parameters	$\chi^2 \Delta$	CFI ($\geq .95$)	RMSEA ($\leq .06$)	SRMR Within ($\leq .08$)	SRMR Between ($\leq .08$)
<i>OF & Organisational Learning</i>							
Model 1a: 4 independent factors	-7460.57	102		0.90	0.06	0.05	0.13
Model 2a: 4 equal factors	-7541.28	94	-59.87***	0.85	0.07	0.18	0.21
Model 3a: 1 single factor	-7632.00	90	-104.37***	0.79	0.09	0.07	0.15
<i>OF & OL-Shared Vision</i>							
Model 1b: 2 independent factors	-4759.53	57		0.93	0.07	0.04	0.07
Model 2b: 2 equal factors	-4801.56	53	-131.64***	0.88	0.09	0.14	0.13
Model 3b: 1 single factor	-4806.82	55	-209.81***	0.87	0.09	0.06	0.07
<i>OF & OL-Open-Mindedness</i>							
Model 1c: 2 independent factors	-4446.39	52		0.94	0.06	0.03	0.13
Model 2c: 2 equal factors	-4477.46	48	-30.41***	0.09	0.08	0.07	0.20
Model 3c: 1 single factor	-4466.59	50	-101.63***	0.89	0.08	0.05	0.15
<i>OF & OL-Commitment to Learning</i>							
Model 1d: 2 independent factors	-4815.74	57		0.93	0.06	0.06	0.09
Model 2d: 2 equal factors	-4871.85	53	-47.92***	0.86	0.08	0.14	0.15
Model 3d: 1 single factor	-4915.85	55	-20.92***	0.83	0.09	0.09	0.09

*p <= .050, **p <= .010, ***p <= .001

OF – Organisational Flexibility; OL – Organisational Learning

Summary & Next Steps

This third study in the development of a measure of organisational flexibility aimed to find support for the construct validity of the proposed organisational flexibility scale (OFS), with evidence for how similar and different the OFS is from other constructs in its network. The study hypothesised that organisational flexibility would significantly and positively relate to its functional twin, psychological flexibility, as a test of its nomological validity. It also hypothesised that organisational flexibility would significantly and positively relate to organisational learning, and its characteristics: shared vision, open-mindedness and commitment to learning, as a test of its convergent validity, based on the shared characteristics, and the organisational-level nature of the constructs. However, a further hypothesis was that organisational flexibility would be sufficiently different from organisational learning, and its characteristics, as a test of its discriminant validity, based on their theoretical and philosophical differences. Using the same multilevel sample of 331 participants across 31 organisations as in Study II, correlational analyses and MCFA were performed on the data. Results showed strong support for the hypotheses, at both the individual and organisational levels. This provides a degree of confidence in the OFS, as providing a scale that reflects the meaning of organisational flexibility. However, further evidence is required to establish the OFS as a measure of organisational flexibility, based on the ability of the OFS to predict individual and organisational effectiveness and wellbeing. This requirement guides the next study in this series.

Chapter 5. Study IV - Criterion-related Validity

Abstract

The aim of this study was to assess the criterion-related validity of the Organisational Flexibility Scale (OFS). A sample of 331 employees across 31 organisations, was used to test hypotheses for criterion-related validity. Support was found for each of the hypotheses, based on regressions which showed the OFS was able to predict mental health, work motivation, job satisfaction and organisational performance. The OFS predicted individuals' mental health ($\beta = 0.25$) and explained 8.90% of the variance, at the individual level. It predicted work motivation (individual level: $\beta = 0.12$; organisational level: $\beta = 0.23$), and explained the variance at the individual level (3.35%) and at the organisational level (89.15%). It predicted job satisfaction (individual level: $\beta = 0.50$; organisational level: $\beta = 0.61$), and explained the variance at the individual level (30.52%) and at the organisational level (73.69%). It also predicted organisational performance (individual level: $\beta = 0.43$; organisational level: $\beta = 0.67$), and explained the variance at the individual level (41.60%) and organisational level (83.83%). Results for incremental validity tests indicated that the OFS was able to explain the variance in the outcomes of mental health, work motivation, job satisfaction, over and above psychological flexibility ($p \leq .001$), at the individual level. It was also able to explain the variance in the outcomes of work motivation, job satisfaction and organisational performance, over and above organisational learning ($p \leq .001$), at both levels of analysis, and as an overall model.

Introduction

This chapter describes the last of four empirical studies in the development and validation of a measure of organisational flexibility. The aim of this study was to seek support for the criterion-related validity of the OFS. Criterion-related validity refers to the extent to which a measure explains theoretically-predicted outcomes (Netemeyer et al., 2003). This study aimed to assess criterion-related validity, based on the ability of the OFS to predict outcomes of effectiveness and wellbeing (Bond, 2015), and its ability predict those outcomes, over and above the existing constructs of psychological flexibility and organisational learning (incremental validity). The purpose of the incremental tests was to further clarify how the OFS fits within the theoretical frame, relative to established constructs within the same domain (Hunsley & Meyer, 2003). This introduction discusses the measures selected for use in this study, and the need to take their levels of analysis into consideration. It then discusses each of the hypotheses to be tested in this study.

Predicting Outcomes

Background. In order to assess the criterion validity of the OFS, it was necessary to consider *outcomes* that are relevant and appropriate for demonstrating the predictive abilities of organisational flexibility, and the *level* at which to analyse them. It was also necessary to consider *existing constructs* that have been used for similar purposes, in order to demonstrate the predictive abilities of the OFS, over and above the existing measures. The theoretical model of organisational flexibility hypothesises that organisational flexibility will predict outcomes of effectiveness and wellbeing. Therefore, the measure of organisational flexibility needs to demonstrate this ability. The natural level of theory of organisational flexibility is at the organisational level, therefore, the OFS needs to be able to demonstrate its ability to predict outcomes that represent the organisation, relative to other organisations. To do so indicates the need for analysis at the organisational level. However, as we have seen

previously, perceptions of organisational flexibility can also be expected to vary between individuals, within an organisation. It is therefore relevant and interesting to understand how individual perceptions of organisational flexibility predict outcomes that are relevant to individuals, within their organisations. To do so indicates the need for analysis at the individual level, as well.

The need to clarify the predictive abilities of the OFS, beyond existing measures, is in order to place the OFS more clearly within the wider literature, by clarifying and justifying its use, in relation to established constructs within the same domain (Hunsley & Meyer, 2003). Existing constructs, within the domain of organisational flexibility, that have been shown to predict outcomes of effectiveness and wellbeing include psychological flexibility, at the individual level, and organisational learning, at the individual and organisational level. Given their relationships with organisational flexibility (according to the theory and results presented in the previous chapter), it is relevant and of interest to understand how organisational flexibility predicts outcomes of effectiveness and wellbeing over and above psychological flexibility and organisational learning, to clarify and justify the use the OFS, in relation to them.

Selecting outcomes for assessment. In organisational research, outcomes of effectiveness and wellbeing have been conceived of in a multitude of ways (Cameron, 1986; Hartnell, Ou, & Kinicki, 2011; Quinn & Rohrbaugh, 1981; Steers, 1975). Specific outcomes have been selected for assessment in the current study that are expected to be valued by individuals and organisations, in line with the CBS criterion that outcomes of interest should be those which are chosen as valued by the entity (e.g. the individual or organisation), rather than because they are socially expected or understood to be ‘true’ (Monestès & Villatte, 2015). The outcomes for assessment have also been selected based on outcomes of effectiveness and wellbeing that the existing constructs of psychological flexibility and

organisational learning have been shown to predict. Psychological flexibility has been shown to predict individually-valued outcomes of effectiveness and wellbeing, including mental health, work motivation and job satisfaction (Bond & Bunce, 2000; Bond et al., 2013; Flaxman & Bond, 2006). Organisational learning has been shown to predict organisationally-valued outcomes of effectiveness and wellbeing, including work motivation, job satisfaction and organisational performance (Egan, Yang, & Bartlett, 2004; García-Morales et al., 2006; Yang, Watkins, & Marsick, 2004). In this chapter, we seek to understand whether organisational flexibility also predicts these same outcomes of mental health, work motivation, job satisfaction, and organisational performance, as measured by the OFS. Also, given the relationships between organisational flexibility and psychological flexibility, and organisational learning, this study seeks to understand whether organisational flexibility predicts these outcomes incrementally, i.e. over and above the existing predictors. First, this study needs to take the levels of analysis into account.

Levels of analysis. In the introduction (Chapter 1, Section 6.3), we discussed the need to apply caution when analysing constructs across levels, in order to avoid certain fallacies caused by inappropriate generalisation of results to the wrong level of analysis. For example, making the assumption that an organisational effect influences everyone in the organisation, in the same way. In this chapter, we discuss the ability of the OFS, at the individual and organisational levels, to predict outcomes, at the individual and organisational levels. Given this complexity, the current study seeks to avoid fallacious assumptions in two ways. First, in this introduction, it aims to clarify the level(s) of theory and measurement of the outcome constructs, and their hypothesised relationships with organisational flexibility. Secondly, in the data analysis phase, it aims to test the data to ensure that the theory is supported with appropriate consensus/variance in the data, within and between organisations (Chan, 1998; Glick, 1985).

Outcomes of Effectiveness and Wellbeing

Mental health. Psychological flexibility is a well-established predictor of mental health (Hayes et al., 2006; Zettle et al., 2016). Organisational flexibility is hypothesised to predict mental health, through its provision of opportunities for people to respond flexibility to their experiences, despite challenges, as well as connecting them to meaning in their work, through the organisation's purpose and goals.

Mental health is a construct that has a natural level of theory at the individual level, and it is considered to be relatively stable across contexts. Its stability makes it unlikely to change significantly in different contexts, which means that an organisation is unlikely to influence a collective effect on the mental health of individuals in the organisations. Without an organisational influence, mental health can be expected to vary between individuals within an organisation, as much as between individuals in the general population. Given the anticipated lack of organisational influence, in the current study, we cannot expect shared perceptions of organisational flexibility to predict 'collective' mental health (i.e. an organisational effect on mental health). However, by providing individuals' with opportunities to respond flexibly, and with the opportunity for meaning and goals in their work, it is anticipated that individuals' (rather than shared) perceptions of organisational flexibility are likely to predict mental health. This guides the current study to assess the relationship between the OFS and mental health, at the individual level, only. To test the incremental validity, the predictive ability of the OFS is assessed over and above psychological flexibility, as an existing predictor of mental health.

Hypothesis 1: Organisational flexibility predicts mental health, at the individual level

Hypothesis 2: Organisational flexibility is able to predict mental health, over and above psychological flexibility, at the individual level

Work motivation and job satisfaction. Psychological flexibility and organisational learning have both been assessed as predictors of work motivation and job satisfaction, at the individual level. Evidence of psychological flexibility's ability to predict work motivation have been mixed (Bond & Bunce, 2000; Bond et al., 2008), but good evidence has been shown of its ability to predict job satisfaction (Bond & Bunce, 2001, 2003; Bond et al., 2013). Evidence has also been shown of organisational learning's ability to predict work motivation (Egan et al., 2004; Joo & Lim, 2009) and job satisfaction (Chiva & Alegre, 2008, 2009; Egan et al., 2004). The focus of organisational learning research is typically directed towards evaluating its effects on performance-related outcomes at the organisational level, however, the effects of a learning organisation on individuals' commitment to learning, to pursuing goals, and to doing so in an open-minded way, have been shown to have influence at the individual level (Kim, 1997; Easterby-Smith & Lyles, 2011a; Egan et al., 2004; Thomas & Allen, 2006). In the current research, organisational flexibility is hypothesised to predict work motivation and job satisfaction, through its ability to provide a context that supports people's flexible responses to their experiences, as well as connecting them to meaning in their work, through the organisation's purpose and goals.

Work motivation and job satisfaction are both constructs that have a natural level of theory at the individual level. Because of this, we can expect work motivation and job satisfaction to show variance between individuals, within an organisation. However, research has also suggested individuals' motivation and satisfaction can be expected to vary in different contexts, and therefore contextual effects may be possible (Aubé, Rousseau, & Tremblay, 2015; Harter, Schmidt, & Hayes, 2002; Klassen, Usher, & Bong, 2010). For example, when people share an organisational context, it is possible that their organisation influences a collective effect (i.e. reduced variance) in work-related motivation and satisfaction, between the individuals within the organisation, relative to other organisations. In

other words, individuals who *work* together, and whose *jobs* interact, may be expected to have a degree of collective work motivation and collective job satisfaction.

This guides the current study in two ways. First, the study needs to assess how individual perceptions of organisational flexibility (according to the OFS at the individual level) predict the extent of, and variance in, individual work motivation and job satisfaction. Secondly, the study needs to assess how organisational flexibility (according to the OFS at the organisational level) predicts a collective extent of, and variance in, work motivation and job satisfaction. However, before proceeding with the organisational-level analysis, it will be necessary to test the data collected in this study, to confirm that it shows an organisational effect (to avoid fallacious assumptions). To test the incremental validity of the OFS, its predictive ability is assessed in two further ways. Firstly, over and above psychological flexibility, at the individual level, given the individual-level nature of the constructs. Secondly, over and above organisational learning, at both levels of analysis, given the organisational level nature of the constructs, and their ability to vary at the individual level.

Hypothesis 3: Organisational flexibility predicts work motivation and job satisfaction, at the individual and organisational levels

Hypothesis 4: Organisational flexibility is able to predict work motivation and job satisfaction, over and above psychological flexibility at the individual level, and organisational learning at the individual and organisational levels

Organisational performance. Organisational learning has been well-established as a predictor of organisational performance (Baker & Sinkula, 1999; Calantone, Cavusgil, & Zhao, 2002; Ellinger, Ellinger, Yang, & Howton, 2002; March, 1991; Santos-Vijande, López-Sánchez, & Trespalacios, 2012), both in terms of objective and subjective measures of performance. Organisational flexibility is hypothesised to predict organisational performance through its ability to take mindful, purpose-driven action, that helps it to achieve its goals.

Organisational performance has a natural level of theory at the organisational level. However, it can be measured in a number of ways. Objective measures of performance are often favoured, such as the organisation's return on assets, return on capital employed, cash flow to operating revenue ratios, sales growth etc., over given periods of time (Richard, Devinney, Yip, & Johnson, 2009). However, alternative perspectives reflect how, without context, financial information can be unhelpful in some circumstances. For example, the time lag between performance-related behaviour, and the dates when financial information is reported can make it difficult to infer causality. Furthermore, 'performance' can require different behaviour, in different situations (Richard et al., 2009). For example, different behaviours may be more relevant for 'performing' during a start-up phase, or under intense competition, or a financial downturn, or as an established market leader.

Perceived organisational performance. Primarily, this study uses the subjective construct of perceived organisational performance. The natural level of the theory of organisational performance is at the organisational level. However, as a subjective perception (like organisational flexibility), some variance can be expected between individuals. To be able to interpret perceptions of performance as representative of the organisation, we need to understand whether there is an organisational influence on the perceptions. We can test this by establishing consensus within organisations, relative to the variance between organisations, first. Therefore, this study needs to assess how individual and shared perceptions of organisational flexibility predict individual and shared perceptions of organisational performance. This guides the current study to assess the relationship between the OFS and organisational performance, at the individual and organisational levels. To test the incremental validity of the OFS, its predictive ability is assessed over and above organisational learning, at both levels of analysis, given the organisational level nature of the constructs, and their ability to vary at the individual level.

Hypothesis 5: Organisational flexibility predicts perceptions of organisational performance, at the individual and organisational levels

Hypothesis 6: Organisational flexibility is able to predict perceptions of organisational performance, over and above organisational learning

Organisational-level ‘triangulation’ measures of performance. In order to seek support for this subjective construct of effectiveness, it was decided to ‘triangulate’ perceived organisational performance with additional approaches to measuring effectiveness, at the organisational level only (Richard et al., 2009).

Informed perceptions of performance. Firstly, it is recommended that different sources are used for the measurement (Wall et al., 2004), such as a knowledgeable respondent who is able to provide a subjective, but informed, view to represent the organisation’s view of its effectiveness, as though at the organisational-level. The views of the knowledgeable respondents can be expected to relate to the shared perceptions of the individuals within the organisation. They can also be expected to be predicted by organisational flexibility, at the organisational level.

Hypothesis 7: Informed perceptions of organisational performance relate positively and strongly to shared perceptions of organisational performance, at the organisational level

Hypothesis 8: Organisational flexibility predicts informed perceptions of organisational performance, at the organisational level

Hypothesis 9: Organisational flexibility is able to predict informed perceptions of organisational performance, over and above organisational learning

Objective measures of performance. Secondly, for ‘triangulation’, it is recommended to use objective data (Wall et al., 2004). It is recognised that this can be challenging for a number of contextual reasons, including: access to financial and human resource records,

inconsistency in the types of measures used by organisations, and inconsistency in time periods used for measurement. However, in the current study, revenue per head, profit per head, and staff turnover were anticipated as being sufficiently accessible and comparable, objective data for use in validity the OFS. As with the knowledgeable respondent data, these objective measures were expected to relate to shared perceptions of organisational performance, and to be predicted by organisational flexibility, at the organisational level.

Hypothesis 10: Objective measures of organisational effectiveness (revenue per head, profit per head and staff turnover) relate positively and strongly to shared perceptions of organisational performance, at the organisational level

Hypothesis 11: Organisational flexibility predicts objective measures of organisational effectiveness, at the organisational level

Hypothesis 12: Organisational flexibility is able to objective measures of organisational effectiveness, over and above organisational learning

In Summary

In order to assess the criterion-related validity of the OFS, it needs to demonstrate its ability to predict outcomes of effectiveness and wellbeing at the individual and organisational levels, and its ability to do so over and above existing measures of effectiveness and wellbeing. In this study, the OFS is assessed as a predictor of mental health, at the individual level; of work motivation and job satisfaction, at the individual and organisational levels; and of various forms of organisational performance, at the individual and organisational levels. This study also seeks to assess the ability of the OFS to predict these outcomes, over and above psychological flexibility and organisational learning, in order to demonstrate the incremental validity of the scale.

Method

Participants and Procedures

The participants in this study were the same sample as those in Study II (for a full explanation, see Participants and Procedures section in Study II methods, p124). The data for Study IV were collected at the same time as Study II, as part of a single survey. In summary, the main surveys provided 331 responses from 31 organisations, where the sample size within each organisation ranged from 1 employee to 51 employees, with an average cluster size of 10.74 ($SD = 11.43$). For the organisational-level ‘triangulation’ measures, the participants were ‘key contacts, for the 19 organisations sampled using the ‘formal’ approach. They provided 19 responses to the ‘key contacts’ survey. For the 12 organisations sampled using the ‘informal’ approach, financial data were sourced from online annual reports, where such data were available.

Measures

Predictors

Psychological flexibility (Appendix 8.1): Psychological flexibility was assessed using the Work-related Acceptance and Action Questionnaire (WAAQ; Bond et al., 2013). This measure is designed specifically to assess psychological flexibility as it relates to the workplace. This 7-item scale was used with a 7-point Likert rating (1-‘never true’ to 7-‘always true), including statements such as “*I can still work effectively even if I am nervous about something*”. In the present study, a Cronbach’s alpha coefficient of .91 was reported for this measure.

Organisational Learning (Appendix 8.2): Shared vision (OL-SV), open-mindedness (OL-OM), commitment to learning (OL-CL), and the composite scale of organisational learning (LO), were measured using 11 items (Sinkula et al., 1997). The scale uses a 5-point Likert rating (1-‘strongly disagree’, 5-‘strongly agree’), including statements such as: “*There*

is a commonality of purpose in my organisation” (OL-SV), *“We are not afraid to reflect critically on the shared assumptions we have made about our customers”* (OL-OM), *“The basic values of this organisation include learning as key to improvement”* (OL-CL). In the present study, Cronbach’s alpha, for the composite scale was .87, and for the 3 subscales, was .85, .48 and .84, respectively. It is noted, here, that the reliability for the open-mindedness scale was low, which could impact results. Removing unreliable items from the scale was considered, however, open-mindedness is a 3-item scale, and three items is typically considered a minimum number of items required for reliability (Clark & Watson, 1995). The least reliable item was a reversed item *“We rarely collectively question our own bias about the way we interpret customer information”*. Based on this analysis, it was decided to proceed, applying cautious interpretation of the results related to open-mindedness and overall organisational learning.

Main outcomes.

Mental health (Appendix 8.3): Mental health was measured using the General Health Questionnaire-12 (Goldberg, 1978). The 12-item scale used a 4-point Likert rating, with higher scores indicating greater mental ill-health. Statements started with *“Have you recently ...”*, and included questions such as *“Been able to face up to your problems?”* The Cronbach’s alpha coefficient was .84.

Work Motivation (Appendix 8.4): Work-related motivation was measured using a well-validated intrinsic work motivation scale by Warr, Cook and Wall (1979). This 6-item scale used a 7-point rating scale (1 – ‘strongly disagree’ to 7 – ‘strongly agree’), including statements such as *“I take pride in doing my job as well as I can”*. The Cronbach’s alpha coefficient was .72.

Job satisfaction (Appendix 8.5): Job satisfaction was measured using the Job Diagnostic Survey (Hackman & Oldham, 1975); a 5-item scale with a 7-point Likert rating (1-

‘disagree strongly’ to 7-‘agree strongly’), including statements such as “*Generally speaking, I am very satisfied with this job*”. The Cronbach’s alpha coefficient for this study was .89.

Organisational Performance (Appendix 8.6): Organisational performance was assessed using a 4-item scale of perceived organisational performance (Gibson & Birkinshaw, 2004), with a 7-point Likert rating (1 – ‘strongly disagree’ to 7 – ‘strongly agree’), including items such as “*This organisation is achieving its full potential*”. The Cronbach’s alpha coefficient was .84.

Organisational-level ‘triangulation’ outcomes.

The organisational-level measures, used for triangulation with the perceptions of organisational performance data, were mainly based on informed responses to the key contact survey (using the formal approach). These were supplemented with financial data, sourced from online annual reports (for both the formal and informal approaches), where such data were available.

Organisational performance (‘key contact’); Appendix 8.6): To assess key contacts’ informed-but-subjective views of performance, the same Gibson and Birkinshaw (2004) scale, as described above, was used. The intention of this scale was to serve as a way of validating the shared perceptions of perceived performance, from the main surveys. The Cronbach’s alpha coefficient was .75.

Organisational performance vs. competition (Appendix 8.7): As an additional subjective view of organisational performance (Wall et al., 2004), key contacts were asked “*What is your company’s performance in comparison with your main competitors?*” for the current year, and for the last two years as a whole. A 5-point rating scale was used (1 – “much worse” to 5 – “much better”).

Revenue per head, profit per head and staff turnover (Appendix 8.8). As objective measures, data were sourced to assess: financial performance in terms of revenue and profit

for the past two years; and staff turnover in terms of new hires and leavers for the past year. Given the differences in organisational type and scale, to obtain more comparable turnover and productivity figures, these data were divided by the number of staff in the organisation (Wall et al., 2004).

Data Analysis Plan

Following data screening, to assess the criterion-related validity of the OFS, the data were assessed for their support of the twelve hypotheses. Throughout this study, the correlation coefficients were interpreted as $r \geq .10$ indicating a small effect, $r \geq .30$ moderate and $r \geq .50$ a large effect (Cohen, 1988); and the intraclass correlations (ICCs) were interpreted as $ICC > 0\%$ indicating some organisational effect, $ICC > 10\%$ as low (Lee, 2000; Robson & Pevalin, 2015), $ICC > 20\%$ as moderate, and $ICC > 30\%$ as high (Kreft & de Leeuw, 1998). The analysis was performed in four stages. First, an assessment of the relationships between the variables; secondly, a baseline assessment of the outcome variables, without any predictors; thirdly, an assessment of the OFS's ability to predict the outcomes of effectiveness and wellbeing; and fourthly, an assessment of the OFS's ability to predict the outcomes, over and above psychological flexibility and organisational learning.

Correlations. The first stage used bivariate correlations to triangulate between the organisational-level effectiveness measures: shared perceptions of organisational performance, the informed performance measures and the objective measures (Hypotheses 7 and 10). Then bivariate correlations were used to assess the relationships between organisational flexibility, psychological flexibility, organisational learning, mental health, work motivation, job satisfaction and organisational performance. ICCs were used to clarify the extent to which each of the outcomes could be understood as organisational-level constructs, and to assess support for using multilevel analysis.

Statistical approach.

