Exploring Taught Postgraduate Student Goal Hierarchies

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Abstract

This study is an exploration of the goal hierarchies of taught postgraduate students registered on a masters in management programme at a UK university. A goal hierarchy is a personalised matrix that shows the interrelationships between an individual's daily tasks, their goals (to be achieved in 6 months to 5 years), the identities they ascribe to themselves and their core values. Individuals populate their own goal hierarchy and draw links between different items within the hierarchy to signify whether the relationship is inhibitory (i.e. pursuit of one goal prevents pursuit of another) or facilitative (i.e. pursuit of one goal facilitates the pursuit of another). The result is a matrix representing the individual's life.

The study aims to better understand how the psychology of this particular group of students might have an effect on the ways in which they '*see*' their lives as a whole. Students were asked to build a goal hierarchy alongside completing a survey exploring a range of psychological constructs of interest (for example core self-evaluation, satisfaction with life, positive and negative affect). Data were collected from over 200 participants across two academic years and analysed to look for any relationships that may be present between the ways in which the goal hierarchies are constructed and psychological constructs.

There were several correlations present within the data. There were relationships evident between constructs that could be considered to be traits (i.e. longer term and more enduring patterns of behaviour) and identities in the goal hierarchy (which are considered to be more stable and long-term items), and between constructs that could be considered to be states (i.e. more fleeting states of being) and goals in the goal hierarchy. In addition to this, goal hierarchies were observed to have differing levels of integration and separation. Well integrated goal hierarchies were associated with lower levels of negative affect, however, they also contained a higher proportion of negative links, suggesting that an ability to '*see*' inhibitory links in the goal hierarchy is positive, and perhaps hinting at a higher level of metacognition in some respondents.

The study is the first step towards a better understanding of how the psychology of an individual affects the structure and content of their goal hierarchy.

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CHC	Confucian heritage cultures (for example China, Japan, Korea)
CSE	Core self-evaluation
CT	Control theory
GH	Goal hierarchy
GST	Goal setting theory
PGT	Taught postgraduate (student)
SWL	Satisfaction with life

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Chapter 1 Introduction

1.1 Introduction

We all have life goals, and we all strive to meet these goals. There is a long-standing and active field of research in relation to goals, goal pursuit and goal achievement in humans. For many years the majority of this research focused on the pursuit of a single goal and much seminal work in the area, such as Locke & Latham's (1990) Goal Setting Theory, is based on this premise. A moment of introspection will reveal to most people that this is not a reflection of reality; humans have complex lives, juggling a variety of goals and tasks. It is now widely recognised that individuals are rarely in pursuit of only one goal (Unsworth et al., 2014). Individuals can be pursuing many goals at one time; some important, some less-so; some long-term, lasting for years or even a lifetime and some short-term; some with positive strived-for outcomes, some to avoid negative consequences; some that only affect the individual and some with wider consequences for others. Researchers have concluded that goals sit in an organisational matrix, a goal hierarchy. Over time, a range of ideas have developed about what a goal hierarchy looks like and what it can reveal through its contents (see for example Little, 1983, Cropanzano et al., 1993, Austin and Vancouver, 1996, Unsworth et al., 2014, Adriasola, 2014). What is widely agreed is that the goal hierarchy is a matrix that contains an individual's goals at several different levels, and shows the links between these goals, either inhibitory (pursuit of one goal precludes another) or facilitative (pursuit of one goal aids the pursuit of another). Constructing a goal hierarchy allows an individual to '*see*' their lives as a whole, and the oftentimes complex interrelationships between the actions they take in pursuit of higher order goals.

This study explores goal hierarchies, the different ways in which they are constructed, and how the way an individual builds their goal hierarchy may be linked to psychological constructs, focusing on a group of Taught Postgraduate (PGT) students registered on a Masters in Management programme at a Russell Group University. This group of individuals has much that unites them; they tend to be young, they are all in full time education; the majority are from an Asian background, particularly Confucian Heritage Cultures (CHCs). There is however, much that makes each study participant unique; their underlying psychology; their reasons for the pursuit of a degree and the way in which they view their lives in relation to all of these things. It is the chance to see whether these similarities or differences can be observed in the way that a goal hierarchy is constructed that make the study of this group so interesting.

There are many studies that have looked at the goals of students but these tend to focus on single goals, or goals that are only relevant to the immediate situation of being a student (for example Morisano et al., 2010, Taing et al., 2013, Chase et al., 2013), taking little account of the individual's wider life. This study looks to address the limitations of previous research by looking at the '*whole life*' of the student, mindful that their current situation (their student status and the pursuit of a degree) is important, but is not the entirety of their life. This study may help us to see how important this current student status is to an individual (or not) and whether or how the pursuit of goals in this domain links to other aspects of their lives. The study does not look at the goal hierarchies of students in isolation but also considers a range of psychological constructs alongside them in an attempt to see whether there are particular aspects of an individual's psychology that are linked to the way in which they represent their life through the goal hierarchy.

Data from the Higher Education Statistics Agency (HESA, 2020a) shows the numbers of Taught Postgraduate Students is increasing across UK Higher Education Institutions (HEIs), from c. 299,000 in 2014/15 to c. 354,000 in 2018/19 (HESA, 2020a) . Data also shows that 45% of Taught Postgraduate Students in UK HEIs are not from the UK or EU (HESA, 2020b). This current study is important because it is incumbent on HEIs to do all that they can to understand and support students from the wide range of cultures and nationalities represented in this growing segment of their populations. In addition to this duty of care to the student, it must also be acknowledged that overseas students at UK HEIs bring a wide range of benefits to the UK as a whole; one recent study showed that should just one cohort of non-EU students remain in the UK to work following study, they will contribute £2 billion to the UK economy (HEPI and Kaplan, 2019). Clearly, this group of students represents a growing, and important, segment of the population.

The study of goal hierarchies in order to reveal something about a person's goals and motivation is not new (for examples see Cropanzano et al., 1993, Cropanzano et al., 1995, Austin and Vancouver, 1996); researchers have studied the goal hierarchies of many different groups of people, and in the process generated new constructs, for example self-concordance; the idea that one pursues a goal for intrinsic, self-generated reasons (Sheldon and Elliot, 1999), and how these link to different aspects of an individual's experience such as their wellbeing (see for example Ehrlich and Bipp, 2016). The majority of goal hierarchy research to date has been carried out by control theorists who hold a view that the pursuit of goals in humans is based on discrepancy reduction (the idea that human goal pursuit is a response to a need to close a gap between where the individual is and where they need to be; see for example Vancouver et al., 2010). This is counter to the cognitive view

that goal pursuit is based on volition; we pursue goals to reach the desired endpoint (see for example Locke and Latham, 1990).

Only in more recent years has there been growing research activity around goal hierarchies by those who hold the cognitive view of human motivation (Unsworth et al., 2011, Adriasola et al., 2011); that is, the view that humans can choose which goals to pursue, how and why. The current study uses a Goal Hierarchy tool developed by Prof. Kerrie Unsworth and Dr Elisa Adriasola that allows individuals to construct a personalised goal hierarchy. The Goal Hierarchy tool asks users to consider a variety of '*levels*' of goals, from their everyday tasks, to their longer term goals (which may be several months or years away), to the identities that they ascribe to themselves, and ultimately their overarching values (i.e. their core beliefs about life). Output from the tool is an individualised goal hierarchy representing a comprehensive '*map*' of a person's life. Looking at this goal hierarchy in concert with a variety of psychological construct data (for example resilience, core self-evaluation or life satisfaction) may reveal patterns related to the different ways in which people '*see*' their lives. Whilst the goal hierarchy tool has been used in developmental workshops in workplaces and with students, to the best of my knowledge this is the first time that it has been used in a formal study with PGT students, and also the first time that there has been an exploration of the ways in which the underlying psychology of an individual may affect the way that they build their goal hierarchy.

1.2 Research Aims

This study explores the goal hierarchies of Taught Postgraduate Students enrolled on a Masters in Management programme at a UK Russell Group University. Alongside an examination of the ways in which these goal hierarchies are constructed, data on a range of psychological constructs will also be collected from the sample population. The study will look for commonalities across the sample in relation to goal hierarchy construction and arrangement, and seeks links between the psychological constructs and goal hierarchy characteristics.

The research is exploratory and therefore no hypotheses are presented. The aim of the research is to identify any relationships, should they exist, between the way in which the sample population construct their goal hierarchies and the range of psychological constructs tested.

1.3 Overview

This dissertation is comprised of 5 chapters. Following this introduction, chapter 2 will review the extant literature. It covers key areas related to this particular study; some background about research into goals and goal pursuit; development of the goal hierarchy; some possible characteristics of the sample population; and considers some other constructs of interest and their relationships to goals and goal pursuit.

Chapter 3 lays out in detail the design of the study and the methodological considerations, as well as providing information about the interpretation of the goal hierarchy data collected. It also provides detail about the scales and measures chosen for the study.

Chapters 4 presents the results of the study with some discussion in relation to what specific findings may mean, but the main discussion and results are presented in Chapter 5 which offers possible explanations for the study findings and a brief conclusion, discusses the limitations of the work, and identifies areas that require further investigation.

Chapter 2 Literature review

The review focuses on key literature in the areas of importance for this study. The literature is drawn from a variety of domains and covers early work on goals and motivation, including an overview of the development of goal hierarchies. It also considers the known characteristics of the sample population and the affect this may have on the study outcomes, as well as discussing how and why certain psychological constructs may be of interest in relation to goal hierarchies.

2.1 Goals and motivation; cognitive and control theories

There is a vast body of literature dealing with goals and motivation, and this area has been a focus of research for many decades (Kanfer et al., 2017, Locke and Latham, 2004). Put simply, a goal can be said to be a desired endpoint. All humans have goals; from the prosaic and everyday, to lofty, ambitious goals that fulfil our wants and desires. In order for a person to meet a goal, there must be some form of motivation that leads to action.

Early research into human goals tended to focus on '*goals*' essential to our survival and automatic, rather than conscious, actions (see for example Wallace, 1960). This view was then expanded to take account not just of goals essential to survival, but to wider goals a human may hold, with the overriding view becoming that action to meet goals was a result of automatic mechanisms rather than choice (see for example Powers, 1973, Campion and Lord, 1982, Carver and Scheier, 1982). Put simply, the popular view in this field of research was, and still is, that humans are in some way akin to machines, and that action in pursuit of goals was the result of external, subconscious or physiological signals; a form of negative feedback loop (Locke, 1996). For an example of this, Kruglanski et al. (2016) talk of the primary motivation for behaviour being survival of genes and how subsequent actions evolved to support this overarching motive. They theorise that over time these 'survival' instincts become intrinsically motivating, and the human actions that led to an outcome in support of survival now in themselves becomes the desired outcome. These ideas are the basis of what is known as Control Theory (CT). The key idea behind CT is that the motivation to pursue a goal is discrepancy reduction (rather than the goal itself). This position, that goal pursuit is based on discrepancy reduction and has a 'needs' based focus, is still the focus of much research (for example Neal et al., 2017, Vancouver et al., 2020). Some of the key ideas of CT developed from seminal research including Maslow's Theory of Human Motivation, originally published in 1943 (Maslow, 2013), Herzberg's two-factor theory (1959) and Deci and Ryan's (1985) self-determination theory.

Alongside the control theorists there are many who believe that, as well as being automatic, human action in pursuit of goals is volitional; and this group of researchers are probably best labelled as cognitive theorists. It must be emphasised that the two schools of thought are not exclusive and there have been attempts to unify or incorporate ideas from one to the other (though not always successfully according to Locke, 1991). When reviewing the literature in this area, it can often be easy to see whether the work has a CT or cognitive theory basis (Locke and Latham, 2006a), and whilst some CT research does recognise that there are elements of choice involved in goal pursuit (Johnson et al., 2006, Vancouver et al., 2010) it is often criticised as being too simplistic, in that it takes too little account of volition and that it is too mechanistic in its view (Locke and Latham, 2013).

Therefore, alongside CT there are a range of cognitive theories that must be considered. These cognitive theories accept that people are of course influenced by their external environment/physiological signals as CT posits, but also believe that humans have internal consciousness and the choice to use their conceptual faculty, or not (Binswanger, 1991). For example, Bandura's (1986) Social Cognitive Theory posits that people may choose to engage in certain behaviours in pursuit of a goal. Bandura (1989) states that self-efficacy (the individual's belief in their ability to control the events that lead to the desired goal) is an important determinant of human action, and that this feed-forward self-regulation stands opposed to CT which focuses purely on negative feedback and discrepancy reduction (Bandura and Locke, 2003). There were some earlier proponents of this approach, for example Vroom's (1964) expectancy theory. However, the most cited theory in the cognitive domain of goals and motivation is Goal Setting Theory (GST), introduced by Locke and Latham (1990) and based on many years of inductive research. This theory, an open theory that the originating researchers expect to see expanded and refined across time, stands in opposition to the CT position of 'human as machine'. GST opposes the view that discrepancy reduction is the main driving force for goal pursuit; the rationale being that if discrepancy reduction were the motivation for goal pursuit then it would be expected that humans would do all they could to get rid of their goals. In fact, it is known that humans actively choose which goals to pursue, therefore *creating* discrepancies and that this signifies discontent with a current situation and a desire to attain the said goal (Locke and Latham, 2006b). Therefore GST posits that it is the goal itself that is the source of motivation rather than the existence of a discrepancy. This theory has been shown to be valid across participants, tasks, nationalities and time spans, and continues to be the focus of research (Locke and Latham, 2019). Despite the predominance of CT in the early years of research into human motivation (and the large body of research that continues in this area) the area is now dominated by cognitive theories of motivation,

such as GST, that view internal cognitive processes as the source of action in pursuit of goals in humans.

This study considers motivation and goals from a cognitive standpoint, taking the view that human action is volitional rather than 'mechanical' in nature, and that it is in fact erroneous to explain human behaviour in this way (Locke and Latham, 2006a). It subscribes to Bandura's (1997) view that people are able to control their lives, and use thought to control their actions to reach a desired endpoint. The participants in the current study are viewed as able to make choices and decisions (i.e. exercising their own volition) and therefore the construction of the goal hierarchy (GH) is a conscious exercise driven by the consideration of their desired goals and how they are working towards them (or not), rather than an exercise in considering how to best reduce discrepancies between a current and desired situation.

2.2 Multiple goals and the goal hierarchy matrix

Early work, in both the control and cognitive domains, focused on pursuit of a single goal. This is not a reflection of reality and it is widely accepted that humans have complex lives involving many goals and that it is normal to pursue multiple goals across different areas of our lives (e.g. Sun and Frese, 2013). It is the case, most often, that the range of goals held by an individual draws on the same finite pool of resources, for example, time, attention, and money. Because of this there is the potential for goal conflict. There have been various studies of issues around goal conflict; for example, individuals who have many conflicting goals are less successful at meeting their goals (but not always the goals in conflict) as they are more likely to be hesitant, and are also more likely to experience negative affect (Boudreaux and Ozer, 2012). However, it is also possible to see how there may be a degree of interdependence amongst goals and how the attainment of one goal may facilitate the attainment of another, for example, how the achievement of a proximal goal may facilitate the achievement of a distal goal (Locke and Latham, 1990). It is theorised that the sample population will have many goals, related to both their student status and other life areas, and be striving towards a variety of desired outcomes across several domains of their life. What is unknown is the degree to which these goals will facilitate or hinder one another, and how this may be represented in the study results.

This situation of holding many and oftentimes competing goals, has been considered by several strands of research. Some important, early work in the cognitive domain is that of Little (1983). He began to research personal projects (which he defined as "a set of interrelated acts, extending over time, which is intended to maintain or attain a state of affairs foreseen by the individual" p.276) and

their pursuit during the 1970s. He proposed that personal projects could vary in size (e.g. something as large as pass my degree, to something as small as remember to brush my teeth daily) and focus (i.e. internally generated or externally suggested). The work is seminal in that it considered how personal projects interlinked with values and actions. It also began to consider how personal projects interlink in a matrix, and how they may inhibit or facilitate each other. These ideas were developed further by Little et al. (2007) with the proposal that personal projects can be entered into a hierarchical model, with a series of connections running from the more mundane and small acts an individual undertakes, to their core life values. This hierarchical model then allows individuals to make assessments about if or how one action related to the pursuit of a personal project may impact on another, be that positively or negatively.

Parallel to this research on personal project pursuit and ideas related to placing goals into matrix, there was CT research ongoing which also considered how multiple goals may be structured and interact. Cropanzano et al. (1993) made an attempt to present a unified model of personality and motivation for use in organisational research, which they named the Goal Hierarchy Model of Personality; this proposed a hierarchy model to show all of the goals held by an individual and the connections between them. Though this model links strongly to personality it did present the idea that the lower levels of the GH were the '*how*' of reaching one's goals (i.e. success at the lower goal levels may aid success at higher goal levels). Austin and Vancouver (1996) were also proponents of a GH, based on Deci & Ryan's (2000) Self Determination Theory. Austin and Vancouver's (1996) work posited that goals of different types may sit at different levels within a hierarchy and be interlinked.

Both of these strands of research developed early ideas that form much of the basis of the GH model that is used in this research; in terms of the structure of the GH used for this study, much is owed to the work of Cropanzano et al. (1993) but the cognitive (rather than control theory) focus owes much to the ideas introduced by Little (1983).

2.3 Development of the goal hierarchy

Following on from the early work of Little (1983) there was some research in the cognitive domain into the use of goal hierarchies, but it was minimal in comparison to the extensive research of the control theorists. Examples of early research using goal hierarchies in the cognitive domain include the work of Hanges et al. (2000) who considered the use of a connective network to consider leadership and culture, Bateman et al. (2002) who looked at the hierarchical structure of managers' goals.

The first iteration of the GH in a form akin to that used in this study (a tool for understanding the goal hierarchies of individuals from a cognitive standpoint) appeared in the work of Unsworth et al. (2011). In this study self-completed goal hierarchies were used to explore the collection of asset data in a mining company, looking at the tasks, personal projects (goals), identities and core values of those individuals charged with the collection of that data, and most importantly, how these different entries within the GH were connected (with the options being strongly or weakly). This study presented the GH as having four distinct levels and different weightings for the connections between those levels. The levels within the GH are values; these are the overarching guiding principles that an individual holds dear, for example ideas of social justice, or deference to elders. The following level is where an individual states their identities; these could be, for example, mother, teacher, friend. The personal project/goal level are outcomes the individual is striving for, and could for example be saving for a house or getting a promotion at work. At the base of the GH are task goals (often just labelled as tasks) and these are the day-to-day activities we carry out in pursuit of our goals and identities; they could be, for example, going for a run, cooking a meal or watching TV. Figure 1 shows the goal hierarchy as it is conceptualised in the Unsworth et al. (2011) study.

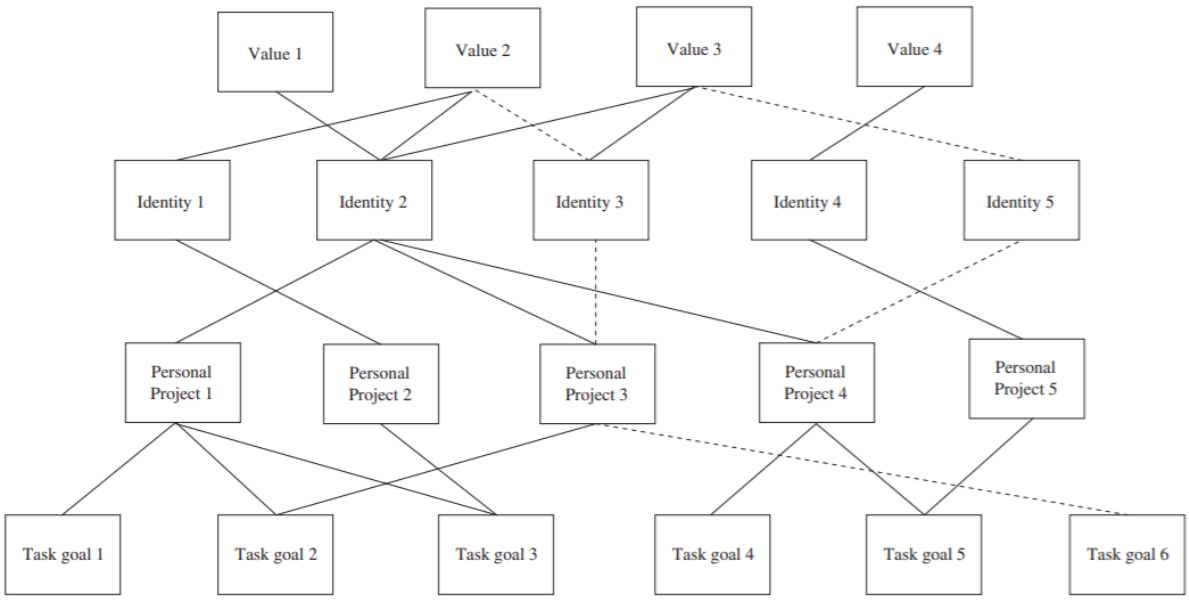

Figure 1: Conceptual Goal Hierarchy (Unsworth et al., 2011)

Subsequent work by Adriasola et al. (2011) and Adriasola (2014) used the GH model developed by Unsworth et al. (2011) to explore the links between leadership and goal striving, by observing self-concordance.

Self-concordance (SC) was first identified by control theorists; Sheldon and Elliot (1999) defined it as, "the degree to which stated goals express enduring interests and values" (p482) and posited that there were two types of goals; those pursued for autonomous reasons (i.e., for enjoyment, to meet individual's values) and those pursued for controlled reasons (i.e., those goals dictated by external sources), with autonomous goals being linked to self-concordance. CT based studies that have found that SC goals are likely to be prioritised, feel easier, are more likely to be achieved and are related to job and life satisfaction (Healy et al., 2016, Werner et al., 2016, Koestner et al., 2002, Judge et al., 2005).

Adriasola et al. (2011) believe that the CT view of self-concordance (based on whether a goal is autonomous or controlled) is a poor proxy for this complex concept, and that looking at the weighting and rating of the links between individual's goals within a GH is a better indication of self-concordance. This new conceptualisation of self-concordance was presented in Adriasola's (2014) study which also presented the GH in the finished form that it takes in this study, where goals, "act as a means or end for other level goals, with the values at the top as the most abstract goals and task goals at the bottom as the most concrete ones" (p.17).

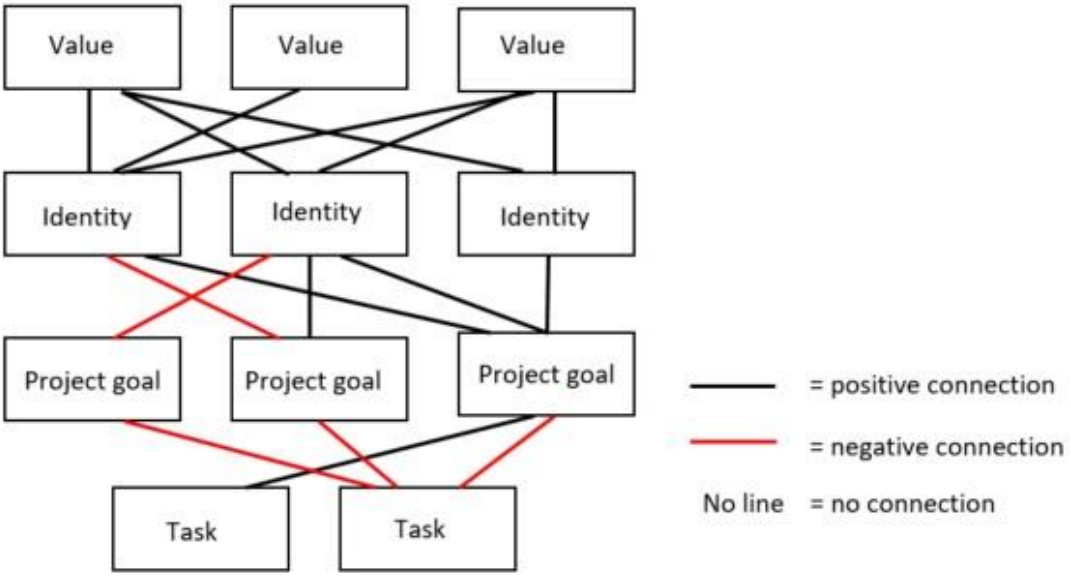

Figure 2: The Goal Hierarchy (adapted by the author from Adriasola, 2014)

It is also important to note that the work of Adriasola et al. (2011) and Adriasola (2014) was also the first time that the work of Schwartz (1992) was used as the basis for the 'value' level of the GH.

Schwartz (1992) identified 10 basic human values found to be applicable across cultures, and these are presented for selection to users of the GH.

2.4 Goals and other psychological constructs

This study takes the goal hierarchies of individuals and looks at them alongside a range of other psychological constructs. There have been studies that show that the pursuit of goals can have an effect on other constructs such as positive and negative affect, for example work by Emmons (1986) found that there was a link between personal strivings (goal pursuit) and positive and negative affect and that lower levels of goal conflict correlate with higher levels of life satisfaction. Further evidence is provided by Riediger and Freund (2004) who found that goal conflict/interference led to lower subjective wellbeing (described as personal assessments of life quality, often simply labelled as 'happiness') in individuals. Given that subjective wellbeing is associated with higher productivity, better health and longevity (Diener, 2013) this is an important construct to consider in this current study.

Research carried out by Brunstein (1993) and Brunstein et al. (1998) found that goal attainment (reaching one's aim) affects subjective wellbeing, and there are many other studies that show links between goals, goal pursuit, goal attainment and wellbeing or positive affect (Klug and Maier, 2015, Sheldon and Elliot, 1999, Boudreaux and Ozer, 2012, Gray et al., 2017, Ehrlich and Bipp, 2016, Koestner et al., 2002, Hope et al., 2016, Kelly et al., 2015, Moberly and Dickson, 2018). Whilst the majority of these studies are CT focused they suggest that the way in which goals are arranged in the GH, and the links between them showing whether they are facilitating or conflicting, may be linked to a range of psychological constructs. One could theorise, for example, that a GH that shows a high number of positive links between goals (therefore much in the way of facilitation between goals rather than conflict) will correlate with increased levels of happiness, reflected in constructs such as positive affect, subjective wellbeing and core self-evaluation.

Core self-evaluation (CSE) is a basic evaluation of one's worth, capability and effectiveness (Mäkikangas et al., 2018). The extant literature shows that CSE has direct effects on the way an individual experiences their lives, and that those people who see themselves as capable of coping with life's challenges are more likely to frame life positively (Judge et al., 1998). In addition to this Srivastava et al. (2010) found that individuals with higher CSE tend to seek more complex work tasks, in turn increasing their satisfaction. Given this evidence, we might expect to see higher levels of CSE in individuals who have a wide range of tasks with many positive links (and few negative links) in their GH.

It is also worth considering the approach individuals take to their goals. The literature suggests that this can be dependent on an individual's general disposition and/or the situation in which they find themselves. Work by Nicholls (1978) and Dweck (1986) originally posited that individuals have different ways of approaching learning (their work was based in education) which they labelled as mastery (the main aim being to learn as a task is carried out), avoid (the main aim being to avoid negative consequence of not meeting a desired task outcome) and prove (the main aim being to prove one's ability in a task to external observers). It is theorised that the way in which an individual approaches a task/goal is linked to their self-efficacy and persistence (Dweck, 1986, Elliott and Dweck, 1988). In the education domain Tuominen-Soini et al. (2008) found that students with growth-focused goals (i.e., mastery goals) had higher levels of wellbeing. Based on the extant literature one might expect that these different ways that an individual approaches their learning would be evident in the way that a GH is constructed, and that, for example, individuals with an 'avoid' orientation may show more negative links within the GH.

2.5 Sample characteristics

The study focuses on students, and in particular PGT students. The number of PGT students in UK HEIs is growing year on year (from c. 299,000 in 2014/15 to c. 354,000 in 2018/19; HESA, 2020a) and around 45% of the PGT student population is not from the UK or EU (HESA, 2020b). The very status of an individual as a student suggests that they have a goal; to pass their degree. Therefore this group is particularly suitable for this study as there is a goal (i.e. personal project that is relatively long term and takes some level of effort to achieve) common to all participants that can act as a point for comparison. There are a range of studies that have looked at goal pursuit in educational settings (for example Suárez Riveiro et al., 2001, Diseth, 2011) but this study differs in that it takes a 'whole life' view.

Given what is known about the PGT student population in UK HEIs, it is almost certain that a large proportion of the participants in this study will be international (i.e. not from the UK or EU), and that a large number of the participants are likely to hail from CHCs (with past knowledge of this particular HEI indicating that the majority of the sample will be Chinese). Given this, it is important to explore literature related to goal pursuit, psychological constructs and cultural background, as well as considering how what is known about the UK educational experience of international students may affect the study outcomes.