Structural equation modelling vs regression. Across the second, third and fourth stages, the intention had been to use multilevel structural equation modelling (MSEM), so that the observed items and unobserved (latent) factors of each of the variables would be assessed. This method has the benefit of providing greater levels of accuracy in its estimations, by accounting for and correcting constructs for errors in the observed items, at both the individual and organisational levels. However, in the current study, convergence problems consistently occurred using this method, due to the number of parameters relative to the organisational-level sample size, and due to the computationally demanding nature of MSEM (Heck & Thomas, 2015). In its place, multilevel regression was used. This approach still decomposes the variance of dependent variables into individual- and organisational-level components; though it is considered to be less accurate as it does not adjust the observed items for measurement error, in estimating latent factors (Heck & Thomas, 2015). To perform the regression analyses, composite scales were created to represent the constructs, based on the aggregation of items for each scale. Therefore, the second, third and fourth stages were designed based on regression analyses, to compare baseline, prediction and incremental prediction models, for each outcome variable in turn.

Centring strategy. To aid interpretation, the models used grand-mean centring for the predictor variables (i.e. organisational flexibility, psychological flexibility and organisational learning). Without centring, the statistical procedure presents the value of predictor at zero, when the outcome variable is at the mean. However, zero is not a meaningful value when there has been no value of zero for respondents to select on the survey scales, which makes the analysis harder to interpret. Using grand-mean centring, when the predictor is at the mean of the entire sample (i.e. the grand mean), the outcome variable is at the mean. The impact is that the individual- and organisational-level values are adjusted, presenting a ‘pure’

organisational value between organisations; and an individual-within-their-organisation value, within organisations (Enders & Tofighi, 2007; Heck & Thomas, 2015).

Prediction analysis.

Baseline ‘unconditional’ model. The second stage used an ‘unconditional’ model designed to assess the outcome variables, without any predictors (i.e. without organisational flexibility, psychological flexibility or organisational learning) as ‘conditions’ in the model. An unconditional model provides baseline scores, in terms of a mean organisational outcome, and the extent to which the outcomes vary within organisations and between organisations. The variance provided by this model can be understood as the total variance in the data, for each variable. The subsequent models can then be used to assess abilities of the predictor variables to explain (a proportion of) that variance. Baseline unconditional models were used to evaluate each of the outcome variable: mental health, at the individual level, and work motivation, job satisfaction and organisational performance, at the individual and organisational levels of analysis.

Organisational flexibility as a predictor. The third stage used a ‘fixed effects’ model designed to assess the impact of organisational flexibility on the outcomes. This model assumes that, between organisations, variance can be expected in the outcome means, but homogeneity is expected in the relationships between the OFS and each outcome (i.e. the effects are fixed). The model assessed three main questions, based on the addition of organisational flexibility as a predictor to the model. The first question is whether the addition of organisational flexibility relates to an increase in the mean of each outcome. The second is the extent to which a one-unit increase in organisational flexibility relates to an increase in each outcome. The third is the extent to which organisational flexibility explains the variance in the outcomes between individuals, within organisations, and between organisations, for

each outcome. This model describes the relationships as hypothesised (Hypotheses 1, 3, 5, 8 and 11), and therefore was expected to demonstrate a relatively good fit for the data.

Incremental validity. The fourth stage was designed to assess the incremental validity of the OFS, over and above psychological flexibility and organisational learning. First, assessments were performed related to psychological flexibility, and the outcomes of mental health, work motivation and job satisfaction, at the individual level only. Then assessments were performed related to organisational learning, and the outcomes of work motivation, job satisfaction and organisational performance, at both the individual and organisational levels.

Psychological flexibility.

Psychological flexibility as a predictor. This model was used to assess psychological flexibility's ability to predict the outcomes, at the individual level. The design of the assessment replicated the 'fixed effects' model used to assess organisational flexibility as a predictor (in the third stage).

Incremental effects of organisational flexibility, over and above psychological flexibility. This model aimed to assess the ability of the OFS to predict the outcomes, at the individual level, after controlling for psychological flexibility. It was hypothesised that adding organisational flexibility to the model would be a better fit than the model of psychological flexibility as a predictor, and it would explain more of the variance in the outcomes than in that model (Hypotheses 2, 4, and 6). The variance explained (alternatively: the reduction in residual variance), can be expressed as a proportion of the variance provided by the unconditional/baseline model, which can be understood as an R^2 statistic, for evaluating the model fit.

Organisational learning.

Organisational learning as a predictor. This model was used to assess organisational learning's ability to predict the outcomes, at the individual and organisational levels. The design of the assessment replicated the 'fixed effects' model used to assess organisational flexibility as a predictor (in the third stage).

Incremental effects of organisational flexibility, over and above organisational learning. This final model aimed to assess the ability of the OFS to predict the outcomes, at the individual and organisational levels, after controlling for organisational learning. It was hypothesised that adding organisational flexibility to the model would be a better fit than the model of organisational learning as a predictor, and would explain more of the variance in the outcomes than in that model (Hypotheses 4, 6, 9 and 12). It is noted that in multilevel analysis, the individual and organisational level R^2 statistics are typically presented separately, and the use and interpretation of a *total* R^2 statistic (i.e. combining the individual and organisational levels) is controversial, for assessing model fit. However, it is presented here for completeness (Kreft & de Leeuw, 1998; Rabe-Hesketh & Skrondal, 2008; Robson & Pevalin, 2015).

Results

Missing Data & Data Screening

Main survey data. All scales were screened for missing data. None had cases with more than 2.7% data missing. To test for any systematic patterns of missing data, Little's MCAR test was used and produced non-significant result for all scales ($p > .158$), indicating no systematic patterns. With this result and missing data sufficiently below the 5% criteria, the missing data were replaced using Expectation Maximisation (Tabachnick & Fidell, 2013). The scales were inspected for normality, and significant negative skew ($p < .001$) was found

across all the scales, except psychological flexibility and open-mindedness. This implied that the overall sample responded with a higher mean than would be anticipated from a normal distribution. Work motivation and mental health also indicated significant kurtosis ($p < .001$), implying that the overall sample responded with less concentration around the mean than would be anticipated from a normal distribution. The tests were repeated for each organisation, separately. Only three of the 31 organisations reported any significant skew, and each was across different scales (Organisation “AJ”: shared vision; “AO”: organisational learning, commitment to learning and mental health; “AQ”: work motivation). Six organisations also reported significant kurtosis, across different scales (“AH”: job satisfaction “AJ”: shared vision; “AO”: organisational learning, commitment to learning and mental health; “AQ”: work motivation; “AS”: mental health; “BH”: organisational learning). These results indicated relatively symmetrical patterns of distribution across the scales, within most of the organisations, despite the overall sample’s indications of skewness and kurtosis.

Organisational-level ‘triangulation’ outcomes. The organisational-level data, for use in triangulation with perceived organisational performance, were screened for missing data. All of them had problematic levels of missing data, ranging from 48% of organisations missing staff turnover data, through to 81% missing revenue per head (previous financial year). The concerning lack of data indicated that these sources were potentially unreliable for evaluating organisational effectiveness. In seeking evidence of the reliability of the effectiveness data, they were tested for their correlations with each other, as it was anticipated (Hypotheses 7 and 10) that positive relationships between the measures would be identified if they were assessing various aspects of the same concept (i.e. effectiveness). For triangulation purposes, these data were also assessed for correlations with the mean shared perceptions of performance, from the main survey. The results (Table 9) indicated that most of the effectiveness-related variables did not relate significantly with each other. The only significant

relationships identified were that the main survey participants and key contacts agreed with each other on their perceptions of their organisation's performance ($r = .77, p \leq .001$), and also the latest year's revenue per head was related to the previous year's revenue per head ($r = .96, p = .003$). However, significance levels are known to be impacted by sample size, and it was noted that there were some relatively strong relationships between the effectiveness variables, which were not identified as significant. For example, performance vs. competition for the previous three years correlated strongly and positively with revenue per head ($r = .77, p = .128$) and profit per head ($r = .64, p = .167$) for the previous year. Overall this data screening did not provide clear support for the reliability of the data, to provide evidence for Hypotheses 7 or 10. It was decided that any further use of these data would be approached cautiously.

Table 9

Correlations: Organisational Performance Measures (organisational-level only)

	N	Mean	S.D.	1	2	3	4	5	6	7	8
1. Mean Organisational Performance (main survey)	31	19.32	3.10								
2. Organisational Performance (key contact survey)	14	18.64	4.47	.77***							
3. Performance vs. Competition (current year)	13	3.54	0.78	.22	.33						
4. Performance vs. Competition (last two years)	11	3.82	0.60	.03	-.21	-.15					
5. Staff Turnover	16	0.12	0.11	-.15	.08	.25	-.27				
6. Revenue per Head (latest financial year)	14	202,438	221,840	.32	-.16	-.31	.38	-.29			
7. Revenue per Head (previous year)	6	76,728	45,137	.24	-.03	-.30	.77	-.35	.96**		
8. Profit per Head (latest financial year)	14	19,641	31,250	.07	-.65	.06	-.42	-.17	.51	-.04	
9. Profit per Head (previous year)	7	2,085	5,288	.18	-.39	-.07	.64	-.18	.27	.48	.34

*p <= .050, **p <= .010, ***p <= .001

Significant correlations highlighted in bold

Correlations

Bivariate and interclass correlations (ICCs) were examined, first in terms of the organisational-level effectiveness measures, and then the remaining outcome variables.

Organisational performance outcomes. The relationship between organisational flexibility, shared perceptions of organisational performance, the informed performance measures and the objective measures were assessed (Table 10). Organisational flexibility correlated strongly, positively and significantly with the key contacts' reporting of organisational performance ($r = .66, p = .011$), in line with hypotheses. However, it did not correlate significantly with any other organisational-level performance-related variables. Yet, as discussed in the data screening of the organisational-level performance data, it is plausible that the small sample size impacted the significance levels of the results. Indeed, the effect sizes indicated a moderate positive relationship between organisational flexibility and performance vs. competition in the current year ($r = .39, p = .187$) and small positive relationships with revenue per head for the latest financial year ($r = .27, p = .348$) and profit per head for the previous financial year ($r = .14, p = .758$). However, they also indicated a moderate negative relationship with revenue per head for the previous financial year ($r = -.32, p = .542$) and a small negative relationship with profit per head for the current year ($r = -.13, p = .652$). Cautious efforts were made to proceed with this data to regression analysis; however further problems were found, due to the extreme variances in the financial data and a maximum variance allowed of 1,000,000 in MPlus. Given the breadth of problems with these data, and the difficulties in being able to interpret them without further context, it was decided to exclude them from further regression analyses.

Table 10

Correlations: Organisational Flexibility and Organisational Performance (organisational-level only)

	N	Mean	S.D.	Variance	Organisational Flexibility (organisational mean)
Organisational Performance (Key Contact responses)	14	18.64	4.47	19.94	.66**
Performance vs. Competition (current year)	13	3.54	0.78	0.60	.39
Performance vs. Competition (previous three year)	11	3.82	0.60	0.36	-.03
Staff Turnover	16	0.12	0.11	0.01	.03
Revenue per Head (latest financial year)	14	202,438	221,840	49,212,932,008	.27
Revenue per Head (previous year)	6	76,728	45,137	2,037,305,844	-.32
Profit per Head (latest financial year)	14	19,641	31,250	976,534,713	-.13
Profit per Head (previous year)	7	2,085	5,288	27,958,857	.14

* $p < .050$, ** $p < .010$, *** $p < .001$

Main predictors and outcomes. The correlations between organisational flexibility, psychological flexibility, organisational learning and each of the remaining outcome variables were assessed (Table 11). At the individual level, organisational flexibility correlated positively and significantly with all other variables, with effect sizes ranging from small (motivation: $r = .19$, $p = .002$) to large (organisational performance: $r = .65$, $p < .001$). At the organisational level, the results were mixed. Organisational flexibility correlated strongly and positively with collective job satisfaction ($r = .82$, $p < .001$), shared perceptions of organisational performance ($r = .87$, $p < .001$) and collective work motivation ($r = .82$, $p < .001$).

Intraclass correlations. The ICCs were assessed, to provide the relative variance in outcomes between organisations, as an indicator of the extent to which the organisation is a factor in influencing the outcome variables (regardless of organisational flexibility). The ICCs

(Table 11) indicated that considerable variance was attributable to the organisation for perceived organisational performance (30%), providing strong support for the concept of shared perceptions of performance. A lower, but still important variance was found for job satisfaction (19%), indicating an organisational impact on a collective sense of job satisfaction. However, organisations were a more ‘trivial’ feature in influencing motivation (5%), bringing into question whether to proceed with multilevel analysis (Robson & Pevalin, 2015). Some researchers argue that ICC values greater than zero still indicate that some contextual effects are present (Bliese, 2000), and that due to different relationships (e.g. some positive and some negative) in different organisations, near-zero ICCs may be misleading (Nezlek, 2008). Furthermore, where it is known that data is nested in meaningful clusters, multilevel analysis can be seen as an appropriate and more cautious approach (Heck & Thomas, 2015). In the current study, it was decided to proceed with multilevel analysis for organisational performance, job satisfaction and work motivation variables, bearing in mind the potentially limited organisational effects for work motivation. (No ICC was hypothesised for mental health, given the lack of theoretical support for organisational effects of mental health.).

Table 11

Correlations: Organisational Flexibility and Main Variables (within and between organisations N = 331)

	1	2	3	3a	3b	3c	4	5	6	7
	Within (individual level)									
1. Organisational Flexibility	28%	.20***	.67***	.64***	.36***	.53***	.30***	.19***	.56***	.65***
2. Psychological Flexibility	-	-	.12*	.16**	.14*	.01	.22***	.07	.14*	.15**
3. Organisational Learning	.97***	-	37%	.83***	.65***	.85***	.25***	.17**	.51***	.61***
3a. Shared Vision	.97***	-	.94***	31%	.35***	.51***	.24***	.17**	.45***	.60***
3b. Open-Mindedness	.79***	-	.90***	.77***	17%	.41***	.20***	.09	.29***	.29***
3c. Commitment to Learning	.92***	-	.97***	.84***	.86***	32%	.16**	.13*	.43***	.49***
4. Mental health	-	-	-	-	-	-	-	-.01	.43***	.32***
5. Work Motivation	.82***	-	.80***	.68***	.78***	.82***	-.17	5%	.21***	.12*
6. Job Satisfaction	.79***	-	.68**	.72***	.31	.71***	.26	.58***	19%	.55***
7. Organisational Performance	.87***	-	.75***	.84***	.41*	.71***	.02	.62***	.93***	30%
Mean	37.05	36.03	41.05	14.84	10.55	15.66	37.07	36.42	26.6	19.79
SD	6.85	6.58	7.23	3.4	1.81	3.44	5.03	3.91	5.87	4.72

Notes: Intraclass correlations (ICCs) in bold on the diagonal. Coefficients above the diagonal represent intercorrelations between individuals within an organisation, and below the diagonal represent intercorrelations between organisations.

p <= .050, **p <= .010, ***p <= .001

Prediction

Baseline model. To assess the baseline model, the outcome variables were analysed without any predictors in the model. The intercepts and variances are reported in Table 12. While variance scores are not directly comparable to one another, it was noted that, between organisations, the variances in work motivation (0.82) were particularly low, indicating that most organisations experience a similar range of scores for work motivation, regardless of predictor variables.

Organisational flexibility as a predictor. To assess this prediction model, organisational flexibility was added as a predictor of the outcome variables. As an overall comparison between this model and the baseline, results indicate that adding organisational flexibility to the model provides a significant improvement, for each of the outcome variables, in line with the hypotheses (Hypotheses 1, 3, 5). This is based on the significant chi-square differences in the deviance statistic ($p < .001$; Table 12).

Mental health. Within organisations (i.e. at the individual level), the regression coefficients indicated that the effect of a one-unit increase in an individual's perceptions of their organisation's flexibility significantly predicted a 0.25-unit increase ($\beta = 0.25$, $p \leq .001$) in their mental health. The change in the variance statistic indicated that individuals' perceptions of their organisation's flexibility explained 8.90% of the variance in mental health between individuals, within an organisation. Organisational effects were not hypothesised, and are therefore not reported here.

Work motivation. Within organisations, individuals' perceptions of their organisation's flexibility significantly predicted their work motivation ($\beta = 0.12$, $p = .003$), and explained 3.35% of the variance in their motivation. Between organisations, shared perceptions of

organisational flexibility significantly predicted collective motivation ($\beta = .23$, $p = .006$), and explained 89.15% variance between organisations (representing almost all of the little remaining variance).

Job satisfaction. Within organisations, individuals' perceptions of their organisation's flexibility significantly predicted their job satisfaction ($\beta = .50$, $p \leq .001$), and explained 30.52% of the variance in their job satisfaction. Between organisations, shared perceptions of organisational flexibility significantly and strongly predicted collective job satisfaction ($\beta = 0.61$, $p \leq .001$), and explained 73.69% of the variance in collective job satisfaction.

Organisational performance. Within organisations, individuals' perceptions of their organisation's flexibility significantly predicted their perceptions of their organisation's performance ($\beta = .43$, $p \leq .001$), and explained 41.60% of the variance in those perceptions. Between organisations, shared perceptions of organisational flexibility significantly and strongly predicted shared perceptions of organisational performance ($\beta = 0.67$, $p \leq .001$), and were able to explain 83.83% of the variance in shared perceptions of organisational performance

Table 12

Criterion-Related Validity: Organisational Flexibility as a Predictor of Effectiveness and Wellbeing, Within and Between Organisations

Hypothesised Model	Model Summary			Regression coefficients				Residual Variance			Total R ²
	Deviance statistic	Parameters	Mean	Within Org Effect (S.E.)	Between Orgs Effect (S.E.)	Within Org	% Δ	Between Orgs	% Δ	ICC	
Mental health											
Baseline Model	-1009.80	3	37.06			25.05		-		-	
OF as Predictor	-2080.03***	5	37.06	0.25 (.04)***	-	22.82	8.90%	-	-	-	-
Work Motivation											
Baseline Model	-924.25***	3	36.36			14.51		0.82		0.05	
OF as Predictor	-1998.41***	5	36.42	0.12 (.04)**	0.23 (.09)**	14.02	3.35%	0.09	89.15%	0.01	7.94%
Job Satisfaction											
Baseline Model	-1047.77***	3	26.63			28.69		6.75		0.19	
OF as Predictor	-2064.66***	5	26.84	0.50 (.04)***	0.61 (.11)***	19.93	30.52%	1.78	73.69%	0.08	38.74%
Organisational Performance											
Baseline Model	-952.28***	3	19.40			15.56		6.81		0.30	
OF as Predictor	-1937.03***	5	19.76	0.43 (.03)***	0.67 (.09)***	9.09	41.60%	1.10	83.83%	0.11	54.46%

*p <= .050, **p <= .010, ***p <= .001; OF – Organisational Flexibility
% Δ represents the proportion of variance explained by the model

Incremental Validity

Psychological flexibility.

Psychological flexibility as a predictor. To assess this prediction model, psychological flexibility was added to the baseline model (i.e. without organisational flexibility), as a predictor of the outcome variables. As an overall comparison between this model and the baseline model, results indicate that adding psychological flexibility provides a significant improvement to the model, for each of the outcome variables, based on deviance statistic ($p < .001$; Table 13). However, it was noted that the effect of psychological flexibility on work motivation was not significant ($\beta = 0.04, p = .225$).

When compared with organisational flexibility as a predictor, the results of the current model indicate similar effects to organisational flexibility in predicting mental health (organisational flexibility: $\beta = 0.17, p \leq .001$ and psychological flexibility: $\beta = 0.18, p \leq .001$). However, organisational flexibility was a stronger predictor for both work motivation (organisational flexibility: $\beta = 0.12, p = .003$ and psychological flexibility: $\beta = 0.04, p = .225$), and job satisfaction (organisational flexibility: $\beta = 0.50, p \leq .001$ and psychological flexibility: $\beta = 0.12, p = .011$). Comparing the effects on the variance in outcomes, organisational flexibility explained a greater proportion of the variance for each of the outcomes than psychological flexibility, particularly for job satisfaction, where organisational flexibility explained 28.62% more of the variance.

Incremental effects of organisational flexibility, over and above psychological flexibility. To assess this incremental model, organisational flexibility was added to the previous model, as an additional predictor variable. When compared with psychological flexibility as a predictor on its own, the overall results of the current model indicate that adding organisational flexibility provides a significant improvement to the model for each of the outcome variables, based on deviance statistic ($p < .001$; Table 13). Furthermore, for each

variable, the proportion of variance explained increased (or the residual variance reduced). In terms of mental health, the proportion of variance explained increased by 6.69%. In terms of work motivation, the proportion of variance explained increased by 3.80%. In terms of job satisfaction, the proportion of variance explained increased by 28.71%.

Table 13

Incremental Validity: Organisational Flexibility and Psychological Flexibility as Predictors of Effectiveness and Wellbeing, Within Organisations

Hypothesised Model	Model Summary			Regression coefficients		Residual Variance	
	Deviance statistic	Parameters	$\chi^2 \Delta$	Mean	Within Org Effect (S.E.)	Within Org	% Δ from baseline (from PF as predictor)
Mental health							
Baseline Model †	-1009.80	3		37.06		25.05	
OF as Predictor †	-2080.03	5	1070.23***	37.06	0.17 (.04)***	22.99	8.21%
PF as Predictor	-2096.92	5	1087.12***	37.07	0.18 (.03)***	23.76	5.14%
Incremental Prediction of OF	-3162.82	7	1065.90***	37.07	0.23 (.04)***	22.08	11.83% (6.69%)
Work Motivation							
Baseline Model †	-924.25	3		36.36		14.51	
OF as Predictor †	-1998.41	5	1998.41***	36.42	0.12 (.04)**	14.02	3.35%
PF as Predictor	-2016.91	5	1092.65***	36.44	0.04 (.03)	14.49	0.14%
Incremental Prediction of OF	-3085.56	7	1068.65***	36.41	0.12 (.04)**	13.94	3.94% (3.80%)
Job Satisfaction							
Baseline Model †	-1047.77	3		26.63		28.69	
OF as Predictor †	-2064.66	5	2064.66***	26.84	0.50 (.04)***	19.93	30.52%
PF as Predictor	-2139.66	5	1091.89***	26.84	0.12 (.05)*	28.15	1.90%
Incremental Prediction of OF	-3151.83	7	1012.17***	26.73	0.49 (.05)***	19.91	30.61% (28.71%)

*p <= .050, **p <= .010, ***p <= .001; OF – Organisational Flexibility, PF – Psychological Flexibility

† Results presented as per Table 12, to aid comparison

% Δ represents the proportion of variance explained by the model

Organisational learning.

Organisational learning as a predictor. To assess this prediction model, organisational learning was added to the baseline (i.e. without organisational or psychological flexibility in the model), as a predictor of the outcome variables. As an overall comparison between this model and the baseline, results indicate that adding organisational learning provides a significant improvement to the model, for each of the outcome variables, based on deviance statistic ($p < .001$; Table 14).

When compared with organisational flexibility as a predictor, the results indicate similar effects for both predictors, in most of the scenarios; however, in each case the effects of organisational flexibility were stronger. The biggest differences were in predicting collective job satisfaction (organisational flexibility: $\beta = 0.61$, $p \leq .001$ and organisational learning: $\beta = 0.41$, $p \leq .001$), and shared perceptions of organisational performance (organisational flexibility: $\beta = 0.67$, $p \leq .001$ and organisational learning: $\beta = 0.44$, $p \leq .001$). Comparing the effects on the variance in outcomes, organisational flexibility explained the same or a greater proportion of the variance for all the outcomes. The differences between organisational flexibility and organisational learning were particularly evident in explaining the variance in job satisfaction, where organisational flexibility explained 21.30% more of the variance at the individual level and 65.76% more at the organisational level.

Incremental effects of organisational flexibility over and above organisational learning. To assess this incremental model, organisational flexibility was added to the previous model, as an additional predictor of the outcome variables. When compared with organisational learning as a predictor on its own, the overall results of the current model indicate that adding organisational flexibility provides a significant improvement to the model, for each of the

outcome variables, based on deviance statistic ($p < .001$; Table 14). Furthermore, for each outcome variable, the proportion variance of variance explained increased (or the residual variance reduced), when organisational flexibility was added to the model. In terms of work motivation, the proportion of variance explained increased by 1.28% at the individual level; by 9.39% at the organisational level, and by 1.72% overall. In terms of job satisfaction, the proportion of variance explained increased by 8.70% at the individual level; by 51.63% at the organisational level, and by 16.88% overall. In terms of organisational performance, the proportion of variance explained increased by 10.63% at the individual level; by 39.91% at the organisational level, and by 19.55% overall.

Table 14

Incremental Validity: Organisational Flexibility and Organisational Learning as Predictors of Effectiveness and Wellbeing, Within and Between Organisations

Hypothesised Model	Model Summary		Mean	Regression coefficients				Residual Variance			Total R ²
	Deviance statistic	Parameter		Within Org Effect (S.E.)	Between Orgs Effect (S.E.)	Within Org	% Δ	Between Orgs	% Δ	ICC	
Work Motivation											
Baseline Model†	-924.25***	3	36.36			14.51		0.82		0.05	
OF as Predictor†	-1998.41***	5	36.42	0.12 (.04)**	0.23 (.09)**	14.02	3.35%	0.09	89.15%	0.01	7.94%
OL as Predictor	-2006.42***	5	36.43	0.11 (.04)**	0.18 (.07)**	14.09	2.89%	0.22	73.66%	0.02	6.67%
Incremental OF	-2972.99***	7	36.41	0.09 (.07)	0.69 (.60)	13.91	4.17% (1.28%)	0.14	83.05% (9.39%)	0.01	8.39% (1.72%)
Job Satisfaction											
Baseline Model†	-1047.77***	3	26.63			28.69		6.75		0.19	
OF as Predictor†	-2064.66***	5	26.84	0.50 (.04)***	0.61 (.11)***	19.93	30.52%	1.78	73.69%	0.08	38.74%
OL as Predictor	-2084.45***	5	26.89	0.46 (.05)***	0.41 (.1)***	26.05	9.22%	6.22	7.93%	0.19	8.97%
Incremental OF	-3031.29***	7	26.62	0.35 (.05)***	2.41 (.72)***	23.55	17.92% (8.70%)	2.73	59.56% (51.63%)	0.10	25.85% (16.88%)
Organisational Performance											
Baseline Model†	-952.28***	3	19.40			15.56		6.81		0.30	
OF as Predictor†	-1937.03***	5	19.76	0.43 (.03)***	0.67 (.09)***	9.09	41.60%	1.10	83.83%	0.11	54.46%
OL as Predictor	-1961.62***	5	19.75	0.41 (.03)***	0.44 (.08)***	9.79	37.08%	2.76	59.43%	0.22	43.88%
Incremental OF	-2896.30***	7	19.78	0.29 (.03)***	2.16 (.52)***	8.14	47.71% (10.63%)	0.05	99.34% (39.91%)	0.01	63.43% (19.55%)

*p <= .050, **p <= .010, ***p <= .001; OF – Organisational Flexibility, OL – Organisational Learning

† Results presented as per Table 12, to aid comparison

% Δ represents the proportion of variance explained by the model

Summary & Next Steps

This fourth study in the development of a measure of organisational flexibility aimed to find evidence for the criterion-related validity of the proposed OFS, with support for its ability to predict individual and organisational effectiveness and wellbeing. The study hypothesised that organisational flexibility would predict mental health at the individual level, and work motivation, job satisfaction and organisational performance at the individual and organisational levels. It also hypothesised that organisational flexibility would predict these outcomes, over and above psychological flexibility and organisational learning, supporting its incremental validity.

Using the same sample (331 participants across 31 organisations) as Studies II and III, regression analysis were performed on the data. Results showed strong support for the OFS as a predictor of job satisfaction and organisational performance, at both the individual and organisational levels. Results also support the OFS as a predictor of mental health and work motivation, at the individual level, but less strongly. Results for the OFS as a predictor of work motivation, at the organisational level, showed a significant effect; however, given the ‘trivial’ organisational effect, this result is interpreted cautiously. Results for the OFS a predictor of various organisational-level performance constructs, designed to ‘triangulate’ with the subjective perceptions of organisational performance, were not clearly supported.

Overall, these results provide good evidence for the OFS, as a scale for predicting individual and organisational effectiveness and wellbeing, in line with the overarching hypothesis of the OFS. However, further evidence is required to establish the OFS as a measure of organisational flexibility, based on its ability to predict-*and-influence* individual and organisational effectiveness and wellbeing. This requirement guides the final study in this series.

Chapter 6. Study V – Utility: A Pilot Study Protocol

Abstract

The aim of this study was to propose a protocol for a pilot study, as a step towards assessing the utility of the OFS. The study identified that an appropriate assessment of the OFS's utility requires a large-scale intervention study and that, prior to such a study, the intervention should be tested for suitability and practicability, in a pilot study. These requirements guide the development of this protocol for the pilot study. The protocol proposed a quasi-experimental, mixed methods design, comparing two matched organisations in different conditions, with between 40-100 employees in each, using observations at multiple points in time. Both participating organisations would receive acceptance and commitment training (ACT), to support readiness for the intervention and as an inducement for the organisations participation. The participating organisations would be allocated to either an organisational flexibility-informed training (FIT) intervention condition, or to a treatment-as-usual (TAU) condition. Quantitative data would be used to assess the suitability of the intervention, based in the ability of the FIT intervention to positively influence individual-level outcomes of effectiveness and wellbeing, and to determine whether the change is mediated by enhanced levels of individual perceptions of organisational flexibility, as measured by the OFS. Qualitative data would be used to assess the practicability of the intervention, in terms of its acceptability and feasibility. Findings from the proposed pilot study will be used to inform future organisational flexibility research.

Introduction

This chapter describes a protocol for a pilot study. This protocol is proposed as a way to progress research towards an assessment of the utility of the OFS. The previous studies in this thesis have provided evidence for the dimensionality, reliability and validity of the OFS, and in doing so have demonstrated the ability of organisational flexibility to predict a range of outcomes related to individual and organisational effectiveness and wellbeing, in the workplace. The next goal for organisational flexibility research is to demonstrate the utility of the measure. From a CBS perspective, a measure needs to offer utility “above and beyond any other property” (Hayes et al., 2012, p. 12). For the OFS to offer utility, it needs to demonstrate its ability to predict-*and-influence* individual and organisational effectiveness and wellbeing. An intervention study is an appropriate approach for assessing the ability to influence change (Levin & Hayes, 2009). However, due to the complexities and scale of ‘real world’ organisational interventions, the current study proposes that a pilot study is conducted, before embarking on a full-scale intervention study, in order to establish preliminary support for the hypotheses, and obtain experiential information for refining the methods and content (Eccles, Grimshaw, Campbell, & Ramsay, 2003). To conduct a pilot study requires a protocol, in order to prescribe methods and content in line with the research goals, based on evidence from prior research. This provides the aim of the current chapter: the proposal of a pilot study protocol.

This introduction starts by presenting the purpose and hypotheses of a full-scale organisational flexibility-informed training (FIT) intervention study. It then discusses relevant and effective organisational intervention research, for use as a guide to developing an appropriate FIT intervention study protocol. Next, the need for a pilot study is discussed, including how a pilot study can offer meaningful results for progressing this research, despite its reduced scale. Finally, the purpose and hypotheses of the pilot study are discussed, providing a path towards the full-scale intervention study.

A Full-Scale Intervention Study

Purpose and hypotheses. The purpose of the full-scale intervention study is to assess the ability of a FIT intervention to positively influence individual and organisational effectiveness and wellbeing, and to determine whether the reason for the change is due to enhanced levels of organisational flexibility, as measured by the OFS (Hayes et al., 2012). To design an intervention that achieves this purpose, it is useful to recall that the theoretical model of organisational flexibility proposes organisational flexibility as an organisational-level construct: an organisation both acting in its context, and as a context, experienced by the people working within it. Both organisational flexibility (the organisation's behaviour) and shared perceptions of organisational flexibility (the working context of the individuals), can be seen as the same organisational-level concept viewed from different perspectives. In the previous chapters of this thesis, the measure of organisational flexibility has been operationalised by conceptualising and measuring organisational flexibility at the individual level (i.e. individual perceptions of organisational flexibility), in order to source the data necessary to aggregate to (shared perceptions of) organisational flexibility. While doing so, the studies have also demonstrated the ability of individual perceptions of organisational flexibility to offer value, based on their ability to predict valued individual-level outcomes. However, this individual-level conceptualisation of organisational flexibility is not the focal construct for assessing the theoretical model of organisational flexibility. For the intervention study to assess utility, based on the theoretical model, it needs to use the organisational-level conceptualisation of the OFS. Accordingly, it is expected that the *shared perceptions* of organisational flexibility (as measured by the OFS), explain (i.e. mediate) the positive effects of the FIT intervention on individual and organisational effectiveness and wellbeing. This leads to the following seven hypotheses (illustrated in Figure 14):

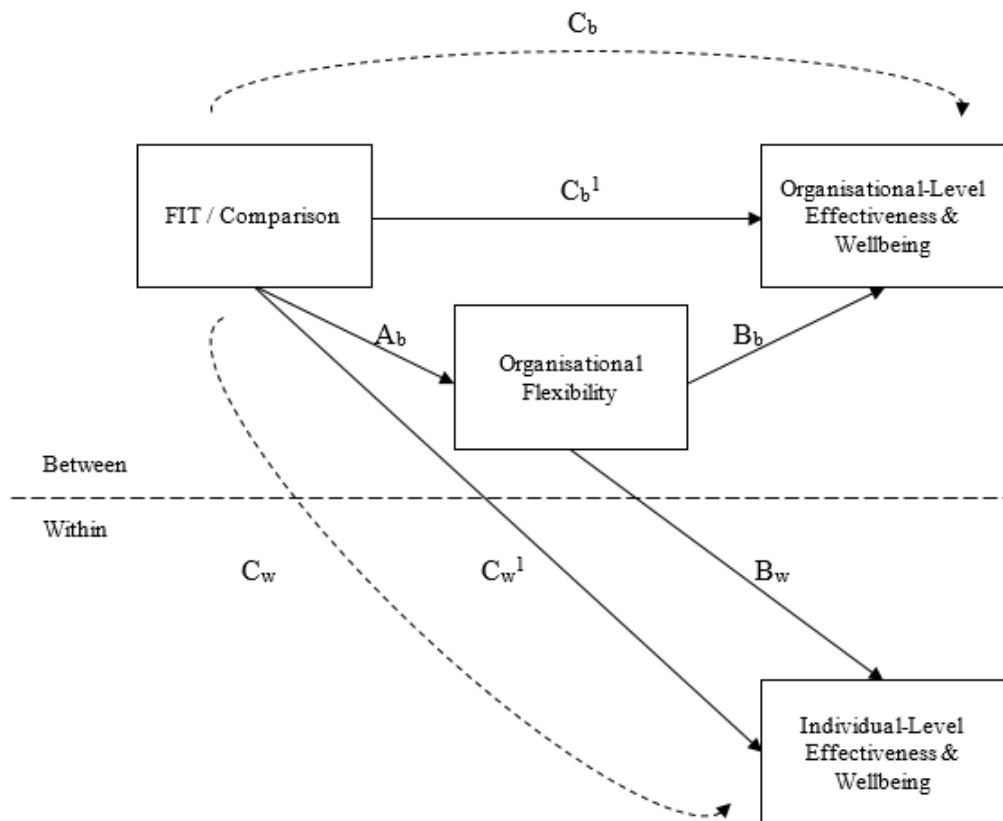


Figure 14. Illustration of the hypotheses of the full-scale FIT intervention study.

- Hypothesis 1: A FIT intervention will lead to significant increases in (shared perceptions of) organisation flexibility, when compared to a comparison group (A_b)*
- Hypothesis 2: (Shared perceptions of) organisational flexibility will lead to significant increases in organisational-level outcomes of effectiveness and wellbeing (B_b)*
- Hypothesis 3: (Shared perceptions of) organisational flexibility will lead to significant increases individual-level outcomes of effectiveness and wellbeing (B_w)*
- Hypothesis 4: A FIT intervention will lead to significant increases in organisational-level outcomes of effectiveness and wellbeing, when compared to a comparison group (C_b^1)*

Hypothesis 5: A FIT intervention will lead will lead to significant increases in individual-level outcomes of effectiveness and wellbeing, when compared to a comparison group (C_w^I)

Hypothesis 6: Increases in (shared perceptions of) organisational flexibility that result from a FIT intervention will explain (i.e. mediate) the increase in organisational-level outcomes of effectiveness and wellbeing (C_b)

Hypothesis 7: Increases in (shared perceptions of) organisational flexibility that result from a FIT intervention will explain (i.e. mediate) the increase in individual-level outcomes of effectiveness and wellbeing (C_w)

To test these hypotheses requires the assessment of organisational- and cross-level mediation effects, which is anticipated to demand a large sample of organisations. It also requires the management and delivery of the FIT intervention or comparison-group treatments across the sample. For developing organisational intervention studies, we now turn to organisational research for methodological guidance.

Organisational Interventions Methods

Organisational interventions are “planned, behavioural, theory-based actions” (Nielsen, Randall, Holten, & González, 2010, p. 234) for improving organisational behaviour and the organisational environment. While the use of organisational interventions has increased over the past twenty years, results have been inconsistent, with research often failing to find support for hypothesised effects, and yet also often unable to identify whether the results were due to inaccurate hypotheses, intervention design, or other organisational factors (Briner & Reynolds, 1999; T. Cox, Taris, & Nielsen, 2010; Nielsen, Fredslund, Christensen, & Albertsen, 2006; Richardson & Rothstein, 2008). In response to these challenges, research has sought to identify how to design the processes and evaluation of an intervention to support its effectiveness (Daniels et al., 2017; M. Egan et al., 2008; Nielsen et

al., 2006; Nielsen & Randall, 2013; Nielsen et al., 2010; Sumner, Beauchaine, & Nielsen, 2018). This research is discussed, in order to inform the methodology of a FIT intervention study.

(Quasi-)experimental designs. The ‘gold standard’ of organisational intervention research uses pre- and post-quantitative measurement, in experimental designs: randomised control trials (RCT) or cluster randomised trials (CRT; Grant, Treweek, Dreischulte, Foy, & Guthrie, 2013; Nielsen & Abildgaard, 2013; Richardson & Rothstein, 2008). These designs assume an ability to control the random allocation of individuals or organisations to experimental conditions, the delivery of the ‘treatment’ (e.g. training), and the organisational environment (Randall, Griffiths, & Cox, 2005). In organisational-level research, such designs typically require a large number of sample organisations to allocate between conditions, in order to assess effects between organisations/conditions (Eccles et al., 2003). However, due to organisational constraints, often, it is not possible to meet these assumptions; and as Cox et al. point out “organizations do not exist to be ‘case studies’, nor are their staff employed to be ‘participants’ in such studies” (2007, p. 353). Where randomisation is problematic, as an alternative, it is common for quasi-experimental designs to be used (Randall et al., 2005). However, typically, these designs assume an ability to find suitably-matched experimental and control groups, that won’t contaminate the study by sharing information with each another, and assumes that confounding factors can be controlled, in a stable environment. Yet, for researchers to exert such control in ‘real world’ organisational contexts is often just as unrealistic, and trying to do so can lead to the context being manipulated, impacting the validity of the research (Heck & Thomas, 2015).

Fit for purpose/workability. Given such complexity, it is recommended that research places a focus on the intervention design being ‘fit for purpose’, by recognising the organisational goals and contexts within the design of the study (Boaz & Ashby, 2003; T. Cox

et al., 2007), and being prepared for the research design to be adaptable to the context (Nielsen, Abildgaard, & Daniels, 2014; Randall et al., 2005). This perspective is also reflected the CBS aim of workability in pursuing its goals. “Scientists rightly prize the sort of tightly controlled evidence that emerges from well-crafted efficacy trials, and the CBS tradition embraces such trials as well, but not at the cost of testing the impact of procedures in the hurly burly of applied agencies.” (Hayes et al., 2012, p. 14). This provides guidance for a FIT intervention study to engage organisations and individuals, based on their own contexts and goals, as well as the study’s (Nielsen & Abildgaard, 2013).

Organisational participation. Effective organisational intervention studies need to recruit organisations and maintain their participation. This is particularly important for studies that require large samples. Organisations are more likely to engage with the research, and support its success, if they (a) are able to see how the aims of the study support the pursuit of the organisation’s own goals, and (b) willingly volunteer to participate (Nielsen & Abildgaard, 2013). Every organisation’s goals can be expected to differ, according to their context; therefore, the intervention study design needs to support such differences. A FIT intervention study is well placed to do so, given its contextual nature and its aim to enhance organisations’ abilities to pursue their purpose-driven goals. However, organisational goals, in different organisations, can be expected to vary in terms of difficulty, effort required, period of change and time for effects to become observable, impacting how the study proceeds. Bush et al., (2017) noted that job design interventions that took observations immediately after, or less than three months after an intervention, frequently failed to show effects, compared with those that took observations at one year or 18 months after the intervention. A FIT intervention study will need to be mindful, and willing to adapt accordingly.

Individual participation. Effective organisational intervention studies also need the engagement of individuals within the organisations. Research has shown that interventions are

likely to be more effective when they involve the people that are expected to be affected by them (Bush et al., 2017; Mikkelsen, Saksvik, & Landsbergis, 2000; Nielsen & Randall, 2012; Schurman & Israel, 1995; VanYperen, Berg, & Willering, 1999). When people participate in interventions, they are less likely to see the need for change as being top-down or imposed from outside, receiving it passively. Instead, they are more likely to engage actively with the need for and pursuit of change, and are more likely to find their own sense of meaning in the process, according to their own context. Evidence has also shown that individual participation leads to enhanced individual job control, wellbeing, job satisfaction and commitment (Bond & Bunce, 2001; Mikkelsen et al., 2000). When people engage in participation as a collective within an organisation, their focus on shared goals has been shown to enhance organisational goal achievement, and openness to change. These results are clearly reflected in the characteristics of organisational flexibility (Bond, 2015). Using a participatory approach to a FIT intervention study can be seen as a way to support the development of desirable behaviours for organisational flexibility.

Participation is enhanced by support and communication, that help individuals to maintain connection with the shared goals, and the desirable consequences of pursuing those goals. Managerial support and communication is important for role-modelling desired behaviours and demonstrating openness to the discomfort of change (Nielsen et al., 2010). However, the support and communication is not expected to be top-down, only. Participation as a collective indicates the need for people to support and offer feedback to each other, upwards, and to the researchers. This latter point, encourages a FIT intervention to consider the use of qualitative, as well as quantitative data. Given the boundless variety of potential confounding factors in an organisational intervention study, the use of qualitative data can give voice to the participants in terms of their contextual experiences, highlighting confounding factors. Using a mixed methods design, for this purpose, has been shown to

provide important insights for clarifying effects, particularly when they are contradictory or not as expected (Nielsen et al., 2014, 2006; Nielsen & Randall, 2012).

Readiness for change. Individuals are more likely to engage in an intervention, when they are aware of the need for change, they to relate to it, and are able to perceive opportunities that may be achieved by participating (Gil, Alcover, & Peiró, 2005; Nielsen et al., 2010). Preparing an organisation, such that individuals are ready for change, in this way, has been shown to influence the success of interventions (Drzensky, Egold, & van Dick, 2012; Nielsen et al., 2010). An approach to preparing individuals for change, that is supported by evidence is psychological flexibility. Research has shown that the effects of a participatory intervention for redesigning work, were enhanced by higher levels of psychological flexibility (Bond et al., 2008). It is reasoned that people with higher levels of psychological flexibility are more likely to notice, and respond more effectively to their environment, and through active participation are more likely to be able to see how they can take valued-action, for them, within the context of the intervention and organisation. Based on this evidence, a coherent approach for a FIT intervention would be to prepare an organisation for change using ACT, to enhance individuals' psychological flexibility, prior to training the organisations with skills for enhancing organisational flexibility. ACT protocols for enhancing psychological flexibility, have been developed across workplace contexts for over 18 years, providing contextually-relevant methods and techniques (Bond et al., 2016; Flaxman et al., 2013). However, Flaxman et al., (2013) highlight the need to still be ready to adapt the protocol to the context, where relevant. Not only is this useful for applying ACT, contextually, within a FIT intervention, but it also serves as a useful lesson for the development of a contextually-appropriate and adaptable FIT protocol.

This discussion provides guidance for the design and development of a FIT intervention protocol. However, the protocol needs to be designed, not only in terms of

suitability for testing the hypotheses, but also in terms of practicability for the context. For a FIT intervention study to be suitable for testing the hypotheses, the protocol must take into account the number of organisations that will be required to achieve sufficient statistical power to detect organisational-level effects. For a participative FIT intervention to be practicable across multiple organisations, the protocol must take into account the logistical, financial and ethical feasibility of the implementation, and its acceptability for the stakeholders of participating organisations (Mathieu & Taylor, 2007). Therefore, before planning a full-scale FIT intervention study across multiple organisations, a pilot study is recommended, for testing and refining the protocol in a small-scale context, to inform future interventions. These factors that guide the need for a pilot study, also make the purpose and hypotheses distinct from the full-scale FIT intervention study.

A Small-Scale Pilot Study

Purpose and hypotheses. The main purpose of the FIT pilot study is to obtain feedback on (a) the suitability of the protocol, while progressing our understanding of organisational flexibility, and (b) the practicability of the protocol, while limiting the risks. In terms of suitability, the protocol will need to maintain a level of fidelity to the intended intervention. Yet, for the study to minimise risks, it will need to impact as few organisations as possible. Limiting the number of organisations will necessarily impact the ability to meaningfully address the fundamental research questions of prediction-and-influence and utility, between organisations. However, the opportunity still exists for a pilot study to provide meaningful information towards answering the research questions, using methods that focus on within-organisation analysis. As discussed earlier, while the full-scale FIT intervention study is interested in the organisational-level concept of organisational flexibility, the individual-level conceptualisation of organisational flexibility has also indicated an ability to predict individual-level outcomes, which can provide a useful direction to guide the pilot

research. In terms of ‘causal’ order, an individual is likely to be influenced more by their own perceptions (proximal, internal experiences), than shared perceptions (distal, external context; Mathieu & Taylor, 2007), and as such individual-level perceptions of organisational flexibility are of interest in the research, and may also provide a useful early indicator of the mechanisms at the organisational-level. Therefore, individual-level perceptions of organisational flexibility can offer a meaningful focus for the pilot study, while maintaining momentum towards the main intervention study’s purpose. First, the suitability of the protocol can therefore be assessed in terms of the ability of a FIT intervention to positively influence outcomes of effectiveness and wellbeing. Secondly, the protocol can be assessed in terms of preliminary indications of the utility of organisational flexibility as the mechanism through which the FIT intervention positively influences outcomes of effectiveness and wellbeing, based on individual perceptions. These can be tested using the following four hypotheses (illustrated in Figure 15):

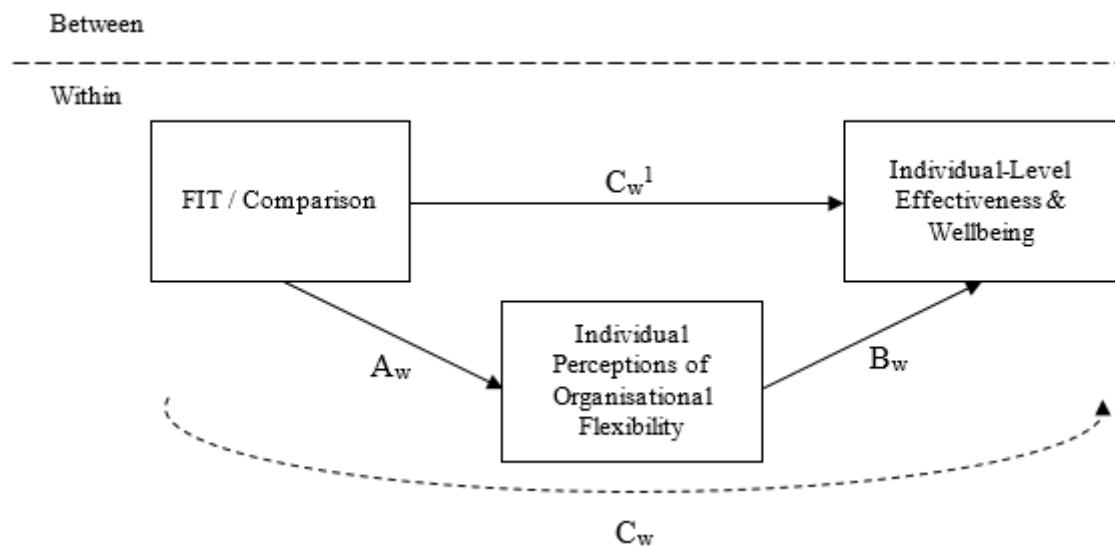


Figure 15. Illustration of the hypotheses of the pilot study.