Oishi and Diener (2001) found that there was a difference in goal pursuit benefits between college students from individualistic (e.g. Western cultures such as the UK and Australia) and collectivist

cultures (e.g. CHCs such as China and Korea). Students from individualistic cultures showed increased wellbeing on the attainment of independent goals (i.e., goals pursued for enjoyment) but students from a collectivist culture did not. Students from collectivist cultures showed wellbeing increases on attainments of interdependent goals (i.e., those goals that please parents/friend) but those from individualistic cultures did not. This finding is supported by Yamaguchi and Kim (2015) who found that Asian students are more likely to consider the interests of close friends and family when pursing goals. Gore and Rogers (2010) also found that the reasons given for studying were affected by individual's attachment to others, and those with strong personal attachments (to parents/friends/significant others) tended to list this as a key reason for studying. These studies show that there may be individual and cultural differences when it comes to motivation, and therefore this may be represented in some way in the GH. This review did not find any literature dealing with this so how or whether these differences may present is unknown. One possibility is that those respondents from CHCs have distinct areas of the GH that could be seen to be related to goals only being pursued for significant others rather than themselves, i.e., obvious evidence of filial duty. Anecdotal evidence indicates that some students from CHCs pursue further study in subjects chosen by significant others (most usually parents) and that the true interests of the individual lie elsewhere.

The university environment in which the sample is based could also be reflected in outcomes of the study. One possible area for consideration is the management of the boundary between the individual's student life and their personal life. Boundary theory, which states that "individuals manage the boundaries between work and personal life through processes of segmenting and/or integrating the domains" (Bulger et al., 2007 p.365) has been extensively studied in relation to work, but there have been few studies looking at the management of boundaries between study life and home life. One example, from Van Steenbergen et al. (2018) found that students who were unable to create clear boundaries between their home and school life were more likely to experience dissatisfaction and those students who were able to set clear boundaries were more likely to experience school success. This may suggest that those individuals who are able 'segment' their lives in some way are better able to cope with the demands of the learning environment, however, there is evidence that counters this from research carried out with school children that suggests that "in real learning situations, students' academic, social and extrinsic goals are interconnected" (Mansfield, 2009, p295). Management strategies in relation to boundaries between university and home life could vary within the sample and may therefore be evident in the construction patterns observed in the GH in relation to how interconnected or 'segmented' they appear to be. Ultimately

it may be possible to see whether the ability to separate out limited time resource between goals related to study and home life is represented in respondent goal hierarchies.

In addition to the distinction between university and home life, given that we know many of the study participants will be international, issues related to adjustment to a culture other than one's own may be evident in the study. It is well recognised that students who are moving to study in a culture different to their own face challenges in relation to adjustment (Bertram et al., 2014, Spencer-Oatey and Xiong, 2006, Schweisfurth and Gu, 2009) which may result in increased stress levels for example. There is also evidence that wellbeing and self-esteem may be affected if an individual does not feel that their personality matches the personalities of the majority of people in the situation in which they find themselves (Fulmer et al., 2010), and higher levels of self-esteem predict better acculturative adjustment (Wang et al., 2012). Therefore there may be evidence with the psychological construct data collected and the goal hierarchies of characteristics related to the international student status of an individual.

2.6 Concluding remarks

The exploratory nature and novelty of this study mean that it's not possible to use extant literature to build hypotheses. Therefore, in this study, the literature is not used to develop hypotheses, but to explore previous research findings, and to use these findings to consider where one *may* expect to see some relationships in the current study, and this has been noted throughout.

Generally speaking, the goal hierarchies constructed for this study should, based on the literature, include a variety of goals towards which each individual is striving, and show evidence of goal conflict, or of goal facilitation through the inclusion of positively or negatively weighted links between items (called nodes). The literature also suggests links between certain aspects of goal pursuit and achievement and psychological constructs, but there is an absence of literature that explicitly deals with the links between goal hierarchies, psychological constructs and postgraduate (international) students.

One could extrapolate from the wide variety of findings presented in this review and build a series of hypotheses, however, I believe that this would be imprudent for several reasons. Chief amongst them is the possibility that too narrow a focus might mean that interesting, but unexpected, findings are missed. In addition to this, much of the literature is based on CT and this study takes the cognitive view that individuals choose which goals to set and how to pursue them. To my knowledge this is the first time that at study has attempted to look at the whole GH (not just one aspect or level) and how the different ways in which the GH is constructed, as well as what is contains, is

related to a variety of psychological constructs; an attempt to hypothesise about such a novel area would be difficult. Finally, the study explores the goal hierarchies of a group of PGT students who have very particular characteristics related to their backgrounds and the situation in which they currently find themselves. Therefore, this study, whilst clear in its focus on goal hierarchies, psychological constructs, and PGT students will take an exploratory approach.

Chapter 3 Methodology

This chapter will outline how the research was carried out and give details of data collection, the tools used, and how data were extracted. The content includes a justification of the approach from a philosophical standpoint and information related to operationalisation of the research.

3.1 Philosophical considerations

Before carrying out any research, a researcher must first carefully consider their own views of the world and how they ascribe meaning to observed phenomena. Key to this consideration are the concepts of ontology and epistemology. Ontology is the study of being, and most specifically whether something (for example, society) can exist independently of social actors (Barron, 2006). This is often characterized as the two extremes of objectivism and subjectivism; put simply that reality exists independent of social actors (i.e. humans) or it does not, respectively. Epistemology is the theory of knowledge and specifically what we can know (Panke, 2018), i.e., what is acceptable knowledge in a given field. This is generally characterized as having two extremes; the positivist standpoint that the social sciences can generate knowledge about cause-effect relationships (Popper, 2002) and the interpretivist view that there can be no certainty and that law-like generalisations cannot be ascribed to the world.

The objectivist ontological view is that reality does indeed exist independently of social actors, and this research is approached from that standpoint. Alongside this, the research is guided by a positivist epistemology; the belief that quantifiable observations will allow for a thorough exploration of relationships between variables of interest. This approach aligns with commonly applied methods in studies exploring psychological constructs; the collection of quantitative data using pre-validated scales and measures. In addition to the use of these scales and measures, further quantitative data is collected from a GH tool, allowing for an exploration of the constructs of interest through statistical analysis. Given the novelty of the GH tool and the lack of previous comparable studies, predictions about relationships within the data cannot be confidently made and therefore the study cannot be described as deductive, and whilst quantitative work is most often deductive, the lack of hypotheses in this case means that an abductive approach is adopted. An abductive approach seeks to provide the best available explanation for any relationships observed, should there be any present (Locke et al., 2008). That is, there is an observation followed by attempts to create a plausible theory for what is seen (Maanen et al., 2007). Whilst there is some debate about the true meaning of abduction and how it can be best classified (Park, 2015, Folger, 2017, Mackonis, 2013), for the purposes of this

research the position taken is that abduction uses contrastive reasoning best summed up by the statement “We have reason to suspect the conclusion of an argument is worthy of pursuit based on an observation” (Folger, 2017 p.308). It is clearly recognised that this small *N* study is the very beginning step in a long process of exploration, and that it is likely to yield more questions than answers.

Ultimately, the philosophical approach, and methods chosen for this study, place it squarely in the positivist paradigm. With regards to axiology (the impact of the researcher’s values on the research), whilst it is widely accepted that no research can be completely value-free (Jupp, 2006), this methodological approach ensures that the study is as objective and value-free as possible.

3.2 Research approach advantages

The extant literature in the domains of interest for this study shows a strong slant towards positivist research design. Some advantages of this approach include that it allows for the collection and analysis of large amounts of data from which generalisations may be able to be drawn. It also allows for comparisons to be made between data collected across studies. Also, the highly structured methodology of research of this nature allows for repetition (Saunders, 2019). It could be argued that this approach is not suited to exploratory research, as it does not explore causal mechanisms at play between variables (Panke, 2018) but given the wide range of variables involved in this study and the lack of previous similar studies, a qualitative approach focusing on very specific relationships between variables at this early stage of understanding may risk missing relationships that do exist. A survey design is also advantageous in this case as it allows for the collection of a large amount of data covering a wide range of variables in a quick and easy manner. Also, the participant pool and sample size means that any attempt to carry out qualitative research across the population would be too onerous at this exploratory stage.

It is also worth noting that the Taught Postgraduate Students who make up the sample would, in any case, generate the data for this study. They all take part in a core programme module that asks them to construct a GH, and then to use the hierarchy to consider their values and identities, what their goals are, and how what they are doing on a daily basis (their tasks) are helping them to make progress (or not) towards them. They also complete a survey exploring several psychological constructs such as subjective wellbeing, thriving and CSE and are invited to use the results to set themselves goals and make decisions about their actions.

3.3 Research design

As discussed, though it is often the expectation that quantitative research involves starting with pre-existing theories and hypotheses (Saunders et al., 2012) and working deductively, in this case the research is exploratory in nature and therefore the aim is not to prove or disprove hypotheses.

Whilst the extant literature does indicate that there may be correlation between some of the psychological construct variables involved in this study, the focus of this work is the relationship (should there be any) between psychological construct variables (conceptualised as a group of covarying behaviours that are measurable using established scales and measures; in this study they are treated as one set or type of variable) and variables linked to goal hierarchies. The aim is to collect primary data on a variety of variables with sample sizes being as large as possible to reduce sampling error and increase power (Field, 2018).

3.4 Data Collection

3.4.1 Research Participants

Research participants were 253 students enrolled on a Masters in Management programme at a UK Russell Group University. The students' core programme of study includes activities that generate the data required for this research. The activities that generate the data are designed to assist students in their reflection on their personal and professional development. Students carry out the data-generating activities in semester 1 of the UK academic year. The study was carried out over two academic years. Participants ranged in age from 21 to 33, around three quarters were female and the majority international students (mainly Chinese). The full sample population totalled around 450 students, with c. 50% of this number consenting to involvement in the study.

3.4.2 Research Phases

Data were collected from activities in Semester 1 of the 2018 UK academic year and Semester 1 of 2019 UK academic year. This allowed for collection of data across two cohorts of students which lessened the risk of the data being collected from one cohort who, for any reason, may have been anomalous. This approach also helped to ensure that the number of respondents was as high as possible so that there is sufficient power to detect an effect assuming that one is present (Field, 2018).

In this case there was no formal pilot study because the tools were already in use and had been shown to be effective for both respondents and researcher. The first use of the tools in Semester 1 of the 2017 academic year generated the expected responses and therefore no formal pilot was required.

3.4.3 Research Instruments

Data collection involved the use of two distinct instruments, administered and completed consecutively during a three-hour timetabled student workshop allied to a core module in the Masters in Management programme of study. Both instruments generate quantitative data. The instruments are:

1) A survey that collects a variety of demographic data alongside measuring respondent's scores across several psychological constructs (See Appendices 1 and 3).
2) An online tool that allows respondents to build a GH. This tool allows a respondent to build a personalised GH across several levels, making explicit links between nodes to represent individual experience (see Appendix 4 for examples).

3.4.4 Operationalisation and administration

As previously discussed, scheduled activity on a core timetabled module of the Masters in Management programme generates the data needed for this study. The specific session concerned is three-hours in length and takes place towards the beginning of the programme of study (early Semester 1 of the UK academic year). The session invites students to begin to consider their own personal and professional development with a specific focus on understanding their own goals, motivation and psychology.

Students first complete a survey hosted on an online platform. This questionnaire includes a selection of scales and measures for different psychological constructs (see Appendices 1 to 3 for detail) and also requests demographic data. All questions on the survey are closed and all excluding the demographic questions use a 5-point Likert-type scale to produce better quality of response (Revilla et al., 2014) and reduce respondent confusion or fatigue. The expected response time for the survey is 20 to 30 minutes. On completion, students are able to see a results page which lists their scores on the scales used in the survey. They are then invited to transpose these scores into a document where further detail is given about a particular construct/scale. This allows the student to interpret and draw meaning from their results.

Students are then asked to use the GH tool to build a goal hierarchy. The tool is still in its beta testing stage but is fully functional from a user perspective. The programme includes a comprehensive introduction to the GH and leads the user through a series of sections where they must select from the ten items of the Schwartz Value Inventory (Schwartz, 1992) and then type in items for different levels of their GH (i.e., identities, goals and tasks). When this is completed the programme generates a graphic that can be manipulated by point and click, and which asks the user to draw in the links between the different items they have already placed in the hierarchy. Based on previous observation of the tool in use, the completion time is estimated at around 60 minutes. On completion the student sees a graphic representation of their personalised GH.

The tools are administered in this order to reduce social desirability bias (Krumpal, 2013). Whilst it is recognised that it is not entirely possible to eliminate socially desirable responses from any survey, the administration of an instrument requiring little depth of thought (many of the research instruments used in the survey do not require the participant to think too deeply about their responses) followed by an instrument that requires more depth of thought (the GH tool) should help in this regard.

Neither of the two research instruments require the entry of personal data that would make an individual identifiable. Each of the instruments only require that a participant-generated code be entered before they are used. Ethical considerations are discussed below.

3.5 Ethical considerations

The study was given favourable ethical approval the AREA Ethics Committee of the University of Leeds (Ref: AREA 18-027). The data for the research is generated as a usual part of a timetabled core session in the Masters in Management programme of study. Towards the close of this timetabled session, students in the workshop were invited to consider whether they would be willing to allow their data to be used in a research study. At this point the data had already been generated (i.e., surveys and goal hierarchies completed). The withholding of the offer to participate in the research until the close of the session was felt to be justified, to protect the validity of responses and also reduce the possibility of social desirability bias (Spector and Brannick, 2009, Krumpal, 2013)

In line with university ethical expectations, willing participants were fully informed of the ways in which their data would be used, how it would be stored and accessed, and when it would be destroyed. Respondents were reassured that should they not wish to participate their data would be destroyed in line with usual practice.

Anonymity is retained for respondents at all times when completing the survey instruments (whether taking part in the research study or not) as the instruments do not require a participant to enter identifying information in order to access them. At the start of the workshop session all students are asked to generate a unique code based on their demographic data. This code is known only to the individual, and it is this that they are asked to enter into the survey and GH in order to access them online. Students are also reassured that the responses to both instruments are private to them, and that no one will later go to the survey or GH and view them without their written consent.

Following the time given to read a participant information sheet (c. 20 minutes) and ask questions, students were given consent forms to complete, away from the gaze of the workshop leader (who was also not the researcher) to ensure that no undue pressure was felt. The consent forms asked participants to provide names and signatures, as well as the unique code they generated at the start of the workshop. Provision of the unique code allowed the researcher to extract data for which consent was given from the larger body of data and destroy any data for which consent was not given. Copies of the participant information sheet and consent form can be seen in Appendix 2.