Hypothesis 1: A FIT intervention will lead to significant increases in individual perceptions of organisation flexibility, within an organisation, when compared to a comparison group (A_w)

Hypothesis 2: Individual perceptions of organisational flexibility will lead to significant increases in individual-level outcomes of effectiveness and wellbeing, within an organisation (B_w)

Hypothesis 3: A FIT intervention will lead will lead to significant increases in individual-level outcomes of effectiveness and wellbeing, within an organisation, when compared to a comparison group (C_w^1)

Hypothesis 4: Increases in individual perceptions of organisational flexibility that result from the FIT intervention will explain (i.e. mediate) the increase in individual-level outcomes of effectiveness and wellbeing, within an organisation (C_w)

In terms of practicability, the pilot needs to seek feedback on the acceptability of the intervention. Such feedback can be sought from leaders and staff, across levels and roles, as representatives of the organisation; and from the researchers/facilitators, as representatives of the study. The aim is to understand their experiences of the activities of the intervention, the organisation's and individuals' level of participation in the activities, and the influence of other factors on the intervention (such as other organisational changes or environmental dynamics; Nielsen et al., 2006). Furthermore, the pilot needs to seek feedback on the feasibility of the full-scale FIT intervention. Such feedback can be established by researchers working with the participating organisations to provide an assessment of the logistical, financial and ethical implications of increasing the scale of the study.

In summary. To assess the utility of the OFS, and therefore organisational flexibility, in predicting-and-influencing organisational and individual effectiveness and wellbeing, a full-scale FIT intervention study is proposed. The full-scale FIT intervention study would use an experimental or quasi-experimental design, across multiple organisations. It would start with ACT to prepare participants for the intervention, and would use a participative approach to enhancing the organisation's mindfulness and pursuit of its purpose. Before using a new

protocol in an intervention study of such scale, it is appropriate to test the intervention, first, in a pilot study. The pilot study has a distinct purpose, to test for suitability and practicability of the intervention. Consequently, the pilot study has distinct hypotheses, and needs a research design that is appropriate for testing these hypotheses, while also providing suitable feedback for refining the protocol, to inform its use for a full-scale FIT intervention study. Therefore, the pilot study seeks to assess the utility of individual perceptions of organisational flexibility in predicting-and-influencing individual-level effectiveness and wellbeing, in a small-scale context. The next step is to propose a protocol for the pilot study.

Method

Study Design

This pilot study uses a mixed methods, quasi-experimental design to assess the influence of a FIT intervention on effectiveness and wellbeing within an organisation, by enhancing organisational flexibility. The mixed methods approach is used so that qualitative data is obtained for evaluating the practicability of the protocol, and quantitative data for hypothesis testing. The quasi-experimental approach is used to compare two well-matched organisations (in so far as it is workable). All individuals in both organisations will receive ACT training, to enhance their psychological flexibility. Then one organisation will be allocated to a FIT intervention condition, and the other to a treatment-as-usual (TAU) comparison condition (Campbell, Stanley, & Gage, 1963). The FIT intervention will use participatory action research (PAR) methods. A TAU approach is proposed, rather than a no-treatment control, in order to remove the risk of different effects being found as a result of one organisation experiencing an(y) intervention. It is proposed that diversity training is used in the TAU comparison, as a sufficiently benign/neutral ‘treatment’ that it won’t influence the process or outcomes associated with the FIT intervention (i.e. as a placebo), yet will be

sufficiently relevant and applicable across organisations so as to avoid wasting the TAU organisation's time. The acceptability of the design will be used to inform the development of the protocol.

The study comprises five phases (Figure 16). The aim of the first phase is to brief all staff on their participation in the study, and to establish a baseline of information. A pretest quantitative survey (Time 1), including biographical questions and the focal measures (see Measures, below), will be administered to all staff in both organisations via email. Qualitative data will be gathered from the leaders of both organisation, using a separate focus group for each organisation. The second phase is to develop psychological flexibility in both organisations, using ACT. For both organisations, the use of ACT is designed to provide an active benefit for participating in the study, by enhancing staff psychological flexibility. It is also designed to support readiness for change, in the organisation (yet) to be allocated to the FIT condition. At the end of phase two, a quantitative survey (Time 2) will assess the focal measures again, immediately after which the organisations will be randomly allocated to either the FIT intervention condition, or to the TAU condition. The third phase is to implement the intervention, using FIT sessions, in comparison with the TAU training sessions, over four months. This phase will also include qualitative interviews with a variety of stakeholders. At the end of the period a quantitative survey (Time 3) will assess the focal measures again. The fourth phase is the adoption of organisationally flexible behaviour. Within this phase, and four months after Time 3, a quantitative survey will assess the focal measures (Time 4), and provide researchers with an opportunity to maintain connection with the FIT organisation, and to observe levels of engagement and progress. The fifth phase is a final follow-up, eight months after Time 4 (i.e. one year after Time 3). At this point, a final quantitative survey (Time 5), will assess the same focal measures. In addition, qualitative data will be gathered in interviews with a variety of stakeholders in the FIT organisation, and in a

focus group meeting with the organisation’s leaders. Qualitative feedback will also be sourced from the TAU organisation, to gauge the suitability of the approach in the TAU condition. The acceptability of the timings, frequency and completion rates of the observations, in relation to the training, will be used to inform the development of the protocol.

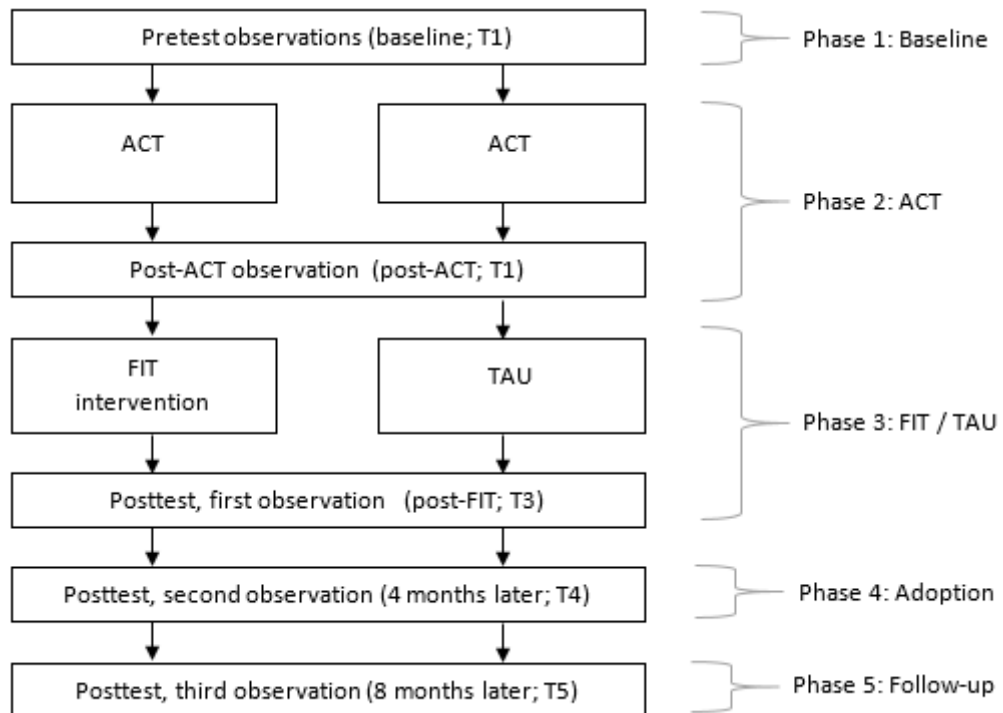


Figure 16. Overview of the five phases of the pilot study interventions and observations

Participants

Organisations. Two organisations will be selected based on their having volunteered to participate, their size, how well they match with one another, and how independent they are from one another. The organisations are expected to be voluntary participants, in order that they commit to the study willingly, with a desire to achieve change; and also, in order to reduce the risk of their dropping out of the study. The size of the two organisations should range from 40 to 100 employees, in order to balance sufficient sample size (suitability; Fritz & MacKinnon, 2007; Schoemann, Boulton, & Short, 2017) with risk management

(practicability; Thabane et al., 2010). The organisations need to be well-matched to create a sufficiently balanced comparison, in terms of size, industry, market, and job functions.

Common examples of well-matched organisations used in research are schools, hospitals and local government (Greasley & Edwards, 2015; Mattila, Elo, Kuosma, & Kylä-Setälä, 2006; Van Wingerden, Bakker, & Derks, 2017). The organisations need to be sufficiently independent from one another to avoid contamination effects from participants sharing knowledge and experiences between the groups. The ability to source independent organisations and match them will be used to inform the development of the protocol.

Individuals. All members of staff within the two organisations will be invited to complete all five surveys, and all members of staff will be advised to participate by the organisations' leadership. To support internal validity, the final dataset will only include those respondents who meet the following two main criteria (Biggs, Brough, & Barbour, 2014). First, given the variety of possible contractual relationship types between staff and organisations, for consistency, inclusion will be limited to staff on the organisation's payroll, with direct employment contracts with the organisation (i.e. employees), whether full- or part-time. This includes all levels from trainees to executive management. Any staff members who provide their services via a third-party, such as consultants, contractors, freelance associates or temporary agency staff (i.e. non-employees), will be excluded from the dataset. Secondly, respondents who join their organisation after the baseline (Time 1) measurement will be excluded. These exclusions from the *dataset* do not mean exclusion from *participation* in the intervention sessions or surveys. Because new staff and non-employees form part of the workforce, they can be expected to serve as an influence on the organisation's pursuit of its purpose. Excluding some staff may influence others, impacting the intervention's effectiveness (Nielsen, 2013).

It is reasonable to assume that some staff will not complete all the surveys, and some staff will not participate fully, indeed the level of attrition is often problematic in longitudinal research (Le Blanc, Hox, Schaufeli, Taris, & Peeters, 2007; Taris, 2000). To help manage this, all employees will be asked to record the sessions that they attend, in order to assess the impact of attendance levels, and intent-to-treat analysis will be used for participants that participate in the first observation, but miss (some) later observations. However, respondents missing more than 50% of the data across the measure will be excluded from analysis. Comparative statistical analysis will be used to detect any systematic differences between groups (employees v. non-employees, and employees with systematically missing data). The practicability of these inclusion/exclusion criteria, and the level of attrition, will be used to inform the development of the protocol.

Measures

Mediation measure

Organisational Flexibility. This will be measured using the Organisational Flexibility Scale (OFS) that has been developed and validated over the preceding studies of this research. This seven-item scale uses a seven-point Likert rating (1-‘never true’ to 7-‘always true’), including statements such as “*My organisation trusts its people to make goal-driven choices, without always having to ask for permission first*”. The aim of using this measure is to assess the mediation effects of organisational flexibility.

Outcome measures

Mental health: This will be measured using the General Health Questionnaire-12 (Goldberg, 1978). The 12-item scale used a 4-point Likert rating, with higher scores indicating greater mental ill-health. Statements started with “*Have you recently ...*”, and included questions such as “*Been able to face up to your problems?*”. The aim of using this measure is

to assess an individually-valued wellbeing outcome, and one that reflects measurement used in the previous studies, to establish consistent effects.

Job satisfaction: This will be measured using the Job Diagnostic Survey (Hackman & Oldham, 1975). This five-item scale uses a seven-point Likert rating (1 - 'disagree strongly' to 7 - 'agree strongly'), including statements such as "*Generally speaking, I am very satisfied with this job*". The aim of using this measure is to assess an individually-valued effectiveness and wellbeing outcome, and one that reflects measurement used in the previous studies, to establish consistent effects.

Organisational performance: This will be measured using a four-item scale of perceived organisational performance (Gibson & Birkinshaw, 2004), with a seven-point Likert rating (1 - 'strongly disagree' to 7 - 'strongly agree'), including items such as "*This organisation is achieving its full potential*". The aim of using this measure is to assess an organisationally-valued effectiveness outcome, and one that reflects measurement used in the previous studies, to establish consistent effects.

Additional outcome measures may be appropriate, such as financial measures, client satisfaction and loyalty, depending on the types of organisation and their aims (Gagné, 2018).

Control measure

Intention to leave: This will be measured using The Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979; Seashore, Lawler, Mirvis, & Cammann, 1982). This scale use three statements. The first two statements ("*I often think about quitting*" and "*I will probably look for a job in the next year*") are assessed on a seven-item scale (1-'strongly disagree' to 7-'strongly agree'), and the third statement ("*How likely is it that you will actively look for a new job in the next year?*") is assessed on a different seven-item scale (1-'not at all likely' to 7-'extremely likely'). The aim of controlling

for intention to leave is due to the potential impact of a desire to leave the organisation, on willingness to participate in its mindful pursuit of purpose.

Manipulation measure

Psychological flexibility: This will be measured using the Work-related Acceptance and Action Questionnaire (WAAQ; Bond et al., 2013). This measure is designed specifically to assess psychological flexibility as it relates to the workplace. This seven-item scale uses a seven-point Likert rating (1-‘never true’ to 7-‘always true’), including statements such as “*I can still work effectively even if I am nervous about something*”. The aim of using this measure is to assess changes in psychological flexibility, from delivering ACT prior to the FIT intervention.

Intervention workability assessment.

Participation and retention. The levels of session and survey participation, and retention will be used to inform the workability of the intervention. As an organisation-wide intervention, participation levels are expected to be relatively high. Therefore, low levels of participation in the sessions or survey may indicate issues (e.g. lack of management support, discomfort with the experience of the intervention, wider environmental influences) that can be used to inform future interventions.

Focus groups and semi-structured interviews. The intervention process will be assessed based on the experiences of the organisation’s leadership (focus group) and a variety of participants’ (interviews). Questions will assess (a) what is happening in and around them and the organisation at the time of the intervention activities, (b) how they understand the purpose and goals of the intervention, (c) how they experience the delivery, content and timings of the sessions, (c) how they experience the observations, (d) how they decide on, ‘own’ and share planned actions, (e) how they monitor their planned actions, (f) how their

activities are supported and hindered, by organisational factors and by external factors and (g) what the overall effects of the intervention are (Nielsen et al., 2006)

Researcher/practitioner reports. Researcher/practitioners will be required to keep field notes and provide interim and final reports of their observations and conclusions of the implementation.

FIT Intervention

The following describes the proposed framework for implementing the FIT intervention (Table 15), including initial timings and procedures. It describes the experience that the organisation in the FIT condition can expect; though, it is noted that the first two phases are relevant to both organisations, as the phases precede the allocation to the FIT/TAU conditions. It is expected that the timings and procedures will be developed more fully, based on contributions from researchers and practitioners, with ACT and PAR skills and experience, who will also facilitate the implementation of the intervention. Further adaptation of these timings and procedures can also be expected in response to the context of the participating organisations.

Phase 1: Baseline. Following the T1 observation, a focus group meeting will be held with the senior leaders of the organisation. The aim is to engage their support, and to gain an understanding of the organisational-level perspective, at the start of the study. They will be asked to share their perceptions of their organisations' aspirations and high-level goals (mission), and of existing factors that hinder their pursuit of those aspirations and goals. A further aim is to use their responses to inform the FIT sessions (in Phase 3).

Phase 2: ACT. One week later, a one-day ACT session will be held. Typically, ACT uses a '2+1' format, with two main training sessions delivered in consecutive weeks, and a 'booster' session six weeks later (Bond et al., 2016; Flaxman et al., 2013). However, one-day sessions have been shown to be effective (Hayes et al., 2004; Varra, Hayes, Roget, & Fisher,

2008), and using this approach offers a practical advantage, limiting the duration of the study. The aim of this session is to enhance the psychological flexibility of participants, helping them to develop skills for noticing and responding to opportunities to take action towards valued-goals, in the situation (Hayes et al., 2006). During the session, participants will be expected to make note of their valued work-related goals, for use in the FIT sessions.

Table 15
Indicative Timings of the FIT Pilot Study Protocol

Time		Condition		
		FIT	TAU	
Month 1 (start)	Week 1	T1 L	T1 L	
	Week 2	ACT	ACT	
	Week 3	T2	T2	<i>allocations</i>
	Week 4	S		
Month 2	Week 1	FIT	TAU	
	Week 2	S		
Month 3	Week 1	FIT	TAU	
	Week 2	S		
Month 5	Week 1	FIT	TAU	
	Week 2	T3 S	T3	
Month 9 (four months after T3)	Week 2	T4	T4	
Month 17 (eight months after T4)	Week 2	T5 L	T5 L	

Note: FIT = (organisational) flexibility-informed training intervention; TAU = treatment-as-usual; ACT = acceptance and commitment training; L = leadership interview; T = timed observation; S = steering group meeting

Phase 3: FIT. Following the Time 2 observation, and allocation to the FIT / TAU conditions. The first step in the FIT intervention, is to establish a steering group.

Steering group. This group is expected to be formed of volunteers, who are representative of the levels and roles within the organisation, to help the organisation to monitor and maintain progress, by collecting, interpreting and feeding back information (Bond & Bunce, 2001; Kemmis, McTaggart, & Nixon, 2013; Nielsen et al., 2010). In the initial meeting, the ACT/PAR researchers and practitioners, will present the outline of the FIT intervention, and the roles and responsibilities of the steering group. Typically, steering groups collect information from the organisation, and then guide changes on behalf of the

organisation. However, this FIT intervention aims to engage the entire organisation in the need for flexibility, and the need for individual and collective roles in establishing and maintaining it. Therefore, the FIT sessions will be used for engaging the whole organisation, and the steering group meetings will be used for helping the whole organisation with progress. The steering group will meet one week after each FIT session, to collect, interpret and reflect of findings, facilitated by the ACT/PAR researchers and practitioners.

FIT sessions. One week later, the first FIT sessions will be held. The FIT sessions will follow a '2+1' format, with sufficient time between the sessions to integrate changes into the working context (Le Blanc et al., 2007). The aim of the FIT sessions is to develop organisational flexibility, by developing the combination of organisation mindfulness and purpose-driven action. To develop these skills, the format of the sessions will be designed to be experiential, to support participation and action, while also being informative, to support understanding of the concepts. The content of the sessions will be designed to focus on the six characteristics of the Orgflex model (Bond, 2015).

The sessions will aim to encourage *openness to discomfort*, with the expectations that some anxiety can be expected, and that mistakes are likely to be made. By doing so, the sessions aim to role-model how uncomfortable thoughts and feelings need not hinder progress, and how mistakes are likely to be resolved more effectively, when they are anticipated and openly acknowledged. Participants will be encouraged to explore how discomfort typically arises in their workplace, and how they might address discomfort, and role-model acceptance in pursuit of aspirational behaviour (relating the organisation's flexibility and their psychological flexibility). The sessions will aim to encourage *awareness*, developing an ability to notice the organisational context, and notice ways in which they relate to it, as individuals, and as a collective. They will be encouraged to engage in pre-emptive analysis and discussion to identify potential problems in organisational plans;

providing them with opportunities to question organisational assumptions and beliefs. The sessions will present the leadership's view of the organisation's *purpose and goals* (based on the focus group meeting in phase one), and participants will be encouraged to reflect on how they relate to this view of the organisation, how their day-to-day actions, their work goals, and their team's work goals relate to the organisation's purpose and goals. The aim is to provide an opportunity for the collective to notice, openly, whether the purpose and goals are shared and offer meaningful guidance for action. The sessions will encourage participants to be *situationally responsive*, by helping them to identify typical ways of working in the organisation, and to identify multiple alternative actions that align with the organisation's purpose and goals, and that are also meaningful for their own valued action. The sessions will encourage participants to enhance their *work design*, by identifying ways to exert some influence over how they approach their work, such that they find value and meaning for themselves, within the context of pursuing the organisation's purpose and goals, and in relation to how they work with their colleagues, managers and subordinates. The sessions will encourage participants to *plan action* for pursuing the organisation's purpose and goals, in general. But also, more specifically, to define individual and collective projects for taking action that seeks to identify, implement and maintain relevant ways for them to reflect organisational flexibility. The individual and collective projects can be expected to identify resources, timelines, and methods for monitoring and sharing progress, opportunities, anticipated obstacles, mistakes and resolutions (Gagné, 2018). It is anticipated that the steering committee provide support for the collection of planned actions. The planned action is expected to require time and effort for implementation beyond the FIT sessions; hence the adoption phase (though ongoing activities are also expected beyond that time).

Phases 4: Adoption. Following the FIT sessions, the expectation is that the participants will engage in their own experimental planned action, for improving their

organisation's flexibility, individually and collectively; supported by the steering committee. The researchers/practitioners will remain available for advice and mentorship. During this period, the T4 survey will be taken, further providing the researchers with an opportunity to informally observe progress with the planned actions. The timing of the observation is also aimed at identifying short-term effects, which are anticipated to be detectable after three months (Bush et al., 2017; Nielsen et al., 2010).

Phases 5: Follow-up. This longer-term follow-up aims to pick-up on any accumulated effects, that might be missed in the short term (Bush et al., 2017). Literature suggests that one year after implementation is appropriate (Bond & Bunce, 2001; Le Blanc et al., 2007). The expectation is that the researchers will meet with the senior leaders, again, to understand their organisational-level perspective, in terms of their perceptions of their organisations' aspirations and high-level goals (mission), at the end of the study. Furthermore, qualitative feedback will be used to gain feedback about the overall feasibility and acceptability of the study. Finally, the study will provide feedback to the organisations informing them of the results.

Data Analysis Plan

The dataset will be prepared by addressing any reverse-scored items, missing data, data plausibility issues, and univariate and multivariate outliers. Before the participant inclusion/exclusion criteria are applied, any significant differences between groups of participants (e.g. returners vs. drop-outs) will be analysed. The FIT intervention condition will be dummy coded with "1", and the TAU comparison group with "0". Due to the anticipated lack of independence between individuals within an organisation, group-mean centring will be used for predictor variables. A preliminary set of analyses will be conducted to provide a baseline comparison of the two organisations, before testing the hypotheses.

Preliminary analyses.

Bivariate correlations. This analysis evaluates the bivariate correlations between all the measured variables (biographical and focal) at Time 1 to examine whether effects appear to be broadly consistent with the theories, research and hypotheses described.

Biographical differences. This analysis compares the sample size and the participants' biographical characteristics between the two groups, using independent *t* tests and chi-squared difference tests, to determine whether there are any significant differences in the participants in the two intervention conditions.

Baseline differences between organisations/conditions. This analysis addresses the baseline differences between the two organisations/conditions, at Time 1. Using analysis of variance (ANOVAs) and chi-squared difference tests, it will assess whether the two organisations start from a similar baseline, or whether there are significant differences between the intervention and control group, for any of the measures at Time 1.

ACT manipulation check. This analysis assesses whether ACT leads to anticipated increases in psychological flexibility. An analysis of variance (ANOVA) is expected to be used to test that there are no between-group differences in psychological flexibility at Time 2, when accounting for the levels of psychological flexibility at Time 1.

Hypothesis testing.

Intervention effects: hypotheses 1 and 3. These analyses assess whether the FIT intervention leads to significant increases in individual perceptions of organisational flexibility (hypothesis 1) and in the individual-level valued outcomes of mental health, job satisfaction and organisational performance (hypothesis 3). A 2 x 5 repeated multivariate analysis of variance (MANOVA) is expected to be used to assess for changes. The condition/organisation (FIT vs. TAU) serves as the between-groups factor, and time (Time 1 vs. Time 2 vs. Time 3 vs. Time 4 vs. Time 5) serves as the within-groups factor.

Mediation effects: hypotheses 2 and 4. These analyses assess whether increases in individual perceptions of organisational flexibility, that result from the FIT intervention, will lead to (hypothesis 2), and explain (i.e. mediate; hypothesis 4) the increase in individual-level outcomes of mental health, job satisfaction and organisational performance, within an organisation. To assess organisational flexibility as a mediator, it is necessary to establish a timeline to demonstrate that the changes in organisational flexibility precede the changes in outcomes, inferring cause and effect (Kazdin, 2007). To establish the timeline, intervals are used to estimate increases over time (between T1 to T2, T2 to T3, T3 to T4, T4 to T5). An initial assessment can test for overall increases between T1 and T5, for organisational flexibility, and the outcomes. However, the aim is to test for changes in organisational flexibility that precede changes in the outcomes, for example, that significant changes in organisational flexibility between T2 to T4, mediate changes in the outcome variables between T4 and T5. A well-established non-parametric bootstrapping procedure is recommended to estimate these mediation effects, with bias-corrected confidence intervals (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004).

Qualitative workability analysis.

Focus groups and interviews will be recorded, and entered into a software package (such as NVivo) for qualitative data analysis (Tesch, 1990). The data will be categorised using content analysis, firstly in terms of the various aspects of the implementation (communication, delivery, timing, surveys, support, overall experience) and secondly, in terms of positive and negative experiences (Mattila et al., 2006).

Summary

This final study aimed to propose a pilot study protocol to progress the research towards assessing the utility of the OFS, as a measure of organisational flexibility, for predicting-and-influencing individual and organisational effectiveness and wellbeing. The study aimed to highlight the need for, and yet the scale and complexity of, a full-scale intervention study. In order to progress the research towards a full-scale intervention study, a pilot study was proposed for assessing the suitability and practicability of the intervention. In this chapter, a protocol was developed, for the pilot study. The pilot study protocol proposed a quasi-experimental, mixed methods design, with observations at multiple time-points, for assessing the ability of individual perceptions of organisational flexibility to predict-and-influence individual-level outcomes of effectiveness and wellbeing; and for assessing the practicability of the intervention. Therefore, despite the challenges of assessing the utility of the OFS in a full-scale intervention study, this pilot study protocol has aimed to offer guidance for future organisational flexibility research and practice.

Chapter 7. General Discussion

7 General Discussion

This final chapter aims to discuss the main findings and implications of the studies in this thesis, as well as the contributions they offer for progressing CBS and organisational research, and for practical application in organisations. With an overall aspiration of improving the ability of organisations to survive and thrive, while also helping the people that work within them to thrive too, the current research focused on assessing the concept of organisational flexibility (Bond, 2015), based on the overarching hypothesis that organisational flexibility is able to predict-and-influence individual and organisational effectiveness and wellbeing. To test this hypothesis, a measure was needed to evaluate organisational flexibility, which provided the goal of the current research, to develop and validate a measure of organisational flexibility.

To discuss the research, this chapter is organized into five sections. The first section provides a discussion of the main findings of the four empirical studies, and a reflection on the significance of the protocol study. The second section discusses implications of these studies; the third section discusses methodological limitations of the studies; the fourth section outlines potential paths for the use of the measure in future research and practice; and finally, a general conclusion is presented.

7.1 Discussion of Findings

The series of four empirical studies aimed to develop and validate a measure of organisational flexibility. The fifth study aimed to provide a path forward for assessing the scale's utility. The discussion of findings is presented here, first, in terms of scale development, then validity, then utility.

7.1.1 Scale development.

The aim of Studies I and II was to develop a scale to measure organisational flexibility. Study I aimed to propose an initial scale that would fully, and yet parsimoniously,

reflect the concept organisational flexibility. To do so, items were generated and assessed for content validity, unidimensionality and reliability (Netemeyer et al., 2003). From the results of this study, a seven-item OFS was proposed as an appropriately strong solution. With the agreement of expert raters, the content of the items was established as sufficiently simple for use across a wide range of educational levels, and was considered valid for reflecting the full theoretical frame of organisational flexibility (MacKenzie et al., 2011). Using cross-sectional data from a sample of 303 independent individuals, the unidimensionality of the OFS was supported by their responses, with seven items being attributable to a single factor structure accounting for 52.32% of the variance. This result of unidimensionality supported the OFS as a measure of a single concept, rather than distinct dimensions of organisational flexibility, such as purpose-driven action and organisational mindfulness, or the six Orgflex characteristics that provide techniques for influencing organisational flexibility. (Bond, 2015; Levin & Hayes, 2009). This finding is broadly consistent with research that has established unidimensional measures of psychological flexibility (Bond et al., 2011, 2013), and unlike measures such as organisational learning, that reflect multiple dimensions (Sinkula et al., 1997). The reliability of the OFS was supported by its good internal consistency (Cronbach's $\alpha = .88$), indicating that the items measure the same construct, based on the patterns of interrelatedness between them (Hinkin, 1998). In addition, the scale offered parsimony (i.e. only seven items), making it practical for use in diverse organisational samples (Wieland et al., 2017). From the results of this study, the OFS was proposed as a scale reflecting individual perceptions of organisational flexibility, as an initial a measurement model.

Study II aimed to confirm the proposed OFS, using multilevel data. To do so, a cross-sectional research design was used, with data collected from 331 people, across 31 organisations; and a series of CFA and MCFA were used to confirm the fit of the measurement model. From the results, the data supported a good fit at both levels of analysis (CFI = 0.97,

RMSEA = 0.05, SRMR-within = 0.03 and SRMR-between = 0.08). Reliability was good (Cronbach's $\alpha = .89$), and in line with Study I. Factor loadings were higher at the organisational level (ranging from .82 to .99) than at the individual level (ranging from .41 to .61), showing strong support for the organisational-level validity of the scale. This was also supported by an organisational effect (ICC = 28%) on people's perceptions of their organisation's flexibility (Heck & Thomas, 2015; Hox, 2010). These results were important to establish, given the organisational-level nature of organisational flexibility (Bond, 2015).

It was noted that in both Studies I and II, there were no biographical effects or group differences, in terms of personal or organisational responses to the organisational flexibility items. The implication of this result is that the biographical differences do not influence individual or shared perceptions of organisational flexibility, supporting the scope of the OFS, as a consistent measure across groups. Overall, the results from these two studies provide support for the OFS as a reliable, content-valid, unidimensional, seven-item scale for measuring individual and shared perceptions of an organisational construct, thus supporting Bond's conceptualisation of organisational flexibility as a single behaviour, representing both an organisation acting-in-context, and as a context for people working within the organisation (Bond, 2015).

7.1.2 Scale validity: Construct.

The aim of Study III was to assess the construct validity of the OFS, in terms of nomological (hypothesis 1), convergent (hypothesis 2) and discriminant (hypothesis 3) validity. Data were used from the same sample as in Study II (i.e. from 331 people, across 31 organisations).

Nomological validity: psychological flexibility. Nomological validity refers to the extent to which a measure supports hypothesised relationships with constructs that are from the same theoretical network (Hinkin, 1998). The nomological validity of the OFS was

assessed by testing the hypothesis (Hypothesis 1) that organisational flexibility relates positively, to a small-to-moderate extent, with psychological flexibility, at the individual level. Organisational and psychological flexibility were expected to be related due to their conceptualisation as functional twins, but not strongly, due to the different levels of the focal entities (i.e. the self and organisation), and the different goals of those entities (Bond, 2015). From the results of correlational analysis, nomological validity was supported at the individual level ($r = .20, p = .002$). This result is in line with expectations, providing support for the nomological validity of the OFS, and thus supporting organisational flexibility as psychological flexibility's functional twin (Bond, 2015).

Convergent validity: organisational learning scales. Convergent validity refers to the extent to which a measure demonstrates positive relationships with other conceptually similar measures (Hinkin, 1998). The convergent validity of the OFS was assessed by testing the hypothesis (Hypothesis 2) that organisational flexibility relates positively and strongly to organisational learning (and each of the characteristics of organisational learning: shared vision, open-mindedness and commitment to learning), at the individual and organisational levels. From the results of correlational analysis, convergent validity was supported based at both the individual and organisational level, in each case. In terms of the relationship between organisational flexibility and overall organisational learning, the results show a very strong relationship (individual level: $r = .67$; organisational level: $r = .96$), indicating that both constructs describe approaches to organisational adaptability towards achieving organisational goals (Bond, 2015; Marsick & Watkins, 2003; Sinkula et al., 1997). In terms of the relationships between organisational flexibility and each of the characteristics, the results show that organisational flexibility relates strongly with shared vision (individual level: $r = .64$; organisational level: $r = .96$), indicating that both constructs describe the pursuit of shared goals (Bond, 2015; Sinkula et al., 1997). Similarly, results show that organisational

flexibility relates strongly with open-mindedness (individual level: $r = .36$; organisational level: $r = .77$), indicating that both constructs describe a willingness and an openness to noticing opportunities in the environment for responding (Bond, 2015; Sinkula et al., 1997). Furthermore, results show that organisational flexibility relates strongly with commitment to learning (individual level: $r = .53$; organisational level: $r = .91$), indicating that both constructs describe a commitment towards achieving organisational aims (Bond, 2015; Sinkula et al., 1997). In terms of the overall relationship between the constructs, good support for the organisational-level nature of organisational flexibility was found in the strength of the relationships, at the organisational level, relative to the individual level. Strong support was found for the convergent validity of the OFS, in terms of its relation to organisational learning, shared vision, open-mindedness and commitment to learning, therefore also supporting organisational flexibility as construct for adaptability towards achieving organisational goals (Bond, 2015). However, the relationships were so strong at the organisational level that there was a risk of interpreting them as measuring the same concept. The discriminant validity tests were therefore especially important.

Discriminant validity: organisational learning scales. Discriminant validity refers to the extent to which a measure demonstrates difference from constructs that are similar, but theoretically distinct (Hinkin, 1998). The discriminant validity of the OFS was assessed by testing the hypothesis (Hypothesis 3) that organisational flexibility demonstrates sufficient difference from organisational learning (and each of the characteristics of organisational learning: shared vision, open-mindedness and commitment to learning), for them to be considered distinct constructs. From the results of a series of three competing MCFAs, discriminant validity of the OFS was supported, by demonstrating that the model of organisational flexibility better reflects a distinct, independent construct from each of the organisational learning constructs, rather than as an equal construct or as a single factor, based

on chi-square difference tests ($p \leq .001$). These results support our understanding of organisational flexibility as being different from organisational learning. In combination, the results from convergent and discriminant analyses provide support for the OFS as a scale measuring a construct with strong similarities to organisational learning, and to each of its characteristics (shared vision, open-mindedness and commitment to learning), but with sufficient difference between them to be considered distinct constructs.

7.1.3 Scale validity: Criterion-related.

The aim of Study IV was to assess the criterion-related validity of the OFS. Criterion-related validity refers to the extent to which a measure explains theoretically-predicted outcomes (Netemeyer et al., 2003). To perform this assessment, regression analyses were used to test the ability of the OFS to predict outcomes of mental health, work motivation, job satisfaction and organisational performance (Hypotheses 1, 3, and 5). To assess incremental validity, further regression analyses were used to test the OFS's ability to explain the variance in outcomes, over and above the existing measures of psychological flexibility and organisational learning (Hypotheses 2, 4, and 6). Attempts to triangulate performance outcomes, with alternative measures at the organisational level, were problematic, due to the small organisational-level sample, lack of responses and missing data. The results for these organisational-level hypotheses (Hypotheses 7 through 12) are not discussed in any further detail, in this section.

Mental health. Organisational flexibility was hypothesised to predict mental health through its provision of opportunities for people to respond flexibly to their experiences, despite challenges, as well as connecting them to meaning in their work, through the organisation's purpose and goals. The relationship between the OFS and mental health was assessed at the individual level only, as the relative stability of mental health across contexts indicated that there would not be a sufficient organisational effect to consider a collective

level of mental health. Therefore, the OFS was used to assess *individual* perceptions of organisational flexibility, only, in these tests. The hypothesis (Hypothesis 1) that individual perceptions of organisational flexibility predict mental health, was supported by the moderate effects ($\beta = 0.25, p \leq .001$) of adding the OFS to the model. It was further supported by the OFS explaining 8.21% of the variance in the mental health of individuals, within an organisation. The hypothesis (Hypotheses 2) that organisational flexibility is able to predict mental health, over and above psychological flexibility was supported based on the OFS explaining an additional 6.69% of the variance in individuals' mental health, within an organisation, over and above psychological flexibility. These results indicate that individuals' perceptions of organisational flexibility (according to the OFS) are moderate predictors of individuals' mental health, providing support for the overarching hypothesis of organisational flexibility as a predictor of individual effectiveness and wellbeing (Bond, 2015). The results also highlight exciting potential for the OFS, given its ability to offer predictive ability beyond the measure of psychological flexibility; given the use of psychological flexibility is a well-established predictor of mental health (Zettle et al., 2016).

Work motivation & job satisfaction. Organisational flexibility was hypothesised to predict work motivation and job satisfaction through its ability to provide a context that supports people's flexible responses to their experiences, as well as connecting them to meaning in their work, through the organisation's purpose and goals. The relationships between the OFS and work motivation and job satisfaction were assessed at both the individual and organisational levels of analysis. While these are typically considered to be individual-level constructs, it was hypothesised that, due to the 'work' and 'job' context of these constructs, they would be influenced by the organisational context, and that collective levels and shared variance could be expected, in order for these constructs to be understood at the organisational level (Aubé et al., 2015; Harter et al., 2002; Klassen et al., 2010). This

expectation was supported for job satisfaction, where the organisational effect was low-to-moderate (ICC = 19%), inferring that organisations have an influence on people's job satisfaction. However, it was not well-supported for work motivation, where organisations only appear to have a trivial effect (5%) on people's work motivation. Analyses were still performed at both levels of analysis for completeness, though following this result, the expectation that organisational flexibility would predict work motivation, at the organisational level, was reduced.

Work motivation. The hypothesis (Hypothesis 3) that organisational flexibility predicts work motivation, at the individual level, was supported by the small but significant effects ($\beta = 0.12, p = .003$) of adding the OFS to a baseline model. It was also supported to a small extent by the OFS explaining 3.35% of the variance in individuals' work motivation, within an organisation. Furthermore, the hypothesis also appeared to be supported at the organisational level ($\beta = 0.23, p = .006$). However, given the 'trivial' organisational effects, this relationship should be interpreted cautiously. For example, the OFS explained 89.15% of the variance in 'collective' work motivation. This figure looks impressive, but only explains an absolute difference in residual variance from 0.82 to 0.09 - both very small scores - indicating that the change in variance from adding organisational flexibility to the model is very small, at the organisational level. The hypothesis (Hypotheses 4) that organisational flexibility is able to predict work motivation, over and above psychological flexibility and organisational learning, was supported at the individual level, in both cases. In relation to psychological flexibility, the OFS explained an additional 3.80% of the variance in individuals' work motivation, within an organisation. In terms of organisational learning, the OFS explained an additional 1.28% of the variance in individuals' work motivation within an organisation; and an additional 9.39% of the variance of 'collective' work motivation, resulting in an overall R^2 change of 1.72%.

These results indicate that, according to the OFS, individual's perceptions of organisational flexibility are significant, but relatively weak predictors of work motivation, providing some support for the overarching hypothesis of organisational flexibility as a predictor of individual effectiveness and wellbeing (Bond, 2015). The results also highlight the potential for the OFS, given its predictive ability beyond psychological flexibility and organisational learning. Psychological flexibility has shown mixed results in terms of its ability to predict work motivation (Bond & Bunce, 2000; Bond et al., 2008); thus, the results of this study provide an opportunity for organisational flexibility to add value in CBS research. Organisational learning has been shown to predict motivation relatively consistently (Egan et al., 2004; Joo & Lim, 2009); thus, the results of this study, provide an opportunity for organisational flexibility to add value to OB research. The interpretation of these results is considered to be clearer for individual perceptions of organisational flexibility, than shared perceptions of organisational flexibility.

Job satisfaction. The hypothesis (Hypothesis 3) that organisational flexibility predicts job satisfaction at the individual level was strongly supported, by adding the OFS to the baseline model ($\beta = 0.50, p \leq .001$). It was further supported by the OFS explaining 30.52% of the variance in individuals' job satisfaction, within an organisation. At the organisational level, the hypothesis was also strongly supported ($\beta = 0.61, p \leq .001$), including by the ability of the OFS to explain 51.63% of the variance in collective job satisfaction. The hypotheses (Hypotheses 4) that organisational flexibility is able to predict job satisfaction, over and above psychological flexibility and organisational learning, was supported at both levels of analysis, in both cases. In relation to psychological flexibility, the OFS explained an additional 28.71% of the variance in individuals' job satisfaction, within organisation. In terms of organisational learning, the OFS explained an additional 8.70% of the variance in individuals' job satisfaction, within an organisation. At the organisational level, it was supported based on the

OFS explaining an additional 51.63% of the variance in collective job satisfaction, resulting in an overall R^2 change of 16.88%.

These exciting results indicate that, according to the OFS, individual and shared perceptions of organisational flexibility are significant and strong predictors of both job satisfaction and collective job satisfaction, providing support for the overarching hypothesis of organisational flexibility as a predictor of individual and organisational effectiveness and wellbeing (Bond, 2015). The results also highlight the potential for the OFS, given its predictive ability beyond both psychological flexibility and organisational learning, both of which are established measures for predicting job satisfaction (Bond et al., 2016; Egan et al., 2004). In both cases, the OFS offered considerable predictive ability, thus adding useful evidence to further CBS and OB research.

Organisational performance. Organisational flexibility is hypothesised to predict organisational performance, through its ability to take mindful, purpose-driven action, that helps it to achieve its goals. The relationships between the OFS and organisational performance were assessed at both the individual and organisational levels, based on the expectation of an organisational effect on perceptions of organisational performance. This expectation was strongly supported (ICC = 30%). The hypothesis (Hypothesis 5) that organisational flexibility predicts perceptions of organisational performance, was strongly supported at the individual level ($\beta = 0.43, p \leq .001$). It was further supported by the OFS explaining 41.60% of the variance in individuals perceptions of their organisation's performance. At the organisational level, the hypothesis was also strongly supported ($\beta = 0.67, p \leq .001$), including by the ability of organisational flexibility to explain 83.83% of the variance in shared perceptions of organisational performance. The hypothesis (Hypothesis 6) that organisational flexibility is able to predict perceptions of organisational performance, over and above organisational learning was supported at the individual level, based on the

OFS explaining an additional 10.63% of the variance in individuals' perceptions of organisational performance, within an organisation, over and above organisational learning. At the organisational level, it was supported based the OFS explaining an additional 39.91% in the variance in shared perceptions of organisational performance, resulting in an overall R^2 change of 19.54%. These exciting results indicate that, according to the OFS, individual and shared perceptions of organisational flexibility are significant and strong predictors of individual and shared perceptions of organisational performance, providing support for the overarching hypothesis of organisational flexibility as a predictor of organisational effectiveness and wellbeing (Bond, 2015). The results also highlight the potential for the OFS, given its predictive ability beyond organisational learning, as an established measure for predicting organisational performance, adding useful evidence to further organisational research (Baker & Sinkula, 1999).

Overall, the results from the validity studies provide good support for the OFS, based on its relationships with other relevant constructs that reflect the theoretical frame of organisational flexibility. Incremental validity was demonstrated beyond psychological flexibility for mental health, work motivation and job satisfaction, and beyond organisational learning for work motivation, job satisfaction and organisational performance. Furthermore, the OFS was well-supported as an organisational-level measure, while also showing beneficial use at the individual level, which has implications for the practical use of individual perceptions of organisational flexibility in research.

7.1.4 Scale utility.

The aim of Study V was to propose a protocol for assessing the utility of the OFS. As a protocol study, there are no 'results', as such, to discuss here. However, it is worth reiterating the significance of the protocol study, before discussing the implications of the overall research in the next section. The study highlighted the need for, and yet the scale and

complexity of, a full-scale intervention study. Such a study requires a (quasi-)experimental design to be implemented across multiple organisations, in order to assess the ability of a FIT intervention to positively influence individual and organisational effectiveness and wellbeing, and to determine whether their improvement is due to enhanced levels of organisational flexibility, as measured by the OFS. Such a study needs to take into account (a) the suitability of the intervention protocol and (b) the practicability of the protocol. Its suitability can be understood in terms of the appropriateness of the intervention design, for testing the hypotheses. Its practicability can be understood in terms of the feasibility (e.g. logistics, finance and ethics) of the intervention, and its acceptability for the stakeholders (e.g. the organisations' leaders, employees and researchers/practitioners). Given the novelty of a FIT intervention, and its aim for organisation-wide impact, proceeding with a full-scale intervention study without testing and refining the protocol in a small-scale context, first, is considered to present unnecessary risk. Hence, a pilot study; as an approach for assessing the suitability and practicability of a FIT intervention, while progressing our understanding of organisational flexibility and limiting the risks. The significance of the current research is that it has proposed the protocol for such a pilot study, in order to provide a path forward.

The pilot study protocol proposes an approach that is suitable for assessing the FIT intervention in a small-scale setting, while maintaining a level of fidelity to the full-scale FIT intervention study. It achieves this, using hypotheses that are designed to test the utility of the individual-level OFS, as a mediator of individual-level outcomes. In terms of practicability, the study proposes the use of qualitative data to evaluate the acceptability and feasibility, for the organisations' leaders, employees and researchers/practitioners. Therefore, despite the challenges of assessing the utility of the OFS in a full-scale intervention study, this pilot study protocol is significant in offering practical guidance for future organisational flexibility research and practice.

7.2 Implications of the Findings

Having reviewed the main findings of the empirical studies and the protocol study, their implications are now discussed, according to the aims of the current research. This section starts by discussing the implications of the current research, in terms of its contribution to the theory of organisational flexibility as a predictor of effectiveness and wellbeing, based on the empirical and conceptual work in this thesis. Next, it discusses the implications of the scale for measuring organisational flexibility, for CBS and for OB; then, it discusses the path forward that this research provides for theory and practice.

7.2.1 Empirical contribution to understanding organisational flexibility as a predictor of effectiveness and wellbeing.

In the current research, developing and validating the OFS has meant evaluating organisational flexibility, based on Bond's (2015) conceptualisation. This evaluation can be seen to offer an important contribution to the literature explaining organisational flexibility. First, the current thesis offers support for the concept of organisational flexibility as a predictor of *individual* effectiveness and wellbeing. Despite the organisational focus of the concept of organisational flexibility, individuals' perceptions of organisational flexibility offer the ability to predict individuals' mental health, work motivation and job satisfaction over and above their own psychological flexibility. This result is particularly interesting, given the well-established body of research on the importance of psychological flexibility in relation to individuals' psychological effectiveness and wellbeing in the workplace (Hayes et al., 2006). The evidence that individuals' perceptions of their organisation's flexibility offer predictive ability, beyond psychological flexibility, provides an indicator of the importance of individuals' external environments in supporting their behavioural effectiveness and psychological wellbeing. It also provides a useful indicator of the benefits of enhancing their external working environment, to be more flexible. The current foundational evidence

provides motivation for research that combines ACT (for enhancing psychological flexibility) with FIT (for enhancing organisational flexibility), as a comprehensive and coherent strategy for helping to improve individuals' and organisations' effectiveness and wellbeing (Bond & Hayes, 2002).

Secondly, the current thesis offers support for the concept of organisational flexibility as a predictor of *organisational* effectiveness and wellbeing. Empirically, the predictive ability of organisational flexibility has been explored in relation to organisational learning, and conceptually, it has been explored, in relation to mainstream organisational flexibility literature. The empirical work showed that despite the strong similarities between people's perceptions of their organisation's flexibility and learning (shared vision, open-mindedness and commitment to learning), organisational flexibility offers the ability to predict work motivation, job satisfaction and organisational performance, over and above organisational learning. Indeed, the OFS's ability to predict job satisfaction and organisational performance so strongly, provides an exciting indicator of the potential of organisational flexibility in research and practice. It provides strong motivation for further research to evaluate the ability to influence collective job satisfaction and organisational performance (and to some extent work motivation), by enhancing organisational flexibility, using a FIT intervention. In contrast, organisational learning research does not yet appear to provide clear manipulable approaches for enhancing learning: "organizational adaption and innovation, both critical in a rapidly changing world, could undoubtedly be improved if organizational designers and administrators knew more about how organizations learn and about how organizations might be guided to learn more effectively" (Huber, 2011, pp. 108–109).

7.2.2 Conceptual contribution to understanding organisational flexibility as a predictor of effectiveness and wellbeing.

Conceptual discussions in this thesis compared the CBS perspective of organisational flexibility with mainstream perspectives of organisational flexibility, and also compared two CBS models of organisational flexibility: Bond's (2015) model informed by OB characteristics and Hayes' (2010) model informed by Ostrom's (1990) design principles.