In order to further ensure the anonymity of the participants, the consent forms were not viewed by the researcher, but given to a colleague who transferred the unique codes to a spreadsheet without further detail. Students were given a period of time in which they could choose to withdraw from the study by providing their unique code to the researchers' colleague, who would then remove that individual from the database. The time allowed for this in both rounds of data collection was four weeks.

When data generated by the activity is not used for research purposes (i.e., in previous years and cases where consent was not granted) it is not retained, and is deleted within 2 weeks of completion of the activity (with the two week window allowing students to request copies of their results should they lose them). Data for which research consent was provided is transferred to secure cloud storage and password protected. The password is known only to an administrator (who entered participant details) and the researcher. The data currently held will be retained for future use by the researcher in similar projects as per the consent form. It will remain password protected and held in a secure, university-supported, cloud-based location.

3.6 Survey instrument detail

3.6.1 Questionnaire scales and measures

The survey instrument was hosted on Qualtrics. The survey was constructed using several psychological scales, and ended with a series of demographic questions. All questions were answered on a 5 point Likert-type scale, apart from demographic questions. The opening statement on the first page of the survey detailed the rationale for the survey, provided a reassurance of anonymity and included an entreaty to provide honest responses (see Appendix 1). The survey ran across several web pages, with each scale having its own page. The following sections details the scales selected for the study and some background about their development and use.

The scales and measures used in the research have been carefully chosen from a large range of possible scales and measures. The data for the study is generated by participants taking part in an exercise that is designed to help them with their own personal and professional development and therefore the scales and measures were chosen for pedagogical reasons (i.e., those that were considered to be of most value to participants from a learning perspective) and also provide the data required. As the exercise of carrying out the survey and building a goal hierarchy had been carried out by students in previous academic years (without the collection of the data for research) there existed a survey that used a range of measures selected for their usefulness for student development. For this research, the scales used previously (that were selected purely for pedagogical reasons) were retained. Added to these, for this research, were several scales and measures that could provide further insight into other aspects of a participants psychology. Specifically, the scales added to the survey for this research were the Life Orientation Test (Scheier et al., 1994), the Satisfaction with Life Scale (Diener et al., 1985) and a measure of Core Self-evaluation (Judge et al., 2003). These three additional scales were chosen as the existing (pre-research) survey had a range of measures for constructs that could be considered to be states (i.e. more fleeting states of being) but less in the way of those that could be considered trait measures (i.e. more enduring patterns of behaviour). These three additional scales ask students to consider their experience beyond the immediate (See Appendix 3 for detail) and are therefore considered to be measures of traits rather than states; for example, Pavot and Diener (2009) have shown that the Satisfaction with Life Scale has a degree of temporal stability. Another additional advantage of these three scales is that they are short in length and therefore do not make the survey too onerous.

Each of the scales and measures chosen for the survey has been tested for reliability using Cronbach's coefficient alpha (α). This measures internal consistency (how closely related a set of

scale items are) and provides an indication of average correlation between items in a scale (Pallant, 2013). Whilst there is some debate about the utility of this measure (Sijtsma, 2009, Cho, 2016), as it is used extensively by researchers in psychological construct scale development and reporting, it will also be used here.

3.6.1.1 The Brief Resilience Scale

The scale was developed by Smith et al. (2008) in order to measure the ability of an individual to recover from stressful experiences, labelled by the authors as an ability to bounce back. Originally designed with a focus on individuals experiencing health related stressors, development of the scale also included healthy female controls and undergraduate students. The scale was found to measure the specific construct of interest (α=.8 to .9) and has subsequently been found to be an effective measure of resilience across wide-ranging domains (Lai and Yue, 2014, Rodríguez-Rey et al., 2016, Taylor et al., 2020) The scale consists of six items, three positively keyed and three negatively keyed, with respondents being asked to indicate how much they agree with each of the statements. Examples of items on the scale:

- I tend to bounce back quickly after hard times (positively keyed item)
- I have a hard time making it through stressful events (negatively keyed item)

The scale was chosen for inclusion in the survey as the situation in which the respondents find themselves (a year-long Masters in Management programme at a high-ranking university) could be considered to be stressful, and that knowledge and understanding of current position on the scale may allow an individual to develop personal strategies to cope with setbacks. Appendix 3.1 shows all six items on the scale.

3.6.1.2 The Mood Awareness Scale

The construct of mood awareness is conceptualised as the attention directed towards one's mood states. The Mood Awareness Scale, developed by Swinkels and Giuliano (1995) measures two dimensions. The first is mood monitoring which is conceptualised "as tendency to scrutinize and focus on one's moods" (Swinkels and Giuliano, 1995 p.934), which may also be described, where the moods are negative, as a form of brooding. The second is mood labelling which "refers to the ability to identify and categorize one's moods" (Swinkels and Giuliano, 1995 p.934). The Mood Awareness Scale measures these two constructs, and has shown that mood monitoring can predict negative affect and the tendency to ruminate on negative moods, whereas mood labelling predicts positive affect. The original scale studies showed alphas of .69 and .80 for mood labelling and .85 to .88 for

mood monitoring. Subsequent use of the scale, for example Wismeijer et al. (2009) show good alphas; .77 and .83 respectively.

A selection of ten statements, four negatively keyed and six positively keyed, are presented to respondents; two examples can be seen below and the full scale can be seen in Appendix 3.2.

- I have a hard time putting my feelings into words (negatively keyed mood labelling item)
- I often evaluate my mood (positively keyed mood monitoring item)

This scale was included to allow individuals to consider their results on the two constructs and raise awareness of habits that may have an effect on overall mood states.

3.6.1.3 The Life Orientation Test (Lot-R)

The Life Orientation Test-Revised (Lot-R), developed by Scheier et al. (1994) is a tool for measuring optimism. The Lot-R scale contains 12 items; four positively keyed, four negatively keyed and four fillers. Given that there are several scales on the survey and in order to reduce respondent fatigue, filler items were removed from this administration of the test. Items include:

- I'm always optimistic about my future (positively keyed item)
- If something can go wrong for me, it will (negatively keyed item)

The Lot-R has been found to be an accurate measure of optimism (Chiesi et al., 2013). Optimistic individuals have been found to benefit from greater career success, social relations and better overall health (Carver and Scheier, 2014). Appendix 3.3 shows the modified (with fillers removed) scale used in this study. In development the Lot-R showed high test-retest reliability and an alpha of .78. The Lot-R has shown similar alphas in subsequent use, for example Bredal et al. (2017) alpha=.75.

3.6.1.4 Core self-evaluation

The concept of CSE combines self-esteem, generalised self-efficacy, neuroticism and locus of control into one trait, and is a basic evaluation of one's worth, capability and effectiveness (Mäkikangas et al., 2018). A brief (12 item) scale to measure this trait was developed by Judge et al. (2003). The scale has six positively keyed items and six negatively keyed items, for example:

- I am confident I get the success I deserve in life (positively keyed item)
- Sometimes I feel depressed (negatively keyed item)

In development, the scale was shown to have alphas ranging from .81 to .85 and high test-retest reliability (Judge et al., 2003). Subsequent use has shown good alpha scores and positive scores on the scale have been shown to correlate with job satisfaction and job performance (Bono and Judge, 2003, Wu, 2011, Wu and Griffin, 2012). The scale wording invites respondents to consider their life as a whole and therefore this scale could be considered to be measurement of a trait rather than a state (Chaplin et al., 1988), and perhaps therefore a more stable construct than others used within the survey. The full scale can be seen in Appendix 3.4.

3.6.1.5 Affective wellbeing

The scale to measure affective wellbeing consists of 30 items and was developed by Daniels (2000). The scale was originally intended for use in a work context but is widely applicable. It explores five aspects of wellbeing, namely anxiety-comfort, depression-pleasure, bored-enthusiastic, tiredness-vigour and angry-placid for an overall picture of affective wellbeing in an individual. Respondents are presented with a variety of (mostly) single word items and asked to consider how often they felt a particular way in the previous week. Items are both positively and negatively keyed:

- Anxious (negatively keyed)
- Tense (negatively keyed)
- Optimistic (positively keyed)
- Motivated (positively keyed)

Given that the instructions invite consideration of the previous week only, this measure could be seen as a short term, state, measure. Subsequent research by the original study author and colleague has considered the effect of temporal instructions on the survey (Russell and Daniels, 2018) but in this case the original form of the survey was used. The alpha scores in development were good at >.7 for all models (Daniels, 2000). The full scale can be seen in Appendix 3.5.

3.6.1.6 The Satisfaction with Life Scale

Developed by Diener et al. (1985) the scale measures global life satisfaction. The scale, shown to have high internal consistency, is a simple (five item) measure to ascertain an individuals' general satisfaction with life (SWL). The scale does not require consideration of specific areas of life but guides the respondent to think generally and make an overall judgement and could therefore be argued to be a measurement of a trait rather than a state. Diener (1994) suggests that the scale could be combined with other measures for accuracy, but does recommend non-self-report measures would be best and therefore impossible within this study design. However, the stand-

alone scale has been found to correlate with other wellbeing measures (Pavot et al., 1991, Pavot and Diener, 2008). The scale present respondents with five statements and they are asked to indicate agreement with each item. Examples are:

- In most ways my life is close to my ideal
- If I could live my life over, I would change almost nothing

Alphas for the scale are good, for example between .79 and .89 in review (Pavot and Diener, 1993) and as high as .88 in subsequent use (Steger et al., 2006, Jovanović and Brdar, 2018). All five scale items can be seen in Appendix 3.6.

3.6.1.7 Goal orientation

Goal orientation is conceptualised as an individual's "disposition towards developing or validating one's ability in achievement settings" (Vandewalle, 1997 p.995). The measure of goal orientation developed by Vandewalle (1997) identifies three specific dimensions; learning (sometimes called mastery), avoid and prove. Put very simplistically, those with a learning orientation view difficulty in a task as a challenge that can be overcome with some additional effort and see this challenge as an opportunity to develop their ability (i.e., they do not see ability as a fixed asset). Those with avoid or prove orientations tend to be more pessimistic in relation to ability and see task achievement as a way to avoid unwelcome consequences or to prove their ability to observers. This particular scale builds on the works of Nicholls (1978) and Dweck (1986) who initially proposed that individuals have certain types of learning goal orientations, but focused on adolescents in education settings. The Vandewalle (1997) tool is domain specific to work settings and was selected as being the most suitable for the measurement of goal orientation over others given the professional focus of the Masters in Management programme. The scale presents a series of 13 statements to respondents who are asked to indicate level of agreement. Some wording of items was amended to remove reference to the workplace but the nature of questions not materially changed. Five items relate to the learning goal orientation, four to prove and four to avoid. Examples are:

- For me, development of my abilities is important enough to take risks (learning orientation)
- I prefer to avoid situations where I might perform poorly (avoid orientation)
- I try to figure out what it takes to prove my ability to others (prove orientation)

In development the alpha scores were .88 for the learning scale, .84 for the prove scale and .83 for the avoid scale (Vandewalle, 1997). The full scale can be seen in Appendix 3.7.

3.6.1.8 The Thriving at Work Scale

Thriving has been defined as "an individual's experience of vitality and learning" (Spreitzer et al., 2005 p.537) and thriving in the workplace is seen as an adaptive function that allows individuals to make positive decisions about their own actions for development. The Thriving at Work scale developed by Porath et al. (2012) seeks to measure this construct and in development was found to correlate to, amongst other constructs, to positive and negative affect, goal orientation and core self-evaluation. Whilst the scale was originally developed for the workplace it is also applicable in this setting. The scale presents a series of 10 statements that respondents are asked to indicate agreement with; two negatively keyed and eight positively keyed, for example:

- I find myself learning often (positively keyed)
- I am not learning (negatively keyed)

In development alpha scores were as high (generally >.8 and as high as .94 in one sample) showing good internal consistency (Porath et al., 2012). The full scale can be seen in Appendix 3.8.

3.6.1.9 Constructive/Unconstructive Worry

McNeill and Dunlop (2016) developed a measure of an individual's tendency to worry in either a constructive or unconstructive way. The Constructive and Unconstructive Worry Questionnaire (CUWQ) attempts to observe two differing types of worry; that which is constructive and may help an individual to meet their goals and that which is unconstructive and may hinder pursuit of goals. Whilst one type of worry does not preclude the other, constructive worry tends to be associated with positive traits, with the opposite being true of unconstructive worry. Worry is often categorised as repetitive negative thought, and the main consequences of unconstructive, or negative repetitive thought are anxiety and lower levels of physical health, and some consequences of positive repetitive thought include recovery from depression and taking up health-promoting behaviours (Watkins, 2008). The CUWQ presents a series of 18 statements that participants are asked to indicate agreement with, with eight focusing on constructive worry and 12 on unconstructive worry. Examples include:

- When I worry, it tends to make me think about how to solve the issue that is making me worry (constructive worry item)
- When I worry, I tend to ask myself "why can't I handle things better?" (unconstructive worry item)

In development, alpha scores were .82 to .88 for constructive worry and .87 to .94 for unconstructive worry across studies, showing good internal consistency. The full scale can be seen in Appendix 3.9.

3.6.2 Goal hierarchy instrument

The GH instrument used in the research is an online tool developed by Professor Kerrie Unsworth and Dr Elisa Adriasola in 2017. Both are researchers focusing on positive psychology and workplace behaviour (see Unsworth et al., 2014, Unsworth et al., 2011). It is designed for use across a wide variety of settings and has so far been used in development workshops in workplaces and with student groups.

The tool allows individuals to build a matrix encompassing the four key GH levels. This drawn representation of a persons' life allows them to better visualise their own personal strivings, what they need to do on a day-to-day basis to meet their longer term goals and aspirations and how their day-to-day activities either facilitate or hinder those strivings.

The tool takes the form of an online web platform (https://www.goalhierarchy.com/). The platform leads users through a series of actions that ask them to enter different items into their GH, ultimately leading to a screen where respondents are able to use a simple point and click interface to make connections (links) between the different items (nodes) that populate the GH. Figure 3 shows the labelling and terminology used in this work.

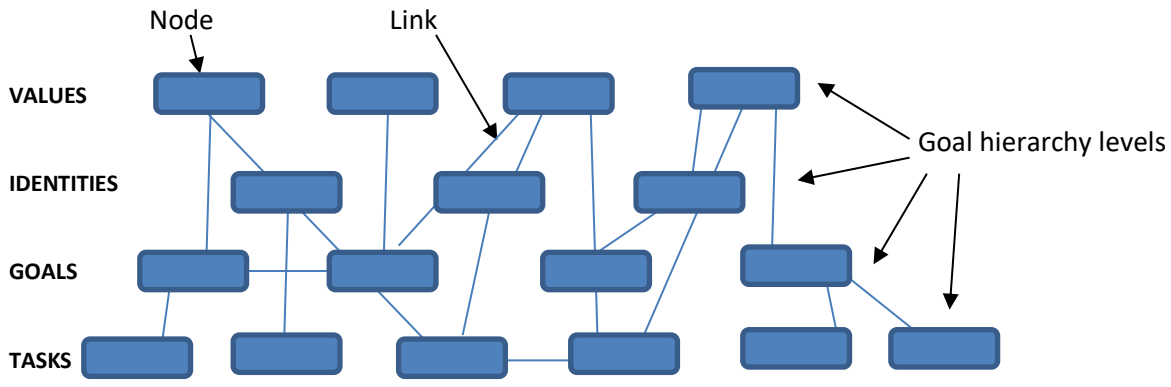

Figure 3: Idealised example of a goal hierarchy matrix showing labelling used in this study

The interface is easy to use, relying on point and click in the main, with a small amount of free typing required. The instructions are given using a mixture of text, images and videos.

3.6.2.1 Further detail: goal hierarchy tool instructions

On entering the GH and after reading through some instruction, users are asked to think about their guiding values. The GH tool uses the Schwartz Value Inventory (Schwartz, 1992) based on the Theory of Basic Human Values. This theory posits that there are 10 universal values that, through extensive study, have been found to be present across cultures(Schwartz, 2012). Users of the tool are asked to choose between two and eight values from the list that most closely relate to the things they see as important in life.

Following this, respondents are asked to consider their identities. People often have multiple identities, with each one based on a set of meanings related to cultural, social or family roles (Burke and Stets, 2009). Individuals are asked to list between two and eight identities (self-generated and not listed as with values) and these may include current identities as well as future sought identities.

Users are then invited to input their goals into the tool. Users are asked to type into the tool between three and eight goals they seek to achieve within around 6 months to 5 years though these are not absolute timescales. Users are invited to consider goals in all domains of their life and not only the personal or professional.

The final section of the tool requiring any typed entry asks users to enter between four and ten of their day-to-day tasks into the tool. Again, users are asked to consider all domains of their life, and the often mundane but regular actions they take on a daily basis. A restriction on the number of items a user may enter ensures that the tool does not become unwieldy.

When these sections are complete, users are led to a video. The video shows the user how they will see the results of the entries into the tool so far, and how to go about using the programme to construct their GH matrix. The next screen lays out the entries made into the tool in a series of layers representing values, identities, goals and tasks. Users then use point and click to draw links between the different nodes in their GH. The links drawn represent the users' feelings about the relationships between the nodes. For example, if a user perceives that a daily task (e.g., visiting the gym) contributes to a longer term goal (e.g., completing a triathlon) they would draw a positive link between these two nodes. Equally, if a user feels that a daily task (e.g., playing computer games late into the night) has a negative effect on their ability to meet a goal (e.g., achieving good marks in their degree) then they would draw a negative link between the nodes.

A user must first select from a list whether the link they draw is positive or negative, with the positive selection presented to users as the first choice. Once a positive or negative selection is

made, the user can then draw as many or as few lines as they wish between the nodes on the matrix. The matrix does not limit where the links can be drawn; they can pass across and between levels. Users are encouraged to spend some time considering how the different items (nodes) within the GH are linked and to do their best to graphically represent this with the tool. On completion the user has a matrix representing their life.

3.6.2.2 Pre-populated items in the goal hierarchy tool

There were several pre-populated nodes in the GH used for the study. The prepopulated nodes ensured that data for comparison could be drawn from all goal hierarchies. The nodes were pre-populated before respondents were given access to the tool, and these fixed items were not able to be changed by users. The pre-populated nodes were:

- At the task level: 'attending lectures'
- At the goals level: 'pass my degree with the best mark possible'
- At the identities level: 'a successful student'

Two of these three pre-populated nodes were then used as the basis for extracting data from the goal hierarchies. From here forward, the goal level node labelled 'pass my degree with the best mark possible' will be referred to as the pass goal and the identity level node 'a successful student' will be referred to as the student identity.

3.7 Data extraction

3.7.1 Extracting data from goal hierarchy

The outcome of the GH tool is a matrix (see appendix 4 for examples). The goal hierarchies produced by respondents showed a variety of different patterns, form and detail. Before decisions were made about the data to be extracted a thorough review of each GH matrix took place. The review process led to the removal of seven goal hierarchies from the data set. GH characteristics that led to removal were:

- A lack of links between nodes, either entirely, or proportionally very few links present (i.e. many more nodes present than links)
- The GH items were written in a language other than English

Following the initial inspection of the GH matrices data was extracted from each of them. Decisions made about what and how to extract data had the aim of ensuring that comparisons could be drawn

across goal hierarchies despite the huge variety of form and content. In all, 11 variables were extracted from each of the goal hierarchies.

3.7.2 Pre-populated goal hierarchy node variables

The pre-populated nodes of interest were the identity level node 'a successful student' and the goal level node 'pass my degree with the best possible mark'. These two nodes were used to generate data that could be extracted from, and compared across, the goal hierarchies. The data extracted from these two nodes was:

- The number of links between the node and lower levels of the goal hierarchy
- The number of links between the node and higher levels of the goal hierarchy
- The number of links between the node and other nodes at the same level of the goal hierarchy
- The number of positive links at the node
- The number of negative links at the node

These are all the quantitative variables that it is possible to take from these nodes. There was also a third pre-populated node at the task level that was not used to extract data because, given its position at the base of the GH it had a small number of expected links, and the expectation (that was proved to be the case in most examples) was that there was just one link from this node to the pass goal.

Given the huge variation within the goal hierarchies, for example some contained many tens of links, some contained very few; some contained a balance of positive and negative links and some were heavily positive with few or no negative links, a decision was made convert the variables drawn from the two nodes of interest into ratios to enable easier comparison in relation to characteristics. Therefore the variables taken from each of the two nodes of interest were:

- The links connecting a node to lower levels of the goal hierarchy as a proportion of all node links
- The links connecting a node to higher levels of the goal hierarchy as a proportion of all node links
- The connection to other nodes on the same level of the goal hierarchy as a proportion of all node links
- Positive links to the node as a proportion of all node links
- Negative links to the node as a proportion of all node links

The variables, reading anywhere from 0 to 1 were each labelled accordingly (see table 1).

Variable	Label
The links connecting the 'pass my degree' goal node and identity or value level nodes as a proportion of all links at the node.	Pass goal links to higher levels
The links connecting the 'pass my degree' goal node to task level nodes as a proportion of all links at the node.	Pass goal links to lower levels
Links between the 'pass my degree' goal node and nodes at the (same) goal level as a proportion of all links at the node.	Pass goal side links
The proportion of positive links at the 'pass my degree' goal node as a proportion of all links to the node.	Pass goal positive links
The proportion of negative links at the 'pass my degree' goal node as a proportion of all links to the node.	Pass goal negative links
The links connecting the 'successful student' identity node to the value level nodes as a proportion of all links at the node.	Student identity links to higher levels
The links connecting the 'successful student' identity node to goal or task level nodes as a proportion of all links at the node.	Student identity links to lower levels
Links between the 'successful student' identity node and nodes at the (same) identity level as a proportion of all links at the node.	Student identity side links
The proportion of positive links at the 'successful student' identity node as a proportion of all links at the node.	Student identity positive links
The proportion of negative links at the 'successful student' identity node as a proportion of all links at the node.	Student identity negative links

Table 1: variable labels for node/link measures within the goal hierarchy

3.8 Methodological limitations: data collection

There were some limitations in the method used to identify consenting participants' data. The unique code generated by respondents should have been used to label both the survey research instrument and the GH research instrument. Unfortunately, in several cases there were codes provided by participants that matched to one of the research instruments but not the other. This meant that rather than a dataset containing matched pairs of goal hierarchies and surveys, the dataset contains some matched pairs, but also some standalone surveys and some standalone goal hierarchies. This respondent error was first observed following the initial round of data collection in October 2018. Attempts were made to address the issue during the second round of data collection

in October 2019 through the use of reinforcement and clear messaging, and whilst there was some improvement in the matching rate, there were still several unpaired surveys and goal hierarchies. The unpaired data is considered in section 4.2.1.

Chapter 4 Results

The chapter outlines the preparation of data for analysis and subsequent detail of that analysis including correlation tests and regression.

4.1 Description of the respondent sample

The sample included 253 individuals; all registered taught postgraduate students on a Masters in Management programme at a Russell Group University. Demographic information is only available for those respondents completing either the survey or survey plus goal hierarchy (n=221) though some data is missing from a small number of surveys. The youngest respondent was aged 21 and the oldest aged 33 (m = 23.25, SD = 1.77); 25% were male (n = 55) and 75% were female (n = 163). 85% of respondents (n = 186) identified as Chinese, 2% (n = 5) identified as Indian, 2% (n = 5) as English/Welsh/Scottish/Northern Irish/British and 6% (n = 13) as 'any other Asian background'. Additional self-declared ethnic identities were 'other' (i.e., an ethnic group not covered in the list provided; for detail see full list in Appendix 5) at less than 2% of the sample, and 'any other white background', 'White and Asian', 'any other mixed/multiple ethnic background', 'African' and 'Arab', with each under 1% of the respondent sample. Self-declared ethnic identity was missing from two surveys. Table 2 shows the self-declared ethnic identity of respondents.

Self-declared ethnic background	Frequency	Percentage
Chinese	186	85
Any other Asian background	13	6
Indian	5	2
English/Welsh/Scottish/Northern Irish/British	5	2
Any other ethnic background other than those listed above	10	5

Table 2: Respondents by self-declared ethnic identity

4.2 Data preparation

4.2.1 Missing data

There are some instances of missing data within the set, where the survey and GH do not come as a matched pair, with reasons for this including:

1) No match between the respondent-generated codes provided on consent forms, goal hierarchies and surveys; in several cases it was only possible to identify a survey response or a GH response from the consent data provided by the respondent.
2) Some goal hierarchies were removed from the data set for reasons detailed previously; this left some surveys with no corresponding GH.

Given that the statistical analysis software to be used for the data analysis (IBM SPSS) is able to handle missing data through the exclusion of cases (Pallant, 2013) the decision was made to retain all available data whether in matched pairs or not.

4.2.2 Preparing the data for analysis

IBM SPSS (Version 26) is the chosen data analysis package for this exploratory research. Data from the GH were manually extracted and entered into SPSS. Data from the survey were generated in such a way that they could be easily uploaded into SPSS.

In order to prepare the data for analysis, several steps needed to be taken. These included:

1) Reverse coding of negatively keyed items within the dataset. Several items within scales used in the survey were negatively keyed; these items were reverse coded.
2) There was a manual/visual check of the data to look for anomalies and outliers, followed by a check of all descriptive statistics using SPSS. There were no anomalies and outliers found in the survey data and only a few typing errors within the GH variables which were corrected.

4.2.3 Normality testing

In order to identify the most suitable statistical tests to use on the data, normality testing was carried out. The size of the data set meant that readings of Skewness and Kurtosis would give good indications of normality. These readings indicated normal distribution across all variables, and whilst not a perfect 0 in any case were well within the bounds of what would be considered to be normal. Kolmogorov-Smirnov output also suggested the data was normally distributed.

4.2.4 Reliability testing

All scale items used in the survey were tested for their internal consistency. Cronbach's alpha (α) was used to check internal consistency on all scales. Table 3 lists the scale name, alpha values from this study and number of items in each scale.

Scale variables	α	# of items
Core self-evaluation	.80	12
Learning Goal Orientation	.83	5
Prove Perform Goal Orientation	.64	4
Prove Avoid Goal Orientation	.70	4
Mood Monitoring	.73	5
Mood Labelling	.47*	5
Optimism (Lot-R Scale)	.61*	6
Resilience	.56*	6
Satisfaction with Life Scale	.76	5
Thriving	.81	10
Wellbeing: anxiety-comfort	.83	6
Wellbeing: depression-pleasure	.81	6
Wellbeing: bored-enthusiastic	.73	6
Wellbeing: tiredness-vigour	.62*	6
Wellbeing: angry-placid	.60*	6
Constructive worry	.73	8
Unconstructive worry	.81	10

Table 3: Cronbach's Alpha scores for scales/scale factors

Whilst the ideal alpha reading is .7 or above, some of the scales (and factors within scales) presented here have a low number of items, which will tend to affect the score (Pallant, 2013). Those with lower than ideal alpha scores for this research (marked * above) are considered below.

Optimism (Lot-R) has a lower alpha score than is ideal at .61. On review it was revealed that the removal of item 2 of this scale ('if something can go wrong for me it will') would increase the alpha score, but only by .1 (to .62) and therefore the scale was left as is as the alpha score is acceptable in cases where there are a lower number of scale items.

Resilience showed a lower alpha score than ideal. A review revealed that when item 5 of this scale was removed then the alpha score increased from .56 to .64. Therefore item 5 of the scale ('I usually come through difficult times with little trouble') was removed from the dataset to improve reliability.

The alpha for mood labelling is low at .47. Further analysis revealed that item 2 from this scale ('I am usually "tuned in" to my emotions') was the cause of the low reliability score and therefore removed, leading to a much improved α=.62.

Wellbeing: tiredness-vigour and Wellbeing: angry-placid both have lower than ideal alpha scores. Further analysis reveals that item 23 on the scale (related to tiredness-vigour, with the item being 'Alert') was the major cause of this, and on removal of this item the tiredness-vigour alpha improved (α=.71). Item 28 on the scale (related to angry-placid, with the item being 'Placid') was also removed as this then led to an improved alpha for that factor (α=.64). No other items were found to lead to a dramatic increase in alpha should they be removed. Further review of the wellbeing scale seemed to suggest that higher-order factors were at play and therefore factor analysis was carried out.

4.2.5 Factor Analysis – wellbeing measure

Daniels (2000) wellbeing measure suggests five factors, but this factor structure does not appear to work well with the data collected in this study. The wellbeing data from this study was analysed to identify underlying factor structure, and to see whether the recalculation of variables based on these underlying structures may improve reliability.