CBS and mainstream perspectives of organisational flexibility. Despite a wide range of perspectives and terminology used for researching organisational flexibility, it has been possible to find common ground between mainstream and CBS perspectives, as well as differences that highlight areas of contribution that the CBS perspective can offer towards understanding organisational flexibility and towards understanding individual and organisational effectiveness and wellbeing. In terms of common ground, both mainstream and CBS perspectives describe organisational flexibility as responsive practices for supporting adaptation in relation to the environment, and for predicting desired outcomes in changing environments. However, the perspectives diverge when mainstream approaches focus on the dilemma of managing the competing relationship between organisational flexibility and organisational control (a capacity for reliable, efficient practices to align with organisational goals). Focusing on this dilemma places attention on achieving *either* organisational flexibility *or* organisational control, or attempting to *balance* them. Research has viewed the need to address this dilemma, in terms of when, how and why to switch between flexibility and control, as an ongoing challenge. Typical arguments have been made for flexibility to be the strategy that organisations choose in conditions of uncertainty, and for control to be the strategy they choose in conditions of stability, and for each option to be implemented through structural or temporal differentiation. However, it is noted that organisations tend towards strategies associated with organisational control regardless of the conditions, due to the

greater sense of certainty such strategies provide, due to the sunk costs involved in developing reliable routines, and due to the potential for short-term rewards that reinforce such behaviours. Various approaches have been offered as solutions for resolving this tendency. For example, contextual ambidexterity research (Gibson & Birkinshaw, 2004) argues that the trade-off between flexibility and control needs to be decided at the individual level, to provide greater sensitivity to the local context, and thus reduce organisational control. Another example comes from paradox theories (Smith & Lewis, 2011) which argue that the persistent pressure arising from attempts to resolve the dilemma between flexibility and control, reinforce the tendency towards defensive and controlling behaviours. They suggest that accepting the choice between flexibility and control as a paradox, rather than as a dilemma, can release the pressure and reduce the tendency for control. A further example comes from purposeful adaptation research (Ghoshal & Moran, 1996) which argues that people need a higher reason (i.e. shared purpose) to direct their action, in order to guide decisions about when to pursue flexibility or control.

The CBS perspective differs from these mainstream perspectives in that it does not directly contrast organisational flexibility with organisational control, but rather it contrasts flexibility with inflexibility: rigid behaviours that are insensitive to the context, which can limit opportunities for pursuing the organisation's purpose driven goals. From this perspective, organisational flexibility is seen as an ability to be aware of and open to noticing the features of the organisation's internal and external environment and, based on the opportunities available in the situation, its ability to take appropriate action for pursuing the organisation's purpose-driven goals. This ability finds common ground with contextual ambidexterity research, in terms of the need for local context sensitivity; and with purposeful adaptation research, in terms of the need to pursue shared purpose. The CBS perspective of organisational flexibility can also be understood as encompassing both reliable and efficient

practices (typically associated with control in mainstream literature), as well as adaptable practices (typically associated with flexibility in mainstream literature), depending on their workability in the context, for pursuing the organisation's purpose. Understanding organisational flexibility in this way highlights common ground with the paradox theories, as it avoids the dilemma of choosing between flexibility and control. In addition, the CBS perspective is able to offer a more thorough explanation for individual and organisational tendencies towards control, as strategies for managing challenging or unwanted internal experiences (e.g. thoughts, feelings, memories, impulses etc.), based on theory that underpins psychological flexibility research. With this understanding, CBS is able to propose characteristics for enhancing flexibility that are coherent between the individual- and organisational-level concepts of flexibility for influencing effectiveness and wellbeing. Consequently, the CBS perspective offers support for aspects of mainstream research, while adding further theoretical coherence and explanation,

The Bond and Hayes/Ostrom perspectives of organisational flexibility. The current thesis provides a conceptual discussion of Bond's model of organisational flexibility alongside the Hayes /Ostrom model, as contributions to the development of the CBS theory of organisational flexibility. CBS encourages the use of a reticulated approach to theory development, and by relating these two models, the current research highlights opportunities for research to pursue greater precision, scope and depth of the concept. Both models of organisational flexibility share the same philosophical and theoretical foundations, and the same goals. They also both seek to enhance organisational effectiveness and wellbeing by influencing organisational flexibility. However, their different approaches to theory development (Ostrom's case studies and Bond's selection of specific mechanisms from OB) have resulted in differences between the design principles and characteristics they identify for influencing organisational flexibility. Therefore highlighting differences between the Bond

and Hayes/Ostrom models can help to highlight potential areas of contribution from each model, and opportunities for further research.

First, the two models offer contrasting approaches to defining the boundaries of the organisation, highlighting a potential need to develop greater conceptual precision. In the Hayes/Ostrom model, the design principles specify the need to define membership of the group, group identity, and the group's position relative to other groups in the same hierarchy (Wilson et al., 2014). In contrast, Bond's model discusses group identity (e.g. culture or brand) as a narrative that can be a factor in reinforcing rigidity, rather than encouraging flexibility in pursuit of purpose-driven goals. Furthermore, rather than defining who is within the group, Bond's model addresses who is involved in the pursuit of organisational goals, and how they can be expected to interact with one another. In doing so, Bond's model appears to provide greater opportunity for flexibility in terms of the content and structure of the organisation, by allowing sensitivity to the context over time. For example, in Bond's model while pursuing the organisation's purpose, changes could be made to employees, divisions, joint ventures, shareholdings structures etc., which might otherwise be considered to alter the identity of the group under the Hayes/Ostrom model, in a way that conflicts with the design principle or that indicates a need to redefine the group. This discrepancy highlights an opportunity for further research to resolve the contrasting views and refine the models to achieve greater precision.

Secondly, the scope of the two models differ. Bond's model is designed to be applicable across organisational types, whereas the Hayes/Ostrom model is focused on 'prosocial' organisations. This identifies Bond's model as potentially providing greater scope; and the Hayes/Ostrom model as potentially providing more contextually-specific techniques. In further support of this point, several specific Hayes/Ostrom design principles appear to describe techniques that could be applied to cultivate characteristics in Bond's model. For

example, the design principle of “Fast and Fair Conflict Resolution” (Hayes/Ostrom) can be seen as offering a potentially useful set of techniques to cultivate “Openness to Discomfort” (Bond), by providing the opportunity for open lines of communication, where individuals are in disagreement,. Also, the design principle of “Graduated Sanctions” (Hayes/Ostrom) can be seen as offering a useful set of techniques to handle problems, where individuals or groups within an organisation are not acting in line with “Planned Action” (Bond). Furthermore, the design principle of “Proportional Costs and Benefits” (Hayes/Ostrom) can be seen as offering guidance for “Planned Action” (Bond), in terms of understanding and planning how to distribute demands and resources across the workforce, fairly. These points highlight opportunities for exploring Bond’s model for enhancing the effectiveness and wellbeing of prosocial organisations, relative to the Hayes/Ostrom model, and for exploring their relationships between the design principles and characteristics.

Thirdly, in terms of the depth of the two models, Bond’s model is more specifically designed to be coherent with the ACT processes. Each of the characteristics of Bond’s model (per the Orgflex) serve an equivalent function to the processes in ACT (in the equivalent positions on the Hexaflex), and are hypothesised to promote them. The Hayes/Ostrom model is not explicit in explaining these relationships, though it does position the design principles on the OrgFlex, which provides an equivalence with the Hexaflex, indicating an opportunity for analysis of the relationships across levels. This highlights an opportunity for future research to compare the coherence of the two models in explaining the relationships between organisational flexibility and psychological flexibility.

7.2.3 The OFS as a measure of organisational flexibility.

A CBS measure of organisational flexibility. The current research aimed to develop and validate a measure of organisational flexibility, as conceived of by Bond (2015) and guided by CBS goals. To evaluate a measure of organisational flexibility, from a CBS

perspective, it needed to be able to predict-and-influence individual and organisational effectiveness and wellbeing, with precision, scope and depth. The current research has been able to meet many of these needs. It has provided a scale for measuring organisational flexibility that is able to predict individual and organisational effectiveness and wellbeing, based on the content and criterion-related validity of the OFS. The OFS supports precision through the fidelity of its design in reflecting Bond's theoretical model (2015), and assessed by the scale's validity. The OFS supports scope through the scales' ability to perform consistently across organisations, despite their different organisational biographies (e.g. industries, markets, sizes, ages etc), as well as across individuals, despite their biographical differences. The OFS also, importantly, supports depth. Depth refers to the need for concepts to demonstrate coherence across levels of analysis and scientific domains (Hayes et al., 2012; Villatte et al., 2016). In the current research, the OFS has provided evidence of the coherence between flexibility at the individual level (i.e. psychological flexibility) and flexibility at the organisational level (i.e. organisational flexibility), supporting the theoretical concept of flexibility across levels of analysis. The OFS may also serve as a measure for the other CBS model of organisational flexibility, for prosociality, as proposed by Hayes (2010).

An OB measure of organisational flexibility. While the current research has focused on pursuing CBS goals, the OFS also offers opportunities for wider OB research to evaluate efforts for improving effectiveness and wellbeing, across levels of analysis. In OB research, a wide range of strategies have been explored for improving organisational effectiveness, including organisational learning, organisational ambidexterity, and high-reliability organisation/collective mindfulness, among others. We believe that the CBS perspective of organisational flexibility can be conceptually useful for achieving these goals, too. For example, whether organisations aspire to learn, or aspire to balance exploitation (organisational control) and exploration (mainstream 'organisational flexibility'), or aspire to

high-reliability, they can all benefit from organisational flexibility, to help them mindfully pursue their aspirational goals.

In addition, these organisational strategies for improving organisational effectiveness typically do not consider organisational wellbeing as part of the same model. In research and in industry, there has been an increase in attention towards organisational wellbeing strategies, to improve health and productivity, yet such strategies have shown mixed results, particularly at the organisational-level (Richardson & Rothstein, 2008; Daniels, Gedikli, Watson, Semkina, & Vaughn, 2017; Deloitte, 2018). We believe that the CBS perspective of organisational flexibility can be particularly relevant, for OB research and organisational practice, to focus efforts on enhancing organisational characteristics, to improve individual and organisational wellbeing (while also improving individual and organisational effectiveness). With the evidence from the current research, the organisational flexibility model and the OFS have the potential to offer useful tools to direct and support such efforts.

Furthermore, across the OB literature, there appears to be a dearth of existing measures for assessing the organisational-level behaviour, that are relevant either for the pursuit of organisational aims or for organisational mindfulness, and that are applicable over time and across situations and settings, and that predict effectiveness and wellbeing. The current research is believed to add particular value in terms of providing such a measure, that is coherent across the individual and organisational levels of analysis. Consequently, we believe that the measure of organisational flexibility, developed and validated within the current research, offers opportunities beyond CBS, and across OB.

7.2.4 A path forward for organisational flexibility to predict-and-influence.

In proposing a protocol for a pilot study, the current research has considered opportunities and challenges for the next steps in organisational flexibility research, providing a path forward for researchers. Chapter V identified the need for a full-scale intervention, in

order to test the utility of the OFS, according to CBS goals and according to gold standard research methodologies. However, based on the need for workability, the current research recommends that a pilot study is conducted first. The pilot study is still designed to provide the opportunity to further evaluate the OFS. We have seen, in the current research, that individuals' perceptions of their organisations' flexibility offer useful predictive qualities, and the opportunity to develop this understanding, further is useful. Furthermore, the pilot study is designed to be practical, offering researchers the opportunity to avoid the pitfalls of research at a larger scale. Furthermore, while the results of the empirical chapters do not assess the full requirement of prediction-*and-influence*, the pilot study protocol provides CBS with a practical path towards doing so. Therefore, the current research can be understood as adding to the CBS literature, by providing a valid measure of organisational flexibility to take forward in research, while also being practical as a simple and parsimonious tool for use in organisations.

7.3 Research Limitations

When considering the findings of these studies, it is important to also consider a number of methodological and practical limitations.

7.3.1 Methodological limitations.

Construct validity measures. For assessing the construct validity of the OFS, at the organisational level, a range of constructs were reviewed for their ability to provide clarity about the 'meaning' of the OFS, as a measure of organisational flexibility. However, the novelty of Bond's (2015) model of organisational flexibility meant that there are no known existing constructs for measuring the same concept, designed with such theoretical coherence, and with manipulability in mind. Furthermore, in mainstream literature, there was a dearth of organisational-level measures reflecting the ability to mindfully pursue organisational aims,

over time, across situations, and in various organisational settings, while also providing a context designed to alleviate individuals' defences within the organisations.

Ideally organisational-level constructs would be chosen for comparison, that would have close theoretical relationships to organisational flexibility, in order to provide strong and unambiguous support for the measure. For example, collective/organisational mindfulness was considered to be an appropriate construct for assessing the construct validity of the OFS (Sutcliffe et al., 2016). However, at the time of developing these studies, no appropriate organisational mindfulness scale was found. Much of the organisational mindfulness research was qualitative, and the four published quantitative measures of collective mindfulness had been "subjected to limited validity testing" (Sutcliffe et al., 2016, p. 64). Furthermore, these collective mindfulness measures were found to be situationally-specific, and inappropriate for application across a broad range of organisational settings. For example an item on the unidimensional Safety Organising Scale states: "When a patient crisis occurs, we rapidly pool our collective expertise to attempt to resolve it" (Vogus & Sutcliffe, 2007, p. 9); an item on the five-factor High-Reliability Organisational Perceptions scale states: "The principal welcomes challenges from teachers" (Hoy, Gage III, & Tarter, 2006, p. 247); and an item on the five-factor Organisational Mindfulness scale states: "We often update our college procedures after experiencing a problem" (Ray, Baker, & Plowman, 2011, p. 201). The specific nature of these items, and their lack of confirmed validity, was felt to be overly-limiting for the current study. Future developments within the organisational mindfulness literature, may provide useful comparative measures in future research.

In light of such challenges, organisational learning was selected, as discussed, based on the expectation that both learning and flexible organisations are able to adapt as the environment changes, through the identification of opportunities, and use of 'knowledge', towards achieving organisational goals. Organisational learning and organisational flexibility

can also be understood to share some characteristics, in terms of shared vision, open-mindedness and commitment to learning. By comparing these constructs and demonstrating their relatedness, organisational learning and its characteristics are considered to have provided a useful and adequate understanding of organisational flexibility to support construct validity, despite the limitations.

In considering the construct validity of the OFS, it can be worthwhile to note that, from a CBS perspective, the meaning of a measure is found in its *utility* for predicting-and-influencing effectiveness and wellbeing, rather than in the *validity* of its correlations with other constructs (Hayes et al., 2012; Levin & Hayes, 2009). The implication is that, if the OFS is able to predict-and-influence individual organisational effectiveness and wellbeing, with precision, scope and depth, then the CBS goals are being met. Thus, it becomes less relevant to need to know the correlates of the OFS. However, given the early stages of this research, and the CBS goals are not yet fully met, understanding how the OFS relates to existing measures is still a worthwhile exercise.

7.3.2 Practical limitations.

Sample size. In Studies II, III and IV, the number of organisations in the sample, the number of individuals within the organisations, and the imbalance in sample size between organisations were less than ideal (Heck & Thomas, 2015). The sampling adequacy was considered sufficient for performing multilevel analyses using full maximum likelihood estimation; however, a larger, more balanced sample, with improved weighting strategies, would have allowed for greater accuracy, through the use of MSEM for the tests of validity (Heck & Thomas, 2015). The sampling needs and statistical methods for multilevel analysis are important considerations for future research that seeks to replicate and/or extend the current research, with accuracy. These needs are particularly relevant for full-scale FIT

intervention studies, due to the challenges of managing large numbers of organisations in samples that are split across conditions, in order to achieve accurate results.

Subjective reports & common method bias. Despite considerable efforts on the part of the researcher to obtain objective data, the results of the current research are based exclusively on subjective reports, for both the predictor and outcome measures. However, it is noted that subjective reports can be vulnerable to social desirability reporting. For example, people may respond to a survey with the aim of inferring their organisation is performing better than it is, thus biasing results. Furthermore, using the same sources for assessing predictors and outcomes can result in common method bias (Podsakoff, MacKenzie, & Podsakoff, 2012). For example, disgruntled employees may be more likely to report their organisation as performing poorly, based on their bias, rather than on 'reality'. To minimise such biases, and reduce the risk that participants would respond based on concerns about their personal views, data confidentiality was assured, and responses were voluntary (Podsakoff et al., 2012). Also, an effort was made to 'triangulate' the organisational performance data. However, due to the relatively small organisational-level sample size, a lack of 'Key Contacts' survey responses, and missing data for these measures, the results were not sufficiently reliable to establish findings (Wall et al., 2004). Despite this limitation, comfort can be found in the consistency in the patterns of responses to items in Study I and Study II, at the individual level. Also, in Studies II, III and IV, comfort can be found in the consensus among individuals responding about their organisations, relative to the variance in responses between organisations. While agreement does not directly provide objectivity, the reliability of responses indicates their representativeness of the organisations. Furthermore, there is evidence to suggest that subjective measures of organisational performance typically provide close approximations of objective measures (Wall et al., 2004). Future research may still wish to consider incorporating objective outcome measures that are organisationally-valued.

Ceiling effects. In organisational-level studies (e.g. Studies II, III, IV and V), the request for organisations to volunteer can result in self-selection, by organisations that are likely to be more flexible. For example, organisations that are interested in their internal environment, are open to discomfort and are willing to seek better ways to pursue their goals, may be more likely to volunteer their organisation for participation in research. Indeed, the empirical studies indicated some overall negative skew for the OFS items (but not within organisations), indicating that the group of organisations that volunteered to be part of the research were likely to be more flexible than average organisations. In the cross-sectional studies in the current research, this was important to note, but it was possible to manage the data using statistical methods that were robust to non-normality. For intervention studies, this effect may be more important to consider, because if the organisations that volunteer to dedicate time and effort to an organisation-wide intervention are already flexible, the FIT intervention will only be able to evaluate effects at the upper levels of organisational flexibility, rather than exploring a shift from inflexible to flexible.

7.4 Opportunities for Future Research

The findings and implications from the current research provide opportunities for future research. This section presents opportunities in terms of their abilities for progressing the CBS goals, of prediction-and-influence, with precision, scope and depth, as well as recognising the need for organisational flexibility research to be practical and workable in ‘real world’ settings.

7.4.1 Prediction-and-influence.

The current research has provided a clear and direct path for progressing organisational flexibility research, in terms of the CBS goal of prediction-and-influence. From this point forward, we have the OFS as a scale to measure organisational flexibility, and we have a protocol for a pilot study to start assessing the utility of the OFS. Conducting the pilot

study would provide evidence for a FIT intervention's ability to improve individual effectiveness and wellbeing, by enhancing organisational flexibility (as measured by the OFS); and would provide an understanding of the feasibility and acceptability of the intervention. The results of the pilot study could then be used to inform a full-scale assessment of organisational flexibility's ability to predict-and-influence individual and organisational effectiveness and wellbeing, in line with CBS goals.

However, this intervention approach is not the only path forward for organisational flexibility research. There are plenty of additional opportunities for further developing our theoretical and practical understanding of organisational flexibility as a predictor, with further precision, scope and depth, that are made possible by the OFS (Hayes et al., 2012).

7.4.2 Prediction.

In the current research, validity studies have been used to provide useful evidence of the OFS's relationships with both psychological flexibility and organisational learning, as well as the OFS's ability to predict outcomes of mental health, work motivation, job satisfaction and organisational performance. However, it is recognised that these are preliminary results. There are myriad opportunities for further evaluations of organisational flexibility's ability to predict individual and organisational effectiveness and wellbeing. Future research can also be expected to seek evidence that increases the precision, scope and depth of our understanding of organisational flexibility. To guide such research, it can be useful to learn from the development of psychological flexibility and ACT.

Precision. A concept's precision refers to its ability to explain a particular behaviour (Hayes et al., 2012). In psychological flexibility research, one approach to seeking greater precision has been the analysis of the mid-level processes, which are targeted in ACT for enhancing psychological flexibility, as a way to explain the behaviour of psychological flexibility (Carvalho, Palmeira, Pinto-Gouveia, Gillanders, & Castilho, 2018; Gillanders et al.,

2014; Hayes et al., 2006). For progressing our understanding of organisational flexibility, similar research would be appropriate to provide a clearer understanding of the relationship between the OFS and the six Orgflex characteristics that have been proposed for enhancing organisational flexibility. Indeed, Bond suggests that future research tests the hypotheses that (a) the six characteristics of the orgflex combine to improve effectiveness and wellbeing, and (b) they do so by enhancing organisational flexibility (Bond, 2015). The opportunity to conduct such research is made possible by the OFS, and would help to develop greater precision in the concept of organisational flexibility, in line with the CBS goal.

Scope. A concept's scope refers to the range of behaviours (the larger the better) that it can explain (Hayes et al., 2012). In psychological flexibility research, establishing the scope of psychological flexibility and ACT has enabled protocols and measures to be developed for use across general contexts, as well as for specific contexts (e.g. behaviours, populations and settings). For example, protocols have been developed such as ACT for kids, ACT for chronic pain, ACT for the workplace, etc. (Flaxman et al., 2013; Turrell & Bell, 2016; Vowles, Wetherell, & Sorrell, 2009), and measures have been developed such as the WAAQ for measuring psychological flexibility in work contexts (Bond et al., 2013). Context-specific tools are appropriate because they target psychological flexibility, which has a broad scope.

In the current research, initial support for the scope of organisational flexibility has been found, based on the generalisability of the OFS across individual and organisational biographies. However, the organisational sample was mainly from professional and financial services, and the organisations were relatively more flexible than might be expected of a more random sample of organisations. It would be beneficial for future research to seek further supporting evidence of organisational flexibility's scope across more diverse samples of organisations (e.g. those experiencing varying levels of 'success', and those in different markets or sectors). Doing so may also help to identify opportunities for contextually-

sensitive protocols and measures (e.g. flexibility for poor-performing organisations, flexibility for start-ups, flexibility for financial services, flexibility for charities etc), if indeed such needs exist. For such research, the OFS provides a tool to help confirm the scope of organisational flexibility, and for supporting the development of context-specific protocols and measures.

Depth. A concept's depth refers to its coherence across levels of analysis and scientific domains (Hayes et al., 2012). In the current research, we have discussed coherence across levels between organisational flexibility and psychological flexibility. It would be beneficial for future research to extend this analysis to the relationships between the Orgflex characteristics and the Hexaflex processes. Bond has indicated that because each of the characteristics of the Orgflex, serves an equivalent function to the processes in the same positions of the Hexaflex, they may be hypothesised "to promote, to varying degrees, in individual workers, the corresponding psychological process on the Hexaflex" (Bond, 2015, pp. 8–9), supporting the coherence of flexibility across levels of analysis.

Furthermore, it would be beneficial for future research to seek coherence across domains. For organisational flexibility, the OFS provides a practical tool for assessing the coherence of flexibility between the domains of OB and economics, and beyond, to evolutionary theory. Until the current OB-based research, the CBS conceptualisation of organisational flexibility has been applied based on Hayes' (2010) model, and informed by Ostrom's (1990) design principles for group efficacy. Yet there have been no known measures for evaluating the Hayes' (2010) model, or Ostrom's (1990) design principles. Consequently, the OFS offers a potential solution for research and practice using Hayes' (2010) model/Ostrom's (1990) design principles. In doing so, the OFS also provides an opportunity for evaluating the coherence between the Bond/OB and Hayes/Ostrom perspectives, bringing

together the ‘reticulated’ (i.e. a networked) approach to the development of organisational flexibility, by identifying how each model serves the CBS goals.

Furthermore, both Ostrom’s work (Wilson, Ostrom, & Cox, 2013) and CBS principles (Hayes, Sanford, & Chin, 2017) have been explicitly linked with group-level evolutionary theory. To explore these relationships, empirically, a measure of organisational flexibility will be needed. This creates another potentially exciting opportunity for the OFS.

7.4.3 Between theory and practice

To further the current research, we need to continue to develop the concept and model of organisational flexibility to be practical and workable for use in the ‘real world’, in pursuit of CBS goals (Hayes et al., 2012). Psychological flexibility and ACT research have shown that it can be beneficial to apply theoretical concepts and models, in practice, early on in development, in order to avoid a disconnection between theory and practice that can otherwise slow down scientific progress. Examples of psychological flexibility being applied in practice can be found in the earliest ACT trials (Strosahl, Hayes, Bergan, & Romano, 1998). “Knowing early on that outcomes were good, when a high level of control was abandoned, and treatment was tested in a more ‘real world’ way, supported the practical importance of the whole development program” (Hayes et al., 2012, p. 13).

Similarly, for the development of organisational flexibility and FIT research, it may be beneficial to identify opportunities for making progress in practice, even if the research needs to be less constrained by methodological control, than would otherwise be ideal. Supporting practical application in this way, is not intended to discourage the progress of methodologically-rigorous research that “scientists rightly prize” (Hayes et al., 2012, p. 14), such as the utility research, outlined for the full-scale FIT intervention. Instead, it is intended to *also* encourage workable progress, with the early practical application of FIT, across a breadth of organisational contexts that do not necessarily follow the same level of

methodological rigour. Indeed, it can be useful to see this approach as encouraging *flexibility* in research: i.e. with an openness to noticing multiple alternative strategies for making progress, and selecting steps forward according to the opportunities in the situation, and despite the challenges, for pursuing research goals. In this way, research and practice can be used to inform one another, and help individuals and organisations to be more effective and healthy, in line with CBS goals

7.5 General Conclusions

The aim of the current thesis was to develop and validate a measure of organisational flexibility, based on Bond's (2015) conceptualisation and model, and in line with CBS goals. The current research has met this aim with the OFS, and gone beyond it to propose an approach to assessing the utility of the measure, providing a path for the next steps in organisational flexibility research. In this way, it is believed that the current research has provided a valuable and unique contribution to this area. The findings from the series of four empirical studies show good support for the OFS as a brief and psychometrically sound measure of organisational flexibility, based on its relationships with psychological flexibility and organisational learning scales that reflect the theoretical frame of organisational flexibility. The findings also showed the OFS to offer validity, beyond psychological flexibility for mental health, work motivation, job satisfaction, at the individual level; and beyond organisational learning for work motivation, job satisfaction and organisational performance, at the individual and organisational levels. Furthermore, the pilot study protocol provides an approach towards assessing the utility of the OFS. Overall, the CBS research into organisational flexibility is still in its early stages. The current research has contributed by providing a coherent path from the theoretical model of organisational flexibility (Bond, 2015), towards its practical application for improving effectiveness and wellbeing in the 'real world', and consequently, towards helping organisations to survive and thrive, while also helping the people that work within them to thrive too.

Chapter 8. References

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Chapter 9. Appendices

Appendix 1. Item Content Adequacy Matrix (Study I)

Content Adequacy Matrix. The thirty-three items generated and approved by expert assessors for content validity.

Item	Flesch-Kincaid Grade Level	Purpose-driven Action		Dual Processes		Mindfulness	
		Purpose & Goals	Planned Action	Awareness	Situational Responsiveness	Effective Job Design	Openness to Discomfort
1. My organisation helps people to see how their work relates to and affects the organisation's goals	10.6 (4.7)	X	X	X		X	
2. My organisation encourages people to ask for feedback on how they are progressing with their goals	9.1 (6.1)	X	X	X			X
3. My organisation takes decisions based on the organisation's vision or long-term goals, rather than on its image or brand.	11.1 (6.4)	X	X	X			
4. My organisation continues doing what works, while also looking for better ways to reach its goals	9.8 (6.9)	X	X	X			
5. My organisation reviews its goals, and is willing to adapt them if they are no longer in line with the organisation's vision	11.8 (7.5)	X	X		X		X
6. If my organisation finds a better way to achieve its goals, it is willing to change its plans	7.8 (5.2)	X	X		X		
7. My organisation trusts its people to make goal-driven choices, without always having to ask for permission first	10.4 (7.8)	X	X			X	X
8. My organisation believes that as long as a goal is achieved well, the result doesn't have to be perfect	8.6 (6.1)	X	X				X
9. My organisation still pursues its goals, even if they seem big or far away	7.6 (4.2)	X	X				X
10. My organisation encourages people to reflect on their progress towards their goals	9.7 (5.8)	X	X				X

Item	Flesch-Kincaid Grade Level	Purpose-driven Action		Dual Processes		Mindfulness	
		Purpose & Goals	Planned Action	Awareness	Situational Responsiveness	Effective Job Design	Openness to Discomfort
11. My organisation's decisions are guided by its vision, even when times are tough	9.4 (5.8)	X	X				X
12. My organisation does not use people, processes and IT as excuses for not reaching its goals	8.4 (5.4)	X		X	X		X
13. My organisation is more interested in its image or brand, than its vision	8.5 (4.9)	X		X	X		
14. My organisation only chooses to adapt to market changes, if doing so is in line with its vision	9.1 (6.5)	X		X	X		
15. In my organisation, people are involved in shaping their own roles	8.0 (3.7)	X		X		X	X
16. My organisation complains that its people, processes and IT are reasons why it doesn't achieve its goals	9.8 (7.0)	X			X		X
17. My organisation is keen to adapt to the latest market changes, even if they aren't in line with the organisation's vision	12.3 (7.8)	X			X		X
18. My organisation encourages its staff to learn from their failures, as well as their successes	8.4 (5.2)		X	X	X		X
19. My organisation encourages people to seek diverse opinions, to help them to make better choices	9.9 (6.8)		X	X		X	X
20. My organisation encourages people to try to improve how they work, even if it doesn't always work out	9.1 (6.5)		X	X		X	X
21. My organisation expects managers to keep a rigid control over its people, to stop things from going wrong	11.1 (8.5)		X		X	X	X
22. My organisation encourages people to change the way they work together, if it helps them to be more effective	9.8 (7.3)		X		X	X	X

Item	Flesch-Kincaid Grade Level	Purpose-driven Action		Dual Processes		Mindfulness	
		Purpose & Goals	Planned Action	Awareness	Situational Responsiveness	Effective Job Design	Openness to Discomfort
23. My organisation encourages people to ask for feedback, to improve their work	8.8 (4.8)			X	X	X	X
24. People in my organisation keep each other up-to-date, even when it's not convenient to do so	9.1 (6.5)		X	X	X	X	X
25. People in my organisation share their work problems, in order to help each other find and apply solutions	10.4 (7.8)			X	X	X	X
26. My organisation treats mistakes as opportunities to learn, rather than finding someone to blame	11.8 (8.4)			X	X	X	X
27. People in my organisation use clear processes that help them to find solutions when they disagree	10.6 (7.6)			X	X	X	X
28. My organisation is keen to hear people's views on better ways to respond to business needs	9.1 (6.1)	X		X	X		X
29. My organisation gathers and learns from market feedback, even though doing so could lead to difficult changes	10.5 (7.7)			X	X		X
30. My organisation looks for ways to improve, despite the effort that it takes	7.6 (4.0)			X	X		X
31. My organisation uses feedback from its staff to learn about and improve its processes	9.3 (5.9)			X		X	X
32. People in my organisation respect each other's roles and expertise, even when their views differ	10.7 (7.6)			X		X	X
33. My organisation discourages people from trying new ways of working, in case it doesn't work out	8.4 (5.4)		X		X	X	X

Note: Flesch-Kincaid Grade Level score in parentheses refers to the score when the word "organisation" is replaced by "firm"

Appendix 2. Survey (Study I)

2.1 Introductory Information

How Effective Is Your Organisation?

Thank you for landing here! This is a survey about organisations. If you currently work in an organisation and are over 18, I would very much welcome your participation. My name is Annie Gascoyne, and I am conducting research for a PhD in Organisational Behaviour at Goldsmiths College, University of London. This survey is the first part of a study into how organisations notice and respond to situations.

Taking Part

Participation involves completing a confidential survey that should take around 15 minutes to complete. It includes some basic biographic questions about you and the type of organisation you work for; these are followed by questions about your views on your work and on the organisation (using simple rating scales to respond to each statement). If you see an error message while completing the survey, this indicates that you have missed a question. None of the questions are mandatory, but you are encouraged to answer as fully as possible, to help with the data analysis. If you do intentionally wish to leave a response blank, you can ignore the message and click 'next' at the bottom of the page. Please read the Confidentiality & Participation statement below, and complete the Informed Consent, before proceeding.

If you have any questions about this study, or your participation in it, please do not hesitate to contact me, at a.gascoyne@gold.ac.uk

Confidentiality & Participation

Your participation is voluntary: You are free to withdraw at any time, and you do not have to give any explanation for doing so. To withdraw, please email me with your Participant ID (which you will be asked to create, below). In that event, all the information that you provided will be immediately destroyed. The information that you supply in this study will remain confidential, and if published, will not be individually identifiable as yours.

This project has been approved by the Institute of Management Studies Ethics Committee of Goldsmiths College, University of London.

2.2 Biographical Questions

Part 1 – About You

1. What is your age? _____
2. What is your gender?
 - Male
 - Female
 - Other (please state) _____
3. Which of the following most closely describes your ethnic group?
 - White / Caucasian
 - Latino / Hispanic
 - Middle Eastern
 - African
 - Caribbean
 - South Asian
 - East Asian
 - Mixed
 - Other (please state) _____
4. Which of the following most closely describes your highest education level?
 - Lower Secondary School (e.g. GCSE or equivalent)
 - Upper Secondary School (e.g. A Level or equivalent)
 - Bachelor's degree
 - Master's degree
 - Doctoral degree or equivalent
5. Where is your main country of work? _____
6. Which of the following most closely describes your current employment status?
 - Volunteer (unpaid)
 - Employed
 - Self-Employed (employing others)
 - Self-Employed (not employing others)
7. Which of the following most closely describes your work schedule?
 - Full-Time
 - Part-Time
8. Which of the following most closely describes your seniority?
 - Intern / Apprentice
 - Employee / Staff Member
 - Junior Manager / Supervisor
 - Manager
 - Executive / Senior Manager
 - Business Head / CEO

2.3 Debrief

Further background to this study: Organisational Flexibility

This study is the first step in the design of a new measure of organisational flexibility. In this context, organisational flexibility describes an organisation that is driven by an overall purpose/vision and long-term goals; it is one that is alert to the opportunities and challenges in its internal and external environment; and it will choose to react, adapt or maintain its response to the environment, but only if the action is in line with its overall purpose, rather than in response to any number of other distractions (e.g. a cultural fixation on 'the way we do things here', or a change in the market that is unrelated to the organisation's long-term aims). It is theorised that this type of flexible organisation is more effective overall, and promotes greater well-being for its staff.

This theory is based on research about flexibility in individuals, which has been shown to be an important predictor of our behavioural effectiveness and well-being. Flexible individuals are those who are able to base their actions more on what they value, and their value-driven goals, rather than on thoughts, feelings, urges, memories and impulses (including fears and anxiety, or even daydreams) which can deter them from taking goal-directed action. It is hypothesised that individual and organisational flexibility are closely related, and influence one another.

The broader intention of this research is that being able to measure organisational flexibility will provide us with a tool to help predict the effectiveness and resilience of an organisation is (and the individuals within it); and one that will provide a model to guide improvement in organisational and individual effectiveness and wellbeing.

Thank you again for your participation. If you have any questions about this study, or your participation in it, please do not hesitate to contact me.

Also, if you think that your whole organisation might be interested in participating in a future stage of this research, please do get in touch.

Annie Gascoyne

Email address: a.gascoyne@gold.ac.uk

Appendix 3. EFA Parallel Analysis Output (Study I)

Output of parallel analysis, indicating a single clear factor, and two potential factors

	Meets criteria for inclusion in factor rotation	Root	Raw Data	Percentile	Difference between raw data and percentile
1	Yes	6.32	0.43	0.52	5.800
2	Borderline	0.43	0.34	0.40	0.030
3	Borderline	0.35	0.27	0.32	0.030
4	No	0.18	0.2	0.26	-0.080
5	No	0.14	0.15	0.19	-0.050
6	No	0.07	0.10	0.14	-0.070
7	No	0.00	0.05	0.09	-0.090
8	No	-0.04	0.00	0.04	-0.080
9	No	-0.05	-0.04	-0.01	-0.040
10	No	-0.09	-0.09	-0.05	-0.040
11	No	-0.13	-0.13	-0.1	-0.030
12	No	-0.16	-0.17	-0.14	-0.020
13	No	-0.18	-0.22	-0.18	0.000
14	No	-0.2	-0.28	-0.23	0.030

Appendix 4. Organisational Recruitment Information (Study II, III & IV)

4.1 Recruitment Media

For recruiting organisations, a range of complimentary media were used to share brief, business-friendly content, to inform organisations about the research.

Website. A website was created to provide a central link to all recruitment materials:

<http://orgflex.blogspot.co.uk/>

One-pager. A one-page introduction and invitation to the research was designed for organisations to be able to quickly see 1) what the research was about, 2) what was needed from them, and 3) what was the benefit to them. This was made available on the website, and was also used in recruitment emails.

Invitation: Free Organisational Insight

Doctoral Research by Annie Gascoyne
Institute of Management Studies, Goldsmiths

Next Steps
Email me, Annie Gascoyne, to sign up or ask any questions:
a.gascoyne@gold.ac.uk
Or watch a short, business-friendly video-guide to find out more about organisational flexibility and my research:
orgflex.blogspot.co.uk

Introducing Organisational Flexibility
Imagine your organisation pursuing its aspirational goals, even in the face of challenges, using an approach that also helps its employees towards living deep, rich, meaningful lives, too.
My research is exploring a theory that suggests that organisational flexibility may be just such an approach.
Join the study and be the first to find out!

Get Involved! It's Easy
For each participating organisation:
• 2 x **anonymous surveys**, completed by 100* employees
• **15 minutes** per survey
• **6 months** between surveys

What's in it for you?
Receive free practical advice on how to help your organisation to thrive.
In return for participation, your organisational will receive:
• **A free Insight Report** on the flexibility of your organisation, relative to others
• **A free Insight Seminar** (or webinar*) to learn evidence-based insights and recommendations to help your organisation and employees to become more flexible, and to thrive.

*Smaller data sets from SMEs are also welcome.

*Seminar expenses are not included. A webinar will be provided for those unable to attend the seminar at Goldsmiths Campus, London.

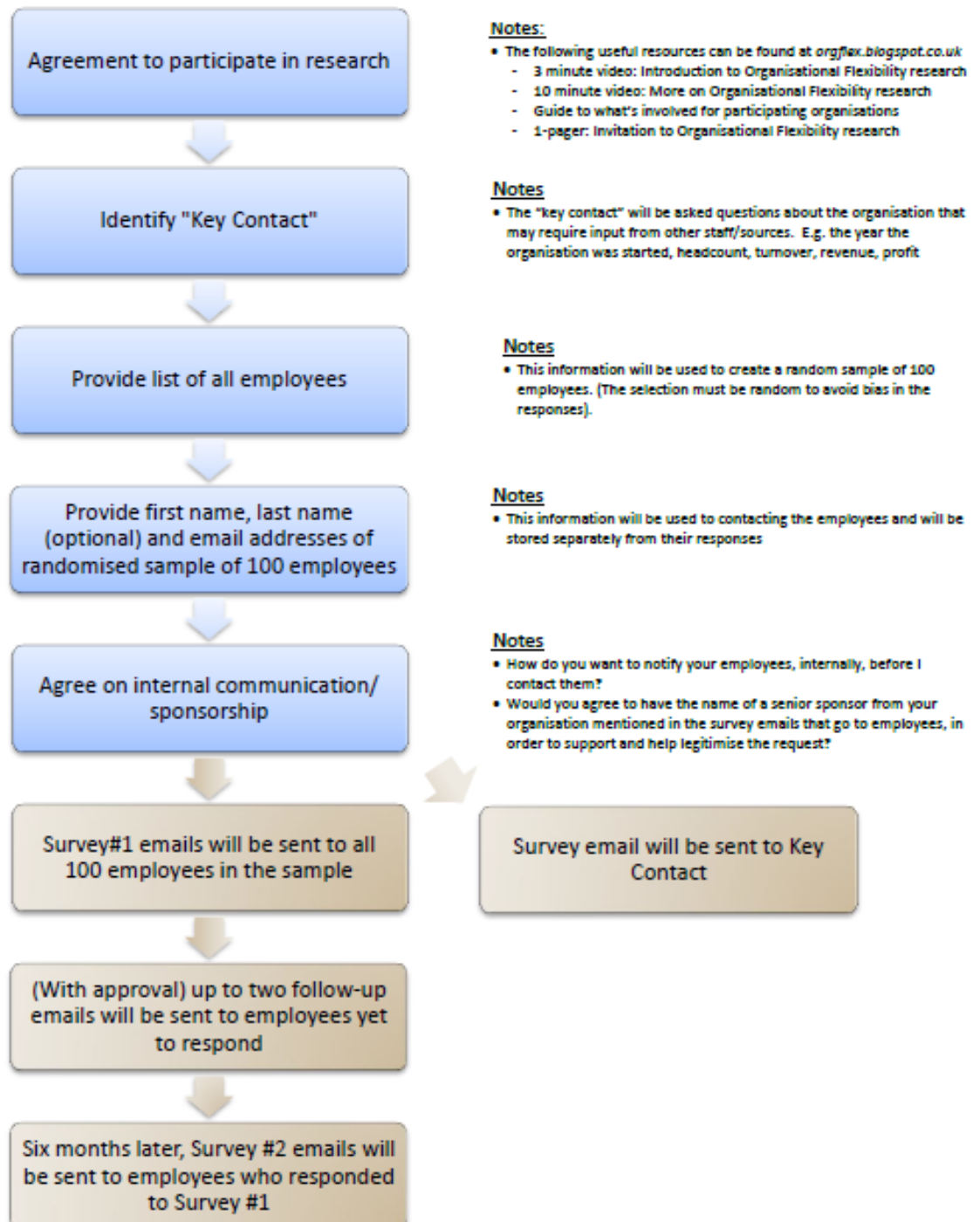
Goldsmiths
UNIVERSITY OF LONDON

Recruitment presentation. Two short video presentations were recorded, expanding on the points highlighted in the one-pager. These were made accessible on YouTube and on the website:

- <https://youtu.be/lkAtd-HGb8k> (3 mins)
- https://youtu.be/uG_eO8qOsD8 (10 mins)

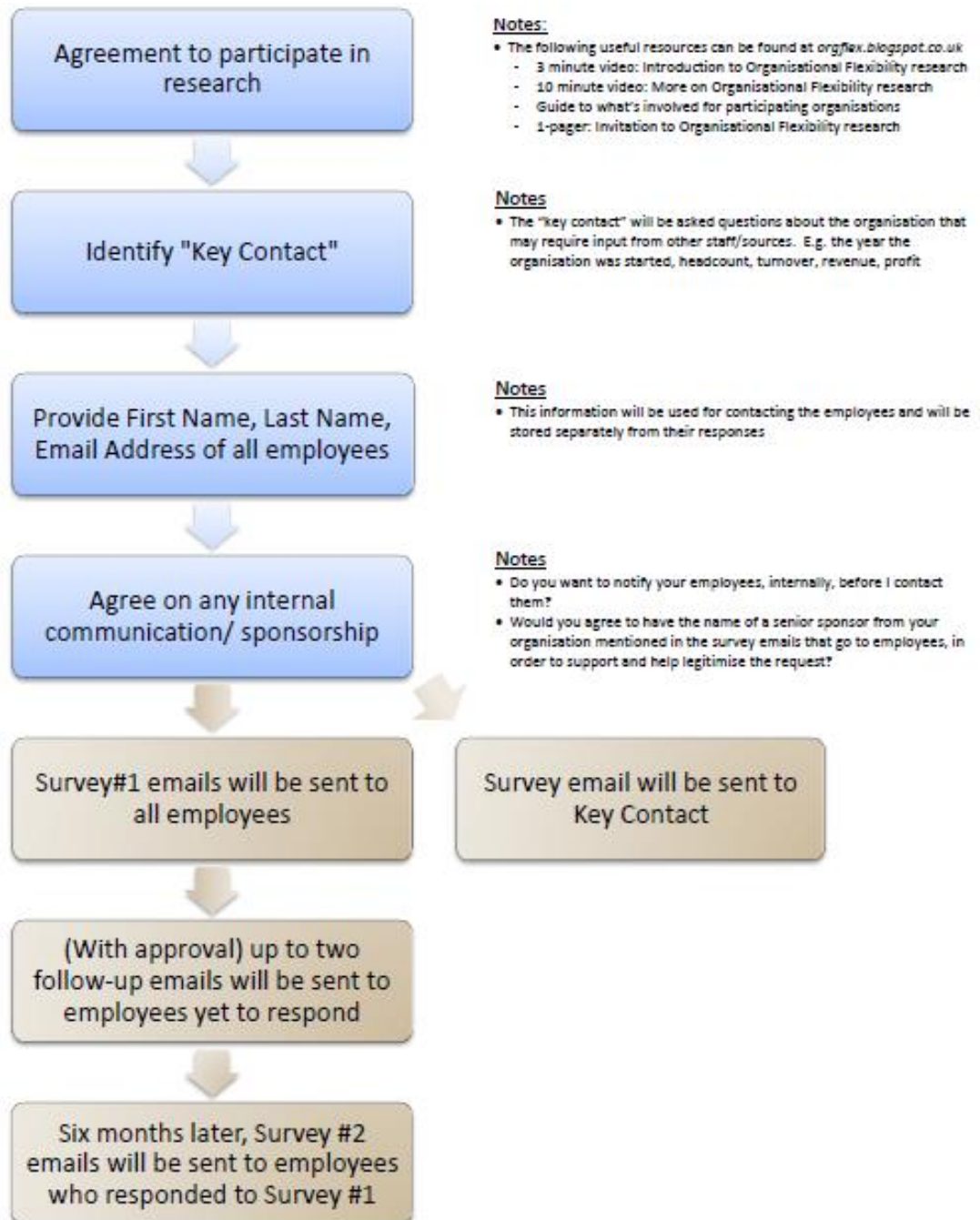
4.2 Process Overview for Large Organisations

For large organisations that were interested in participating and wanted a summary of participation process, the following process flow was provided.



4.3 Process Over for Small- and Medium-sized Organisations

For small- or medium-sized organisations that were interested in participating and wanted a summary of participation process, the following flow was provided.



4.4 Survey Procedures

For organisations that were interested in participating and wanted more detail about the process of participation, the following two-page guide was provided.

Organisational Flexibility: Survey Guide

Overview

Each organisation in this research will be asked to complete some straightforward surveys. There are two types of surveys:

- the first seeks one-time information from a single key contact;*
- the second seeks information, twice, from a random selection of employees about their views of their working environment.*

Surveys

Key Contact Survey

At the beginning of the research, I will ask a single key contact from each organisation to respond to some questions. This key contact can be anyone within the organisation with the knowledge and authority to respond to factual 'biographic' questions about the organisation. These questions include: the size of the organisation (in terms of numbers of employees and revenue), industry, country, employee turnover etc. This information will help provide comparisons between the various organisations, and will also help to clarify whether these biographical features have any impact on the results of my research. When reporting the research findings, organisations will not be individually identifiable. We will protect the identity of your organisation by simply referring to it as 'organisation A', for example.

Employee Survey

For organisations that have fewer than 100 employees, we request that all employees within the organisation be asked to respond to the survey. For organisations with more than 100 employees, we request that 100 employees (selected using randomised sampling – which I would gladly manage) respond to the survey. For consistency across organisations, I would ask for the respondents to be employees only (not contractors, consultants or associates). The questions in this survey include some basic 'biographic' questions about the employee (e.g. age, country, length of service with the organisation etc.), and then several sets of questions asking about their views on their work and the organisation, using simple rating scales to respond to statements.

Steps

Contacting the employees: *The selected employees would be emailed the survey; sent from me and distributed using survey software.*

Anonymity: *In order that I am able to email the same set of employees, twice, I would need to hold contact information about them i.e. email address and name. However, the survey tool enables me to hold this contact information separately from their response data. Only I and my university supervisor (Dr Jo Lloyd) have access to both of these sets of data. Even if the data is published, no participant will be individually identifiable. Their names and email addresses will not be used for anything beyond this specific piece of research.*

Engagement: *To encourage the employees to respond, it would be helpful to have the research endorsed by a senior member of staff (e.g. the key contact, Head of HR etc.), allowing me to use their name and to reference their support within my email. Other appropriate methods of endorsement may be applicable and encouraged, depending on the organisation.*

I would propose a two week window for employees to complete their survey. For those who haven't completed it after one week, I would propose a follow-up email. For those who haven't completed it after 13 days, I would propose a second follow-up email. (If the response rate is low to the initial survey, in the larger organisations it may be appropriate to select additional employees to participate). Organisations may propose alternative approaches to this timeline and to the email follow-ups, if there is a more appropriate suggestion for their employees.

Only those employees who responded to the first survey will be contacted to take part in the second survey, six months later. For this second survey, we would recommend the same procedure for contacting and following up with the participants, as above.