Before factor analysis can be carried out, there must be several checks made to ensure that the data are suitable. First, the size of the data set is important, and the larger the set, the better; according to the criteria of Tabachnick and Fidell (2013) the size of this data set makes it suitable for factor analysis. The correlation matrix should also be inspected to look for coefficients of >.3. In this case, there were many correlations above this level. The factorability of the data is also revealed by Bartlett's test of sphericity (in this case p=<.001) and the Kaiser-Meyer-Olkin measure of .88.

Factor analysis seeks to find a balance between reducing the number of factors within a scale and explaining variance. An exploratory approach was taken here; all 30 scale items were analysed using principal component analyses with Oblimin rotation. This initially yielded 6 factors explaining 66% of variance. The majority of items loaded strongly onto the first four factors (58%) and the majority of this the first two factors (44%) with only small amounts of variance explained by the final two factors. A four factor solution was forced but the factors were not clear, and it showed quite clearly that the strongest loadings were on the first two factors. Therefore a two factor solution was forced. The two factors identified were clearly related to positive and negative affect, based on the items within each factor, and were therefore named as such.

Inspection of communalities in the two factor solution identified 10 items with low communalities (<.4). These items (listed in table 4) were removed. This was justified as when these ten items were included, the two factor solution explained 44% of variance, but when removed the two factor solution explained 55% of variance.

Item	Extraction
Anxious	.36
Bored	.19
Sluggish	.29
Dull	.32
Sleepy	.26
Alert	.34
Angry	.32
Aggressive	.33
Placid	.17
Patient	.28

Table 4: items with low communalities (<.4) removed from the wellbeing measure

The pattern matrix can be seen in table 5. The two factors were labelled positive affect and negative affect, based on the items falling under each factor. Variables associated with this scale were recalculated based on the results of factor analysis.

Scale Item	Factor 1 – positive affect	Factor 2 – negative affect
Pleased	.84	
Cheerful	.84	
Enthusiastic	.83	
Active	.80	
Happy	.79	
Full of energy	.78	
Optimistic	.77	
Motivated	.77	
Comfortable	.69	
At ease	.64	
Relaxed	.64	
Calm	.47	

Fatigued		.72
Depressed		.72
Tense		.72
Miserable		.70
Tired		.68
Annoyed		.67
Gloomy		.65
Worried		.65

Extraction Method: Principal Component Analysis
Rotation Method: Oblimin with Kaiser Normalization

Table 5: Wellbeing measure factor analysis pattern matrix

4.2.5.1 Possible reasons for low alpha scores and factor loading issues

Descriptive statistics reveal that the respondent sample is heavily skewed towards international individuals; that is, individuals from a background where English is not the first language. Therefore the English comprehension abilities of some of the sample may have been the cause of some of the results observed.

When considering the alphas, and the items that were removed in order to improve alpha scores, it is possible to see that some of the language present and/or words used could be either unfamiliar to a non-native English speaker, or ambiguous in their meaning. An example could be the item removed from the Resilience scale; 'I usually come through difficult times with little trouble'. A native speaker of English might easily see that this statement is expressing that the individual comes through difficult times with not much problem (i.e. easily) but this statement may be misconstrued by a non-native English speaker to mean that one comes through difficult times *with* trouble (i.e., difficulty, even if the statement suggests that there is little of said trouble). Language and comprehension related issues should be considered when collecting data using scales and measures that are not in the respondent's first language. Further consideration is given to this in Chapter 5 when discussing limitations and future directions.

4.3 Analysis results

4.3.1 Goal hierarchy structural variable

A review of the goal hierarchies showed a difference across the data between those hierarchies that were well integrated (i.e., there were many links between and across nodes, and the goal hierarchy

was distinctly 'one piece') and those that were not well integrated (i.e., showed separation between different sets of nodes at different points within the goal hierarchy). Examples of both a well-integrated GH and a GH showing a high level of separation can be seen in Appendix 4. Further review of the hierarchies indicated that the integration/separation could be easily codified based on where the integration/separation occurred in relation to the GH levels (see figure 3 for further detail of levels). Each GH was inspected and given a reading on a 0 to 3 scale providing an ordinal variable (labelled as integration in the analysis). Detail can be found in table 6.

Integration variable score	**Explanation**
0	Full separation within the goal hierarchy. A set of nodes and links exist entirely independently of at least one other set of links and nodes and there is no point of contact/shared nodes.
1	A high level of separation in the goal hierarchy. There is clear separation within the goal hierarchy (i.e. no crossing/sharing of nodes or links) until the highest level, values, at which point there is a connection made between two distinct lower level clusters of nodes and links.
2	Separation in the goal hierarchy until the goals level. There is clear separation in the goal hierarchy on the lower two levels (tasks and goals), with clearly distinct sets of nodes and links. Only at the level of identities does the goal hierarchy show any crossing/sharing of links and nodes.
3	Full integration within the goal hierarchy. Nodes and links are fully integrated across all levels of the goal hierarchy. There are no groupings of nodes or links at any level that are not clearly linked to the main body of the goal hierarchy.

Table 6: Goal hierarchy integration level labelling.

4.3.2 Descriptives for all variables

Table 7 lists all study variables from the survey and GH. It also shows the number of responses available for each variable, the mean and the standard deviation (SD).

Variable	Number of responses	Mean	SD
Resilience	221	3.36	.59
Life orientation	221	3.63	.59
Thriving	220	3.70	.47
Mood monitoring	221	3.01	.74
Mood labelling	221	3.37	.48
Learning goal orientation	220	3.51	.72
Prove perform goal orientation	220	3.47	.67
Prove avoid goal orientation	220	2.89	.73
Satisfaction with life	221	3.214	.71
Core self-evaluation	221	3.27	.50
Constructive worry	219	3.58	.53
Unconstructive worry	219	3.09	.65
Positive affect	221	3.39	.69
Negative affect	221	3.82	.54
Integration within the goal hierarchy (from 0=no integration to 3=full integration)	167	1.62	1.22
Pass goal links to higher levels	164	.44	.32
Pass goal links to lower levels	164	.51	.32
Pass goal side links	164	.05	.15
Pass goal positive links	164	.88	.23
Pass goal negative links	164	.12	.23
Student identity links to higher levels	159	.34	.25
Student identity links to lower levels	159	.63	.26
Student identity side links	159	.04	.12
Student identity positive links	159	.90	.18
Student identity negative links	159	.10	.19

Table 7: Descriptive statistics for all variables in the study

4.4 Correlation testing

Correlation testing allows for examination of the strength and direction of any relationship between variables. As the data is normally distributed Pearson's correlation coefficient, *r*, was used. Given the novel and exploratory nature of the research a two-tailed test was carried out as no predictions can be made about the direction and strength of relationships that may be present in the data (Field, 2018). As well as showing whether there is a relationship between variables, *r* will also show the direction and strength of that relationship. Readings within a correlation table can range from -1, which would indicate a perfect negative relationship between variables to 0; no relationship between the variables; to +1, a perfect positive relationship between variables (Field, 2018). Strength can be interpreted using *r* values; r = 0.10 is a small effect, r-=0.30 a medium effect and r=0.50 a large effect (Cohen, 1988). The correlation matrix also indicates the *p* value i.e., the probability that we get the result seen where no effect exists (Field, 2018), indicating whether p<.05 or p<.01.

Correlation was carried out using all variables; demographic variables, survey variables (n = 14) and variables related to the data read from the goal hierarchies (n = 11). The correlation matrix for all variables is shown below (Table 8).

Table 8 – Pearson correlation matrix showing all variables (sig. 2-tailed)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender	1.00													
2. Age	.00	1.00												
3. Positive affect	.00	.00	1.00											
4. Negative affect	.09	.01	.35**	1										
5. Resilience	-.01	.06	.35**	-.24**	1.00									
6. Optimism	.08	.03	.36**	-.16*	.23**	1.00								
7. Thriving	.06	.10	.53**	-.23**	.37**	.35**	1.00							
8. Mood monitoring	.08	-.19**	-.03	.24**	-.11	-.03	.05	1.00						
9. Mood labelling	.09	.09	.26**	-.15*	.22**	.22**	.20**	-.06	1.00					
10. LGO	-.11	.02	.33**	-.06	.30**	.18**	.40**	.01	.18**	1.00				
11. PPGO	-.11	-.12	.28**	.00	.13	.13	.09	.16*	.15*	.35**	1.00			
12. PAGO	-.10	-.01	-.04	.05	-.19**	.00	-.24**	.12	-.05	-.24**	.28**	1.00		
13. SWL	.00	-.01	.38**	-.13	.25**	.26**	.38**	-.04	.12	.10	.03	-.05	1.00	
14. CSE	-.15*	.15*	.49**	-.28**	.39**	.39**	.46**	-.21**	.18**	.34**	.08	-.24**	.55**	1.00
15. Uncon. worry	-.04	-.13	-.19**	.20**	-.31**	-.20**	-.12	.33**	-.21**	-.10	.19**	.31**	-.23**	-.36**
16. Con. worry	.02	.02	.19**	-.08	.25**	.13	.35**	.17*	.14*	.28**	.15*	-.09	.12	.18**
17. Integration	.04	.08	.08	-.18*	.12	.07	.08	.01	.04	-.01	.00	.02	.06	.03
18. Pass goal links to higher levels	.01	.02	-.02	.17	.06	.09	.14	.18*	.06	.08	-.07	-.07	.06	.01
19. Pass goal links to lower levels	-.03	-.04	.02	-.21*	-.02	-.06	-.19*	-.17	-.08	-.13	.05	.09	-.10	-.06
20. Pass goal side links	.05	.02	.03	.10	-.07	-.09	.12	.01	.01	.13	.05	-.07	.06	.11
21. Pass goal positive links	-.02	-.06	-.11	.08	-.13	.02	-.10	-.05	-.10	.08	.17	-.01	-.05	.00
22. Pass goal negative links	.02	.06	.11	-.08	.13	-.02	.10	.05	.10	-.08	-.17	.01	.05	.00
23. Student identity links to higher levels	-.11	-.05	.06	-.03	.02	-.04	.07	-.09	.00	.02	.03	-.10	.15	.11
24. Student identity links to lower levels	.17	.06	-.08	.00	.01	.01	-.10	.11	.05	-.05	-.02	.09	-.19*	-.19*
25. Student identity side links	-.12	-.02	.04	.06	-.07	.06	.05	-.05	-.10	.06	-.01	.01	.09	.17
26. Student identity positive links	.02	-.07	-.06	.03	-.12	-.07	-.08	-.03	-.06	-.04	-.15	-.04	-.06	-.18*
27. Student identity negative links	-.02	.07	.06	-0.03	.12	.07	.08	.03	.06	.04	.15	.04	.06	.18*

	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Gender													
2. Age													
3. Positive affect													
4. Negative affect													
5. Resilience													
6. Optimism													
7. Thriving													
8. Mood monitoring													
9. Mood labelling													
10. LGO													
11. PPGO													
12. PAGO													
13. SWL													
14. CSE													
15. Uncon. worry	1.00												
16. Con. worry	.17*	1.00											
17. Integration	-.13	.10	1.00										
18. Pass goal links to higher levels	-.11	.08	.06	1.00									
19. Pass goal links to lower levels	.10	-.06	-.05	-.89**	1.00								
20. Pass goal side links	.04	-.02	-.01	-.23**	-.23**	1.00							
21. Pass goal positive links	-.01	-.10	-.16*	-.07	.07	.01	1.00						
22. Pass goal negative links	.01	.10	.16*	.07	-.07	-.01	-1.0**	1.00					
23. Student identity links to higher levels	-.13	.02	.16*	-.22**	.22**	.01	-.03	.03	1.00				
24. Student identity links to lower levels	.16	-.01	-.17*	.21**	-.17*	-.10	.02	-.02	-.89**	1.00			
25. Student identity side links	-.08	-.02	.04	.01	-.11	.200*	.04	-.04	-.19*	-.28**	1.00		
26. Student identity positive links	.00	-.03	-.20*	.11	-.09	-.03	.22**	-.22**	-.20*	.19*	.00	1.00	
27. Student identity negative links	.00	.03	.18*	-.11	.10	.02	-.22**	.22**	.18*	-.17*	.00	-.95**	1.00

*p<.05 **p<.01

4.5 Correlation findings and brief discussion of results

The matrix suggests a range of correlational relationships exist within the data. These can be subdivided into relationships between demographic data; between demographic data and psychological constructs; between psychological constructs; and between psychological constructs and GH variables. The focus of this study is only the latter but some results of the former are briefly reported below.

4.5.1 Correlations between demographic data and psychological constructs

Whilst the study is not concerned by these results per se, they can say something about the sample population. Comparison of means indicates that males (making up 25% of the sample) tend to be older than the females in the sample population. The correlation matrix indicates a relationship between gender and CSE; comparison of means found a small but significant difference indicating that males score more highly on the CSE scale. In addition to this, the data also shows that older respondents also score more highly on this scale. Older respondents also tend to score lower on the mood monitoring scale, which may suggest that older respondents are less prone to brooding.

4.5.2 Correlations between psychological constructs

The Pearson Correlation matrix suggests a number of significant relationships between psychological construct data collected in the survey. Many of these relationships are strong and significant. Based on the extant literature and there is nothing unexpected in this data. Given the focus of this study is the relationships psychological construct variables may have with the GH variables then further analysis of these findings is not necessary.

4.5.3 Correlations of interest between psychological constructs and goal hierarchy variables

Each of the observed, significant positive correlations of interest will be detailed here. Given the abstract nature of the variables, alongside the more usual data related to analysis an explanation for each finding will also be provided. This will attempt to illustrate what each of the findings *may* mean in relation to the GH and give an example of what this *may* look like in the lived experience of a respondent. It must be borne in mind that these illustrations are conjecture and exist only to aid understanding. There is full discussion of findings in chapter 5.

4.5.3.1 Pass goal links to higher levels and mood monitoring

The number of links connecting the pass goal to higher levels of the goal hierarchy, as a proportion of all links at the pass goal, and scores on the mood monitoring scale variable were found to be positively correlated, r(164)=.175, p≤ .05. Though the effect size(*r)* is small, this suggests that respondents with proportionally more links between the pass goal and higher levels of the GH than links between the pass goal and lower or equal levels of the GH are likely to score higher on the mood monitoring scale. This may suggest that respondents with strong links between their pass goal and identities/values are more likely to brood or regularly check their feelings.

4.5.3.2 Pass goal links to lower levels and negative affect

The number of links between the pass goal and lower levels of the GH, as a proportion of all links at the pass goal, and scores on the negative affect variable of the wellbeing scale are negatively correlated, r(164)=-.214, p≤ .05. The *r* is small but the finding suggests that respondents with a proportionally higher number of links between the pass goal and lower level (tasks) will tend to be lower in negative affect. This may suggest that a respondent who is able to list a variety of daily tasks related to studying successfully for their degree generally experiences less negative feelings.

4.5.3.3 Pass goal links to lower levels and thriving

The number of links between the pass goal and lower levels of the GH as a proportion of all links at the pass goal, and scores on the thriving scale variable are negatively correlated, r(164)=-.185, p≤.05, though the *r* is small. This finding shows that in this sample respondents with a proportionally higher number of links between tasks and the pass goal than links between the pass goal and identities/values will tend to score lower on the thriving scale variable. This may mean that an individual with many daily tasks related to their goal of passing the degree feels overwhelmed to some extent. This in interesting when one considers the finding above which seems to suggest lower levels of negative affect related to proportionally more links between task level of the GH and the pass goal.

4.5.3.4 Student identity links to lower levels and satisfaction with life

The number of links between the student identity node and lower levels of the GH as a proportion of all links at node, and scores on the SWL scale variable are negatively correlated, *r*(159)=-.191, p≤ .05. Thought the *r* is small it suggests that those respondents with a higher proportion of links between student identity and tasks/goals that student identity and values, are likely to be lower on the SWL scale. This may suggest that a respondent is striving hard to be a good student but perhaps cannot

see how that identity aligns with their deeply-held values and this could result in them experiencing less happiness and general satisfaction with life.

4.5.3.5 Student identity links to lower levels and core self-evaluation

This finding is similar to that above meaning that there are two significant correlations related to the student identity node. The correlation indicates that the number of links between the student identity node and lower levels of the GH, as a proportion of all links at that node, and scores on the CSE scale variable are negatively correlated, $r(159)=-.192$, $p \leq .05$. Respondents with proportionally more links between student identity and lower levels of the GH are more likely to score lower on the CSE scale variable. This may mean that they are unable to align their strivings to be a successful student with their values and it leads to them rating themselves lower on the scale measuring self-worth, capability and effectiveness.

4.5.3.6 Student identity positive and negative links and core self-evaluation

The proportion of positive and negative links to the student identity and CSE are correlated. Proportionally more positive than negative links to the student identity and scores on the CSE scale variable are negatively correlated, $r(159)=-.175$, $p \leq .05$. Therefore a higher proportion of positive links to the student identity and scores on the CSE scale variable are positively correlated to the same degree as all node links must either be positive or negative and cannot be neutral. Though the *r* is small it suggests that respondents with proportionally more positive links entering the student identity are likely to score lower on the CSE scale variable, and respondents with proportionally more negative links entering the student identity are likely to score higher on the CSE scale variable.

This may mean that respondents who are better able to visualise how tasks, goals and values that they have may prevent or hinder their pursuit of this identity rate themselves more highly on self-worth, capability and effectiveness. This could indicate that the ability to visualise these '*negatives*' is beneficial and may speak of a deeper stability or level of contentment within those respondents able to do this.

4.5.4 Goal hierarchy integration/separation findings

There are a range of correlations present in the data related to the integration/separation level of the GH (i.e. whether the GH is well integrated or has apparent separate 'streams' between which there are little or no shared links). These findings are presented below, and some possible explanations offered.

The following interesting correlations were observed the data between integration/separation in the GH and:

- Negative affect; $r(167)=.182$, $p \leq .05$. This suggests that respondents with integrated goal hierarchies experience lower levels of negative affect.
- Positive links at the pass goal; $r(164)=-.159$, $p \leq .05$. This suggests that integrated goal hierarchies have more negative links at the pass goal node.
- Positive links at the student identity node; $r(159)=-.202$, $p \leq .05$. This suggests that integrated goal hierarchies have more negative links at the student identity node.
- Links between the student identity node and lower levels; $r(159)=-.174$, $p \leq .05$. Respondents with proportionally more links between student identity and tasks/goals have less integrated goal hierarchies.
- Links between the student identity node and values; $r(159)=.159$, $p \leq .05$. Respondents with proportionally more between student identity node and values level of the GH have more integrated goal hierarchies.

The data suggests that those individuals who have well integrated goal hierarchies (i.e. are able to visualise their life as a complex, interconnected matrix, rather than a series of separate 'strands') are less likely to experience negative feelings. More integrated goal hierarchies also contain a higher proportion of negative links to the pass goal and student identity, so it seems that the ability of an individual to visualise how the tasks they carry out on a daily basis or the goals they pursue may prevent them from reaching their goal of getting a degree/reaching their successful student identity is in some way positive. Integration is also linked to more connections being present between the student identity and values (i.e. an ability to see how the student identity allows one to live up to their values, so proportionally more links between the student identity node and higher levels than the student identity node and lower levels) although it is recognised that this finding may just be a quirk of the statistics as more links overall suggest more integration. However, overall, data suggests that it is better for an individual to have a well-integrated GH with a balance of positive and negative links. One explanation is that those individuals who see their life as separate strands (i.e. have less well integrated goal hierarchies) may experience conflict as they struggle to make decisions about where to allocate limited resources across the different spheres of their life. The findings seem to hint at a higher level of metacognition in respondents with integrated and well-balanced (in respect to positive and negative links) goal hierarchies.

The correlation matrix also shows some additional relationships between GH variables, related to the construction of the GH. The GH data is based on proportions, often of binary measures, and so

this explains the almost perfect correlation seen in some cases in the matrix, therefore further detail is not included here. Also, some of the very strong correlations are related to the proportion of links related to a particular node and therefore require no further exploration. Additionally, links out of the pass goal lead naturally towards the student identity and are therefore given no further explanation.

4.5.6 Multiple regression analysis

Regression will allow further exploration of the observed relationships within the data. In particular this research is interested in how much influence the observed psychological construct variables have on variables related to GH characteristics. Negative correlation was observed between student identity links to lower levels and the CSE variable (-.192, p≤ .05) and student identity links to lower levels and the SWL scale variable (-.191, p≤ .05) variables. Given this observation, standard multiple regression was used to address the following questions:

1. How do the CSE and SWL scale measures (the independent variables) relate to the proportion of links into the student identity (the dependent variable)?
2. Which of the independent variables (CSE or SWL) is most strongly associated with the proportion of links between the student identity and lower levels of the goal hierarchy?

Before beginning the analysis residuals were checked. A tolerance level of .7 and a VIF of 1.43 suggest no multicollinearity. The sample size (N=159) is acceptable based on N>50+8m where m=number of independent variables (Tabachnick and Fidell, 2013). The Normal P-P plot is as expected and the scatterplot shows no outliers.

A multiple linear regression indicates CSE and SWL scale variables have a small but significant ability to predict the outcome variable, (F(2,126)=3.13,p=.047. R^2 = .047) meaning that 4.7% of variation within the dependent variable (student identity links to lower levels) can be explained by variation in the independent variables (CSE and SWL scales). See table 9.

CSE makes a stronger unique contribution to explaining the proportion of incoming links to the student identity (B= .065, p=.23) than SWL (B=.044, p=.24) but neither predictor variable makes significant unique contribution (see table 10) therefore it is the shared variance across both that is associated with student identity.

Model	R	R^2	Adjusted R^2	Std. Error
1	.22[a]	.047	.032	.25

a. Predictors (constant), core self-evaluation, satisfaction with life

Table 9: Regression analysis model summary; dependent variable: student identity links to lower levels

Predictor	B	SE B	β	*t*	*p*
(constant)	.98	.15		6.5	<.001
Satisfaction with life	-.04	.04	-.12	1.17	.24
Core self-evaluation	-.07	.05	-.13	1.21	.23

Table 10: Regression analysis summary for satisfaction with life and core self-evaluation predicting student identity links to lower levels

Chapter 5 Discussion and Conclusion

5.1 Discussion

Chapter 4 outlined the key findings from the study and the observed correlations between the characteristics of goal hierarchies and psychological constructs of interest in this sample, and provided some explanation of what they may mean. This chapter will present further discussion of the observations and conclude the work with an overview of limitations and suggestions for further study.

Before embarking on the discussion it is worth reiterating the focus of the data drawn from the goal hierarchies; the pre-populated nodes. There were three pre-populated nodes within the GH, and two of these were used for the generation of data; the pass goal node (labelled 'pass my degree with the best mark possible') and the student identity node (labelled 'a successful student'). These two nodes were selected as they are common to all respondents and the student identity is of particular interest in this study. Additional data came from a variable related to the level of separation or integration observed in the GH.

Given the abductive nature of the research, throughout the discussion I seek to make inferences to the best explanation (Vogel, 1998) for the correlations present in the data, based on the literature and what is known about the sample, whilst recognising that there may be alternative explanations and confounding factors at play.

5.1.1 Integration/separation

The most visually obvious variation across goal hierarchies was the level of integration/separation. Some goal hierarchies were complex interconnected webs; a well-integrated GH has clear links between nodes across and between levels across the length and breadth of the GH. A GH that is not well-integrated will tend to show clear separation between different clusters of tasks, goals, identities and values. (i.e., clearly defined subsections down the length of the GH). As detailed in the results section and illustrated in Appendix 4, this could be a full and complete split in the GH at the most extreme end of the scale, or a split (or splits) to the goal or identity level of the GH. Those goal hierarchies with the most apparent splits seem to place respondent's different identities into distinct streams.

5.1.2 Affect and integration/separation in the goal hierarchy

Goal hierarchies that had clearly separated sections, when looked at in detail, often separated off the individual's study life and personal life. Oftentimes the study life had no, or very few links to other aspects of the respondents life; there was a clear 'study self' and 'other self' evident. The results of this study suggest that there is a link between the level of separation and integration in the GH and frequency of experiencing negative affect. Specifically, those respondents who had a well-integrated GH experienced less negative affect than those who had a GH that exhibited separation. The suggestion made is that this separation leads to internal conflict in the individual as they struggle to allocate their limited resources (e.g. time) between the different spheres of their lives. This finding contradicts the findings of Van Steenbergen et al. (2018) who recommend that students seek to build clear boundaries between their study and home lives to reduce conflict. I posit that the reason for this contradictory finding is related to the 'level' of the goals in both studies being different. The Van Steenbergen et al. (2018) study focused on more day-to-day activity, equivalent only to the task level on the GH. Whilst separation between day-to-day tasks may be beneficial in terms of reducing conflict, this study suggests that as separation spreads higher within the GH, beyond tasks and to the levels of goals, identities and values, the more likely an individual is to experience negative affect.

One possible explanation for the finding is self-discrepancy. Self-discrepancy theory (Higgins, 1987) suggests that negative affect is an outcome of experiencing the difference between one's actual state/situation and one's desired state/situation. The two (or more) seemingly separate strands within a GH may represent the '*actual*' and '*desired*' self. Alternatively they may represent the actual self and the self that is desired for that individual by a significant other, for example, a parent. It is recognised that Confucian Heritage Culture (CHC; from which many of the respondents hail, examples being China, Taiwan and Hong Kong) has a strong focus on filial piety which can effect academic motivation (Hwang, 1999, Hui et al., 2011) and therefore I suggest that individuals with high levels of separation in their goal hierarchies could be experiencing consistent internal conflict about which goals and identities to prioritise (i.e. how to share out their limited resources such as time and effort) between the identities that are internally generated and those that are perhaps generated by others, or are a '*desired*' self. There may be some link here to theories of self-concealment; extant literature indicates lower levels of wellbeing in individuals who practice self-concealment (the withholding of negative information about oneself) or have tendency to be secretive (Kahn and Hessling, 2001, Kelly and Yip, 2006) and higher levels of negative affect may be the way in which a this is observed in this particular sample. If an individual does have an assigned or

desired self, then the withholding of the '*true self*' may be a factor in the higher levels of negative affect, and observed lower SWL and CSE scores within the sample (discussed below).

5.1.3 Positive and negative balance and integration/separation

The data also showed a relationship between the level of integration/separation within the GH and the balance of positive and negative links to the two nodes of interest. The data revealed that goal hierarchies that were less well-integrated showed higher proportions of positive links to the nodes of interest than those goal hierarchies that were well-integrated. This may, at first, seem to counter the findings above that suggest that overall negative affect is associated with less well-integrated goal hierarchies. However, it seems that the ability of an individual to see how they may be prevented from reaching goals and identities may be positive to some extent, and possibly relates to metacognitive ability. I suggest that individuals who are better able to '*see*' negative links within the GH (i.e. how one goal may hinder pursuit or achievement of another) were also better able to view their lives as a complex, interconnected matrix. This suggests something about the ability of these individuals to '*see*' that which is not happening and therefore include a balance of negative as well as positive links across the GH. The cognitive effort required to '*see*' what is not there is greater than observing the obvious. Put simply, it is easier to see how X leads to Y than to see how X *may not* lead to Y. In the case of the student respondents here for example, it may be quite easy for them to see how a task they complete daily (e.g. going to the gym) assists in the pursuit of their goal to lose 10lbs, and therefore the drawing of a positive link in the GH between these two items is quite easily thought through and executed. However, it takes more effort (and more cognitive steps) for the respondent to see how the goal of passing their degree (and the associated tasks related to this) may hinder their pursuit of the 10lb weight loss by using up the resource of time that they need to take out of their day to go to the gym. Therefore, the consideration of, and subsequent drawing of a negative link between the weight loss goal and study related tasks requires more mental effort. I offer the suggestion that those individuals who are able to make the mental steps required to '*see*' negative links were also better able to '*see*' the connections that exist that tie the differing strands of their lives together, therefore producing well-integrated goal hierarchies.

Another possible explanation for this finding could be related to the ability of respondents to remain stable in terms of their affect, despite being in a stressful situation. Respondents who have more negative links in their GH are happier overall (if one takes a lack of negative affect experienced as a proxy). This would suggest that individuals do '*see*' the negative links (as they do draw them into the GH they produce) but that the presence of these negative links does not cause them distress (that one would expect to see reflected in negative affect). This may be related to an ability to maintain

stable mood states despite a current stressful situation; the individual '*sees*' the difficulty but feels able to meet and overcome the challenges. This may suggest some deeper level of contentment that is unaffected by the current stressful situation in which they find themselves, and this is clearly an area for further exploration.

Another possible explanation for the lack of balance in terms of positive and negative links in the less well integrated goal hierarchies could be methodological error; for example not providing enough time for some respondents, the majority of whom were working in a second or even third language; the explanation of how to complete the GH not being fully understood; or the fact that when constructing the GH online, the first point and click choice a user sees (reading from left to right on the screen) for the drawing of links is positive rather than negative.