Organisational Insights

Following successful completion of both sets of surveys, organisations will be eligible to receive a personalised report about their organisation and how it compares with the other participating organisations. They will also be invited to join a seminar, with the other participating organisations, to hear about the insights from the research, and how it might be applied into their businesses. It will also be an opportunity to hear about related evidence-based insights and advice from the Institute of Management Studies at Goldsmiths, University of London.

Appendix 5. Key Contacts Survey (Study II & IV)

5.1 Introductory Email

Note: Emails were based on this template. However, exact wording was customised for each organisation, according to their needs.

Dear \${m://FirstName}

You have been identified as a key contact, at \${e://Field/OrgName}, to provide biographical information about your organisation for PhD research (in conjunction with Goldsmiths, University of London) . The research seeks to help organisations, and the employees that work within them, to be more resilient, more adaptable and more able to thrive.

The information you provide will be used in statistical analysis, together with survey data collected from a sample of employees in your organisation. These datasets will help us to understand relationships between employee and organisational characteristics, perceptions and performance.

The information you provide is confidential. Only I and my PhD supervisor (Dr Jo Lloyd) will have access to the data. When reporting the research findings, your organisation will not be individually identifiable, but referred to as 'organisation A', for example.

Further information about the research will be provided within the survey.

To access the survey, please click on the following link: \${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser: \${l://SurveyURL}

If you have any questions about this study, or your participation in it, please do not hesitate to email me.

Kindest regards

Annie

5.2 Introduction

About Your Organisation

Thank you very much for taking part in this study. As the key contact for your organisation, you will be asked to provide biographical information about your organisation, including its industry, age, headcount, revenue etc. The information you provide will be stored securely and confidentially.

For accurate analysis, it is very important that the data you provide is as accurate and complete as possible. If you do not have the answers to hand, please obtain them from the most appropriate source available to you. You do not have to complete the survey in one sitting; you may pause at any time and come back to the question you were working on. While we would like full responses, no question is mandatory. So, if you do intentionally wish to leave a response blank, you may do so, and ignore the message that will appear when you click 'next' at the bottom of the page.

If you have any questions, comments or concerns, please do not hesitate to get in touch with me: Annie Gascoyne (a.gascoyne@gold.ac.uk).

5.3 Biographical Questions

About Your Organisation

1. Where is the headquarters of your organisation? _____
2. Which of the following best describes your organisation's market?
 - Local/Regional
 - National
 - International
3. Which of the following most closely describes the sector of your organisation?
 - Private Sector (incl. limited companies and PLCs)
 - Public Sector (incl. state-maintained organisations, nationalised institutions and local authorities)
 - Third Sector (incl. charities, NGOs, voluntary sector)
4. Is your organisation a publicly traded company?
 - Yes
 - No
5. Which of the following most closely describes the industry of your organisation?
 - Administrative / Support Services
 - Agriculture, Fisheries, Forestry, Mining
 - Construction
 - Education
 - Financial Services
 - Health / Social Services
 - Information / Communication
 - Leisure / Hospitality
 - Manufacturing
 - Professional Services
 - Public Administration
 - Real Estate
 - Transport / Storage
 - Utilities
 - Wholesale / Retail Trade
6. In which year was your organisation founded? _____
7. How many people work for your organisation (do not include external consultants and third-party providers)? _____

5.4 Debrief

Thank you!

If you have any questions about this study, or your participation in it, please feel free to contact me:
Annie Gascoyne (a.gascoyne@gold.ac.uk).

About This Research

This survey has been about **Organisational Flexibility**.

In this context, organisational flexibility describes an organisation that is able to thrive, pursuing goals that are in line with its overall purpose even in the face of challenges, using an approach that we believe will also help the employees to thrive too.

Initial studies showed a strong link between how flexible people see their organisations to be, and how satisfied they are with your jobs, how likely they are to leave their organisations, and how flexible/resilient they are as individuals (indicating their personal effectiveness and well-being).

The broader intention of this research is to enable us to measure organisational flexibility, providing us with a tool to help predict the effectiveness, agility and resilience of organisations (and the individuals within them); and one that will provide a model to guide improvement in organisational and individual productivity and wellbeing.

You can find out more about this organisational flexibility research at: orgflex.blogspot.co.uk

Appendix 6. Main Survey (Study II, III & IV)

6.1 Introductory Email

Note: Emails were based on this template. However, exact wording was customised for each organisation, according to their needs.

Dear \${m://FirstName}

As you may be aware, \${e://Field/OrgName} is taking part in PhD research that seeks to help organisations, and the staff that work within them, to be more resilient, more adaptable and more able to thrive.

Participation in the research involves completing some questionnaires, and you and your colleagues are all being asked to participate on behalf of your organisation, by taking two brief surveys: one now and one in six months' time.

Please help us to understand and improve the workplace, by contributing your experiences in this questionnaire, enabling us to build a robust, evidence-based approach to organisational development.

Taking Part

This survey takes approximately **15 minutes to complete**. You do not have to complete it in one sitting; you may pause at any time and come back to the question you were working on.

The survey asks questions about you, how you feel at work, and your views on your work environment and your organisation; mostly using **simple rating scales** in response to statements. Please do not spend time deliberating over any one question. You may find that your answer to any one question would vary depending on the context. This is entirely normal and to be expected. In these cases, please select the response which represents the most typical situation or reaction.

You are encouraged **to answer the questions as fully and as honestly as possible**, as it is very important for accurate data analysis. However, no question is mandatory, so if you do intentionally wish to leave a response blank, please ignore the message that will appear, and click 'next' at the bottom of the page.

The information that you provide is confidential, nobody other than me and Dr Jo Lloyd (my PhD supervisor) will have access to your responses. Furthermore, your name and email address will be

held securely and separately from your survey responses to ensure that your data is not personally identifiable. Any results shared with your organisation will be at an aggregated level.

Further information about the research will be provided at the end of the survey.

To access the survey, please click on the following link: [\\${!://SurveyLink?d=Take the Survey}](#)

Or copy and paste the URL below into your internet browser: [\\${!://SurveyURL}](#)

If you have any questions about this study, or your participation in it, please do not hesitate to email me.

Kindest regards

Annie

6.2 Introductory Information

You and Your Organisation

Thank you very much for taking part in this study about you and your organisation. If you agree to the confidentiality and participation information below, you can start the survey by clicking the "I AGREE" button at the bottom of the page.

Confidentiality & Participation

- Your participation is voluntary: You are free to withdraw at any time, without needing to give any explanation for doing so.
- To withdraw, just email me, providing me with the email address that was used to contact you; then all the information that you provided will be immediately destroyed.
- The information that you supply in this study will remain confidential and, if published, will not be individually identifiable as yours. Your name and email address will be held securely and separately from your survey responses to ensure that your data is not personally identifiable.
- Your organisation will be provided with summarised findings only, aggregated from all the participants in your organisation. Your individual responses will not be shared with anyone.
- This project has been approved by the Institute of Management Studies Ethics Committee of Goldsmiths College, University of London

If you have any questions, please do not hesitate to get in touch with me: Annie Gascoyne (a.gascoyne@gold.ac.uk).

6.3 Biographical Questions

To help us to learn a little about you, please start by answering the following 8 brief biographical questions:

1. How old are you?

2. What gender do you identify as?

Male

Female

Other (please state) _____

3. Which of the following most closely describes your highest education level?

No formal qualifications

Lower Secondary School (e.g. GCSE or equivalent)

Upper Secondary School (e.g. A Level or equivalent)

Bachelor's degree

Master's degree

Doctoral degree or equivalent

4. Where is your main country of work? _____

5. Which of the following most closely describes your current employment status?

Volunteer (unpaid)

Employed

Self-Employed (employing others)

Self-Employed (not employing others)

6. Which of the following most closely describes your work schedule?

Full-Time

Part-Time

7. Which of the following most closely describes your seniority?

Intern / Apprentice

Employee / Staff Member

Junior Manager / Supervisor

Manager

Executive / Senior Manager

Business Head / CEO

8. How many years have you worked for your current organisation? _____

6.4 Debrief

Thank you!

If you have any questions about this study, or your participation in it, please feel free to contact me:
Annie Gascoyne (a.gascoyne@gold.ac.uk).

About This Research

This survey has been about Organisational Flexibility.

In this context, organisational flexibility describes an organisation that is able to thrive, pursuing goals that are in line with its overall purpose even in the face of challenges, using an approach that we believe will also help the employees to thrive too.

Initial studies showed a strong link between how flexible people see their organisations to be, and how satisfied they are with your jobs, how likely they are to leave their organisations, and how flexible/resilient they are as individuals (indicating their personal effectiveness and well-being).

The broader intention of this research is to enable us to measure organisational flexibility, providing us with a tool to help predict the effectiveness, agility and resilience of organisations (and the individuals within them); and one that will provide a model to guide improvement in organisational and individual productivity and wellbeing.

You can find out more about this organisational flexibility research at: orgflex.blogspot.co.uk

Appendix 7. Participating Organisations: Biographical Summary (Study II, III & IV)

Org Code	Sampling Approach	HQ Country	Market	Sector	Industry	Year Founded	Headcount	Participant Count	Participants as % of Headcount
AA	Formal	United Kingdom	National	Private	Wholesale / Retail	2007	3	3	100%
AB	Formal	United Kingdom	International	Private	Financial Services	2010	10	8	80%
AC	Formal	United Kingdom	International	Private	Professional Services	2003	160	51	32%
AD	Formal	United Kingdom	National	Private	Information / Communications	2006	10	4	40%
AE	Formal	Norway	International	Private	Information / Communications	2014	7	7	100%
AF	Formal	United Kingdom	International	Private	Professional Services	1992	12	9	75%
AG	Formal	United Kingdom	Local / Regional	Private	Wholesale / Retail	1979	65	7	11%
AH	Formal	United Kingdom	International	Private	Professional Services	2011	10	9	90%
AJ	Formal	United Kingdom	International	Private	Professional Services	2008	55	31	56%
AK	Informal	Canada	International	Private	Professional Services	2011	4,300	15	< 1%
AL	Formal	United Kingdom	International	Public	Education	2002	16	10	63%
AM	Formal	United Kingdom	National	Private	Financial Services	2013	1	1	100%
AN	Formal	United Kingdom	International	Private	Wholesale / Retail	2007	3	1	33%
AO	Formal	United Kingdom	Local / Regional	Private	Information / Communications	2003	55	34	62%
AP	Formal	United Kingdom	National	Private	Information / Communications	2013	3	1	33%
AQ	Formal	United Kingdom	National	Private	Professional Services	1995	17	14	82%
AR	Formal	United Kingdom	National	Private	Professional Services	1994	5	5	100%
AS	Formal	United Kingdom	Local / Regional	Tertiary	Health	1940	47	30	64%
AT	Formal	USA	International	Private	Wholesale / Retail	2011	300	22	7%
AU	Formal	United Kingdom	National	Tertiary	Education	1991	22	11	50%
BA	Informal	USA	International	Private	Professional Services	1945	21,000	4	< 1%
BB	Informal	United Kingdom	Local / Regional	Public	Public Administration	1965	2,400	7	< 1%
BC	Informal	United Kingdom	International	Tertiary	Health	1919	1,500	9	1%
BD	Informal	USA	International	Private	Professional Services	1911	380,000	4	< 1%
BE	Informal	USA	International	Private	Construction & Professional Services	1946	26,000	7	< 1%

Org Code	Sampling Approach	HQ Country	Market	Sector	Industry	Year Founded	Headcount	Participant Count	Participants as % of Headcount
BF	Informal	United Kingdom	International	Private	Financial & Professional Services	1849	20,000	6	< 1%
BG	Informal	USA	International	Private	Financial Services	1868	66,000	7	< 1%
BH	Informal	Australia	International	Private	Construction & Professional Services	1869	800	7	1%
BI	Informal	USA	International	Private	Information / Communications	1975	114,000	2	< 1%
BJ	Informal	United Kingdom	National	Private	Professional Services	1986	50	5	10%
BK	Informal	United Kingdom	International	Private	Professional Services	1977	23	2	9%

Appendix 8. Measures (Study III & IV)

8.1 Psychological Flexibility (Study III & IV)

Below you will find a list of 7 statements. Please rate how true each statement is for you, using the scale below to make your choice:

	Never True	Very Seldom True	Seldom True	Sometimes True	Frequently True	Almost Always True	Always True
1. I am able to work effectively in spite of any personal worries that I have	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I can admit to my mistakes at work and still be successful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I can still work very effectively, even if I am nervous about something	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Worries do not get in the way of my success	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I can perform as required no matter how I feel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I can work effectively, even when I doubt myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. My thoughts and feelings do not get in the way of my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8.2 Organisational Learning Orientation (Study III & IV)

Please respond according to how much you agree with the following statements, as they relate to your organisation:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
1. There is a commonality of purpose in my organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. There is total agreement on our organisational vision across all levels, functions and divisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. All employees are committed to the goals of this organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Employees view themselves as partners in charting the direction of the organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. We are not afraid to reflect critically on the shared assumptions we have made about our customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Personnel in this enterprise realise that the very way they perceive the marketplace must be continually questioned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. We rarely collectively question our own bias about the way we interpret customer information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Managers basically agree that our organisation's ability to learn is the key to our competitive advantage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The basic values of this organisation include learning as key to improvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. The sense around here is that employee learning is an investment, not an expense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Learning in my organisation is seen as a key commodity necessary to guarantee organisational survival	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8.3 General Health Questionnaire (Study IV)

We would like to know how your health has been in general, over the last few weeks. Please answer ALL the questions simply by selecting the answer which you think most nearly applies to you.

Remember that we want to know about present and recent complaints, not those you had in the past. It is important that you try to answer all the questions. Have you recently.....

1. Been able to concentrate on whatever you're doing?	<input type="radio"/> Better than usual	<input type="radio"/> Same as usual	<input type="radio"/> Less than usual	<input type="radio"/> Much less than usual
2. Lost much sleep over worry?	<input type="radio"/> Not at all	<input type="radio"/> No more than usual	<input type="radio"/> Rather more than usual	<input type="radio"/> Much more than usual
3. Felt that you are playing a useful part in things?	<input type="radio"/> More so than usual	<input type="radio"/> Same as usual	<input type="radio"/> Less useful than usual	<input type="radio"/> Much less useful
4. Felt capable of making decisions about things?	<input type="radio"/> More so than usual	<input type="radio"/> Same as usual	<input type="radio"/> Less so than usual	<input type="radio"/> Much less than usual
5. Felt constantly under strain?	<input type="radio"/> Not at all	<input type="radio"/> No more than usual	<input type="radio"/> Rather more than usual	<input type="radio"/> Much more than usual
6. Felt you couldn't overcome your difficulties?	<input type="radio"/> Not at all	<input type="radio"/> No more than usual	<input type="radio"/> Rather more than usual	<input type="radio"/> Much more than usual
7. Been able to enjoy your normal day-to-day activities?	<input type="radio"/> More so than usual	<input type="radio"/> Same as usual	<input type="radio"/> Less so than usual	<input type="radio"/> Much less than usual
8. Been able to face up to your problems?	<input type="radio"/> More so than usual	<input type="radio"/> Same as usual	<input type="radio"/> Less so than usual	<input type="radio"/> Much less than usual
9. Been feeling unhappy and depressed?	<input type="radio"/> Not at all	<input type="radio"/> No more than usual	<input type="radio"/> Rather more than usual	<input type="radio"/> Much more than usual
10. Been losing confidence in yourself?	<input type="radio"/> Not at all	<input type="radio"/> No more than usual	<input type="radio"/> Rather more than usual	<input type="radio"/> Much more than usual
11. Been thinking of yourself as a worthless person?	<input type="radio"/> Not at all	<input type="radio"/> No more than usual	<input type="radio"/> Rather more than usual	<input type="radio"/> Much more than usual
12. Been feeling reasonably happy, all things considered?	<input type="radio"/> More so than usual	<input type="radio"/> About same as usual	<input type="radio"/> Less so than usual	<input type="radio"/> Much less than usual

8.4 Intrinsic Work Motivation (Study IV)

Thinking about your present job, not work in general, please indicate on the scale, how strongly you agree or disagree with each comment. Remember that I'm asking now about your present job.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
1. I feel a sense of personal satisfaction when I do this job well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. My opinion of myself goes down when I do this job badly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I take pride in doing my job as well as I can	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I feel unhappy when my work is not up to my usual standard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I like to look back on the day's work with a sense of a job well done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I try to think of ways of doing my job effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8.5 Job Satisfaction (Study IV)

Each of the statements below is something a person might say about his or her job. You are to indicate your own personal feelings about your job by marking how much you agree with each of the statements.

How much do you agree with the statement?

	Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly
1. Generally speaking, I am very satisfied with this job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I frequently think of quitting this job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I am generally satisfied with the kind of work I do in this job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now please think of the other people in your organization who hold the same job you do. If no one has exactly the same job as you, think of the job which is most similar to yours. Please think about how accurately each of these statements describes the feelings of those people about the job. It is quite all right if your answers here are different from when you described your own reactions to the job. Often different people feel quite differently about the same job.

How much do you agree with the statement?

	Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly
4. Most people on this job are very satisfied with the job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. People on this job often think of quitting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8.6 Organisational Performance (Study IV)

Reflecting on your organisation's performance over the past two years, please indicate the degree to which you agree with the following:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
1. This organisation is achieving its full potential	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. People at my level are satisfied with the level of organisational performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. This organisation does a good job of satisfying our customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. This organisation gives me the opportunity and encouragement to do the best work I am capable of	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8.7 Organisational Performance vs. Competition (Study IV)

These final questions are about your informed perceptions of your organisation's performance. In the current year, what is your company's performance in comparison to your main competitors?

- Much better
- Somewhat better
- About the same
- Somewhat worse
- Much worse

For the last 2 years as a whole, what has your company's performance been in comparison to your main competitors?

- Much better
- Somewhat better
- About the same
- Somewhat worse
- Much worse

8.8 Additional Organisational Performance questions (Study IV)

How many new staff joined your organisation, in the last year? _____

How many staff voluntarily left your organisation, in the last year? _____

The next questions are related to your organisation's financial performance: revenue and profit. Please select the currency which you will use for these answers:

- GBP Pounds Sterling
- EUR Euro
- USD US Dollars
- Other (please state the currency)

What was your organisation's annual revenue, for the past 2 financial years?

Last financial year _____

Previous financial year _____

What was your organisation's net profit, for the past 3 financial years?

Last financial year _____

Previous financial year _____

Appendix 9. MPlus Syntax – Organisational Flexibility MCFA (Study II)

9.1 CFA Individual Level Only

TITLE: Step 1: Individual-Level CFA

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, organisational flexibility items

USEVARIABLES = OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

MISSING = ALL (-999);

ANALYSIS:

TYPE = GENERAL;
ESTIMATOR IS MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

L1_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

9.2 MCFA: Independence Model

TITLE: Step 2: Independence MCFA

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, organisational flexibility items

USEVARIABLES = OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR=MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

%WITHIN%
WITH_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

%BETWEEN%
OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

9.3 MCFA: Saturated Model

TITLE: Step 3: Saturated MCFA

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, organisational flexibility items

USEVARIABLES = OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR=MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

%WITHIN%
WITH_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

%BETWEEN%
OF_1 WITH OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;
OF_3 WITH OF_4 OF_7 OF_11 OF_22 OF_32;
OF_4 WITH OF_7 OF_11 OF_22 OF_32 ;
OF_7 WITH OF_11 OF_22 OF_32;
OF_11 WITH OF_22 OF_32;
OF_22 WITH OF_32;

9.4 MCFA: Multilevel Model

TITLE: Step 4: Proposed model MCFA

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, organisational flexibility items

USEVARIABLES = OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR=MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

%WITHIN%
WITH_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

%BETWEEN%
BET_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;

Appendix 10. MPlus Syntax – Discriminant Validity MCFA (Study III)

10.1 Model 1: Independent Factors

This syntax was used to assess organisational flexibility (OF) as an independent factor from the organisational learning subscale, shared vision (OL-SV) This syntax was used for the other organisational learning variables, with OL-SV replaced by the relevant measure.

TITLE: Model 1: Independent Factors

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, organisational flexibility and organisational learning items

USEVARIABLES = OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32
OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR IS MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

%WITHIN%
WITH_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32
WITH_OL-SV BY OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;

%BETWEEN%
BET_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32
BET_OL-SV BY OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;

10.2 Model 2: Equal Factors

This syntax was used to assess organisational flexibility (OF) as an equal factor with the organisational learning subscale, shared vision (OL-SV) This syntax was used for the other organisational learning variables, with OL-SV replaced by the relevant measure.

TITLE: Model 2: Equal Factors

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, organisational flexibility and organisational learning items

USEVARIABLES = OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32
OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR IS MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

% WITHIN%
WITH_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;
WITH_OL-SV BY OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;
WITH_OF@1;
WITH_OL-SV@1;

% BETWEEN%
BET_OF BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32;
BET_OL-SV BY OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;
BET_OF@1;
BET_OL-SV@1;

10.3 Model 3: Single Factor

This syntax was used to assess organisational flexibility (OF) as a single factor with the organisational learning subscale, shared vision (OL-SV) This syntax was used for the other organisational learning variables, with OL-SV replaced by the relevant measure.

TITLE: Model 3: Single Factor

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, organisational flexibility and organisational learning items

USEVARIABLES = OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32
OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR IS MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

% WITHIN%
WITH BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32 OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;

% BETWEEN%
BET BY OF_1 OF_3 OF_4 OF_7 OF_11 OF_22 OF_32 OL-SV_1 OL-SV_2 OL-SV_3 OL-SV_4;

Appendix 11. MPlus Syntax – Criterion-Related Validity (Study IV)

11.1 Baseline ‘Unconditional’ Model

This syntax was used to assess the unconditional model for the variable of Mental Health, using data from the General Health Questionnaire (GHQ). This syntax was used for the other outcome variables, with the GHQ variable replaced by the relevant measure.

TITLE: Model 1: Unconditional

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, composite measures

USEVARIABLES = ORGNO GHQ;

MISSING = ALL (-999);

WITHIN = ;

BETWEEN = ;

CLUSTER = ORGNO;

ANALYSIS:

TYPE = TWOLEVEL;

ESTIMATOR IS MLR;

ITERATIONS = 10000;

CONVERGENCE = 0.00005;

MODEL:

% WITHIN %

GHQ;

% BETWEEN %

GHQ;

11.2 Organisational Flexibility as Predictor

This syntax was used to assess the fixed effects of organisational flexibility (OF) model, for the outcome variable of Mental Health, using data from the General Health Questionnaire (GHQ). This syntax was used for the other outcome variables, with the GHQ variable replaced by the relevant measure.

TITLE: Model 2: Fixed Effects of OF

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, composite measures

USEVARIABLES = ORGNO OF GHQ;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

DEFINE:

CENTER OF (GRANDMEAN);

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR IS MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

% WITHIN%
GHQ ON OF;

% BETWEEN%
GHQ ON OF;

11.3 Organisational Learning as Predictor

This syntax was used to assess the fixed effects of organisational learning (OL) model, for the outcome variable of Mental Health, using data from the General Health Questionnaire (GHQ). This syntax was used for the other outcome variables, with the GHQ variable replaced by the relevant measure.

TITLE: Model 4: Fixed Effects of OL

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, composite measures

USEVARIABLES = ORGNO OL GHQ;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

DEFINE:

CENTER OF (GRANDMEAN);

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR IS MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

% WITHIN%
GHQ ON OL;

% BETWEEN%
GHQ ON OL;

11.4 Incremental Effects of Organisational Flexibility

This syntax was used to assess the incremental effects of organisational flexibility (OF) over organisational learning (OL), for the outcome variable of Mental Health, using data from the General Health Questionnaire (GHQ). This syntax was used for the other outcome variables, with the GHQ variable replaced by the relevant measure.

TITLE: Model 5: Incremental Effects of OF

DATA:

FILE = source data, output from SPSS
FORMAT IS FREE;

VARIABLE:

NAMES = unique IDs for individuals, unique IDs for organisations, composite measures

USEVARIABLES = ORGNO OF OL GHQ;

MISSING = ALL (-999);

WITHIN = ;
BETWEEN = ;
CLUSTER = ORGNO;

DEFINE:

CENTER OF OL (GRANDMEAN);

ANALYSIS:

TYPE = TWOLEVEL;
ESTIMATOR IS MLR;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;

MODEL:

% WITHIN%
GHQ ON OF OL;

% BETWEEN%
GHQ ON OF OL;