5.1.4 Psychological construct links to the student identity node

The findings showed a link between the student identity node and CSE and SWL. These constructs are measures of self-esteem, generalised self-efficacy, neuroticism and locus of control into one trait, and global life satisfaction respectively. The finding was that individuals had lower scores on both scales if they had proportionally more between this node and the lower levels of the goal hierarchy (values and goals) than links with the higher (value) level.

The identity level node findings are of interest as the identities that an individual has in life (and therefore on the GH) tend to be long-term and stable items, often lasting for many years, even a lifetime. For example, within this sample, there are very likely to be respondents who will have held the identity of a 'successful student' for over a decade; understandable given that the majority of respondents will have been in full time education for their entire remembered life.

The two constructs of CSE and SWL that show correlation with the student identity node are also considered to be relatively stable and have a longer-term temporal focus. When considering the wording used on the scale measures in the survey, both invite participants to consider their 'life' as a whole; for example first two items on the CSE scale ask one to consider their 'life', and the SWL scale items are also phrased in a way that invites a longer-term temporal focus by asking respondents to consider their life as a whole (rather than dictating which life domains should be considered). The SWL scale is a conscious evaluative judgement of life based on an individual's own criteria, and has been shown to have a degree of temporal stability (Pavot and Diener, 2009). For this reason it could be argued that these two constructs are traits (i.e. longer term and more enduring) rather than states (a more temporary state of being). Therefore, both student identity and the two constructs

could be considered to be longer-term, more stable items and therefore perhaps a better indication of the individual's internal life than shorter-term state level constructs and goals in the hierarchy.

SWL scores are generally lower for individuals with proportionally more links between the student identity node and lower levels of the goal hierarchy (and therefore proportionally fewer links with the value level). The same is true for CSE; if a respondent is lower on this scale they will also tend to have proportionally more links between this node and lower levels of the goal heirarchy. These findings may suggest that respondents perceive the importance of being a successful student, they may have had this important identity for some time, and they may have many tasks and goals within their hierarchy that feed into that identity, but that they may be unable to see how this long strived-for student identity aligns with their deeply held core values. If this identity and the core values one holds cannot be reconciled, this may lead to negative feelings (whether acknowledged or not) that are revealed in lower scores in the traits of CSE and subjective wellbeing; this is clearly an important area for future research.

This links to the discussion in section 5.1.3 about the balance of positive and negative links across the GH and the hypothesis proffered that in many cases the student identity, rather than being an internally generated or '*real*' identity for the individual, may be a desired self or even an assigned self. If this is the case, then it would make sense that there is less linkage between core values and identity. This again leads to consideration of self-discrepancy theory (Higgins, 1987); are lower scores in the traits of CSE and SWL the result of conflict between the real self (the originator of the core values) and the desired self or who another person wants the respondent to be (for example a significant other)? As discussed in section 5.1.3, this could be related to the characteristics of the sample; a high number of student from CHCs who are perhaps unable to reconcile their own core values with the identities that have been assigned to them by parents/significant others.

An alternative explanation is methodological error; as discussed in previous sections this could be related to the ways in which the GH is presented, the time allowed or the instructions given.

5.1.5 Psychological construct links to the 'pass my degree' goal node

There were a series of correlations present in the data between the pass goal node and negative affect, thriving and mood monitoring. The pass goal node was pre-populated as it is relevant to all of the sample respondents. This goal is only pertinent for a further 10 months for the respondents at the time of the survey but is of central importance in the lives of the all in the sample. So, whilst the goal is salient, it is quite short-term, which may be reflected in the constructs that correlate with this node. The scale measuring Thriving, when one looks at the wording, seems to invite a shorter-term

temporal focus. It is phrased in such a way that invites one to think of immediate feelings, and specifically invites students to think of their time at the current university where they had, at the time of the survey, only been for a matter of weeks in the majority of cases. The mood monitoring scale could also be argued to have a shorter-term temporal focus as it invites students to respond to statements such as 'on my way home from university I find myself evaluating my moods' and 'I find myself thinking about my mood during the day'. It appears then, from the data, that there is a link between those psychological constructs that could be considered to be states and the goal level of the goal hierarchy.

The data suggests that individuals with proportionally more links between their pass goal and lower levels of the goal hierarchy experience lower negative affect. One explanation for this could be that an individual's ability to see what is needed to pass their degree (i.e. to know the tasks that need to be done in order to pass) means that they feel well informed and prepared. However, this finding is interesting when one considers the observation in the data that students with proportionally more links between the pass goal and lower GH levels are lower on the Thriving scale. A possible explanation may be that the individual with more tasks feeding into this goal may feel overwhelmed by the amount of daily tasks, positive and negative, that have an effect on the pursuit of their goal. The students in the sample find themselves in a high-pressure situation and based on my knowledge of the student body are at a point in time where the 'reality' of the hard work needed to pass the degree becomes apparent (c. November of the first semester of the academic year). One possible explanation, based purely on conjecture, for the apparent contradiction between the scores for negative affect and thriving is that whilst the students are keenly aware of their learning situation and the difficult road ahead, and the thriving scale presents statements specifically related to learning, the student respondents are perhaps not experiencing negative affect as they are still in the first weeks of an exciting experience at a new university, and for most respondents in the sample, a new country.

In addition to the findings above, the data also suggests that individuals who have proportionally more links between their pass goal and higher GH levels, are higher on the mood monitoring scale, which is defined as a tendency to regularly check and focus on one's moods. This is sometimes characterised as a tendency to brood, but is not always negative. This finding could suggest that individuals who are more aware of their own emotions are better able to see how the achievement of their degree goal feeds into their identities and values though again, this is conjecture and an area requiring further investigation.

As with the student identity node, there is also correlation between the balance of positive and negative links at this goal node and integration/separation. As discussed in detail above, it seems that the presence of some negative links in the GH leads to better integration and the reason suggested for this is that individuals who are able to make the series of cognitive steps required to '*see*' negative links are also better able to visualise their lives as a complex matrix (which I suggest is closer to reality) and this may speak of a higher level of metacognition.

5.2 Practical actions, limitations & suggestions for future studies

5.2.1 Practical actions taken as a result of the research

Results of the study have already begin to influence practice across the programme of study from which the sample population is drawn. First amongst these is the inclusion of discussion with student participants about their reasons for following the programme of study. Encouraging frank discussion of the reasons for pursuing the subject area provides insight (to the student participants and staff) into the different motivations for study, and how these can be better supported. For example, many participants, particularly those from CHCs indicate that the programme of study is one that has been either chosen for them, or they have been strongly encouraged to pursue, by significant figures in their lives (most commonly parents or grandparents). This then means that the engagement of these students in the teaching and learning 'for the love of the subject' cannot be guaranteed. This has led to the production and provision of clearer expectations for actions required to progress through the programme for those students who may lack intrinsic motivation to study.

This finding, that many may be pursuing the programme at the behest of others, also made it clear that there is a need to help students to better articulate their learning from the programme of study to improve their employability. Students are often well able to articulate what they have learned on a programme of study when it comes to the subject specific knowledge, however, the articulation of transferrable skills and core social and emotional competencies proves difficult for many. Completing the survey and goal hierarchy begins to reveal to students more about their own psychology, but does not in itself improve their ability to communicate this. The understanding that students may wish to pursue careers out of the field of study has led to the design and provision of specific input that helps students to better articulate skills that can be applied across domains.

The study also revealed that a large number of students appear to have quite separate '*selves*' (i.e., the '*study self*' and the '*other self*'). Encouragement is now given to students to consider whether there is a split evident in their goal hierarchy, what the reasons for this might be, whether this

inability to reconcile the two '*selves*' may be causing any conflict, and what could be done to address this. Students are invited to consider how they could use their passions and interests to help with the pursuit of their subject of study. This has been used to some success already in encouraging students to pursue research projects combining their extra-curricular interests with their programme of study, for example through the choice of dissertation focus.

5.2.2 Limitations & suggestions for future studies

There were a several limitations to this study. The first was time; this study was carried out part time and was therefore limited in terms of collection of data and the time available to analyse it. The study only took place with PGT students on one programme, at one university and across only two academic years. This limited the number of participants, but also the participant profile to students at a Russell Group University studying a masters level business degree. Whilst the study has provided good insight into the characteristics of this particular group of students, it would be interesting to include students at other levels, from other subject areas and other institutions to see whether the data shows similar patterns to those seen in this study in all students. Further to this, it would also be interesting to look across a population (all age ranges and occupations) to see whether any observations made in this particular group of respondents hold true across the population as a whole, and therefore may be robust enough on which to begin to build theory.

Another limitation related to the participant profile was that the cultural background of participants was heavily skewed to those from an Asian background, and in particular those from Confucian Heritage Cultures (CHCs). There is much extant literature dealing with cultural difference but there does not appear to be any that explicitly discusses goal hierarchies and cultural background. The ways in which an individual from a CHC builds a GH could be very different to the ways in which an individual from another cultural background builds a GH, but that would not be revealed by this study given that the overwhelming majority of respondents are from CHCs. Therefore in future studies it would be helpful to include, where possible, individuals from a range of cultural backgrounds.

A further limitation related to the participant profile is language proficiency. The vast majority of participants in the study (estimated at >95%) completed the study in a second (or even third) language. Whilst all participants in the study do have to have a certain level of English language proficiency (as a prerequisite for acceptance onto the programme of study) the language issue does present challenges for comprehension. First, there may have been issues with time; it takes longer to comprehend instruction and carry out a task when not working in your first language, and the

instructions for the workshop, GH tool and survey items were all presented in English only. There were evidently some issues with the wording of certain items on scales measuring psychological constructs; see section 4.2.5.1 for a discussion of the items removed from scales to improve alpha scores. There may well have been methodological errors related to language issues, such as not allowing sufficient time for those students with lower levels of English language ability to complete the tasks. In future studies, should it be known that a large proportion of participants will have English as a second language, there should be allowance made for this through the provision of extra time to complete study tools (allowing the individual time to translate anything they do not understand), or the provision of verified translated materials.

Given the lack of previous studies looking at the particular areas of interest, it was not possible to build a series of hypotheses and the study took an exploratory approach. Whilst this has some advantages (see discussion in section 3.2) it is also limiting in that it does not allow for a focus on one particular area. For example, whilst this study was able to look at a range of psychological constructs of interest in relation to GH variables (a total of 27 variables were included) there was not sufficient resource to focus on one particular area/run subsequent studies in areas shown by the results to be of interest. This study has merely provided a starting point on which to base possible future studies.

One of the more interesting findings is related to the links between specific constructs and different levels of the goal hierarchy. There is an indication in the data that psychological constructs that are more stable and long-term (traits) are linked to the identity level of the GH, and that state-like constructs are more likely to be linked to the goal level of the GH. Clearly further investigation is needed into whether there are temporal influences in the correlations observed between GH construction and the psychological constructs of interest. Also, given only one node at each GH level was considered in this study, any future study would need to be expanded to take into account a range of goal nodes and identity nodes. It would also be interesting to see whether this finding would be evident should a range of additional psychological constructs that could be argued to be state or trait level be included in a study.

Another suggestion made as a result of observations in this study is that it appears to be positive to be able to '*see'* negative links in the goal hierarchy, with the suggestion that this is linked to higher levels of metacognitive ability in some individuals. It would be interesting in future studies to look at the levels of metacognition in individuals alongside goal hierarchies using a tool such as the Metacognitive Awareness Inventory (Schraw and Dennison, 1994). Individuals higher in metacognitive ability have also been found to perform better academically (Veenman et al., 2006)

and so, given the academic setting of the research, it would also be interesting to see whether there is a link between academic performance and the ways in which goal hierarchies are constructed.

Clearly there is also a need to consider the study scale. This is an exploratory study based on analysis of a relatively large group of participants. However, the goal hierarchy and psychological constructs of interest are very personal and whilst group-level analysis can provide an indication of relationships, there is a need for individual-level analysis to draw meaning from findings. As this study was exploratory and set out to search for relationships, should any be present, between the goal hierarchies and constructs, then this method can be justified as an initial approach. However, future work in this area should consider individual-level or small-group analysis when seeking to draw meaning from observed relationships.

5.3 Conclusion

This study set out to explore the goal hierarchies of a group of PGT students, and to see whether there were relationships between the ways in which the goal hierarchies were constructed and a range of psychological constructs, in the hope that this may reveal more about the ways in which this particular group of people approach their studies, and their lives .Whilst this is one small study in a novel area and it is therefore impossible to draw any certain conclusions, there were some interesting findings. I have proffered some explanations for the observations made based on extant literature and draw them together in this conclusion, but recognise that they are conjecture and that there may be a range of confounding factors.

One of the more interesting observations in the data relates to the integration/separation present in the goal hierarchies. In some cases a hierarchy completed by an individual seemed to represent two separate lives, whilst in other cases there was full integration, and there was, of course, a spectrum in between. Well integrated goal hierarchies contained more negative links and seemed to be a more realistic representation of the complexity of life. I suggested the hypothesis that the production of a well-integrated and balanced GH that is more representative of the reality of life required a higher level of metacognition given the additional cognitive steps required to '*see*' negative links.

There also seemed to be some suggestion in the data that constructs that could be considered to be traits (more long-term patterns of behaviour) were correlated with the identity level content of the GH, and that constructs that could be considered to be states (more temporary ways of being) were correlated with the goal level content of the GH.

This exploration of the goal hierarchies of PGT students has suggested a variety of areas for further study, but there are also a range of interesting findings that can be interpreted as they stand for this cohort. Perhaps most interesting is the suggestion in the data, backed up by looking at goal hierarchies, that some students appear to have quite separate spheres within their lives, which in many cases could be characterised as having a '*real me*' and a '*study me*'. In many of the goal hierarchies a distinct split was evident between the individual who was a friend, liked to play sports, watch TV, hang out with friends, and pursue an exciting and varied life; and the individual who had a strong sense of filial duty and was striving to be a good student by studying hard.

This finding is very interesting when one considers the design and delivery of programmes of learning and the assumption (certainly in the UK HE market) that individuals choose their own course of study. Certainly the programme on which the respondents in this study are registered approaches teaching and learning with the assumption that the individual has chosen the programme of study for themselves as it aligns with their passions and interest. There is also the assumption that individuals on the programme of study would like to develop a career in this area. However, it appears that this may not always be the case. Anecdotal evidence has previously suggested that some students on the programme at the centre of this research are pursuing the degree at the behest of a significant other (usually a parent) but the findings of this study suggest that this may be more widespread in the cohort. This has implications then for the way in which future teaching and learning is designed if one must take into account that perhaps not all students in a class have an interest in the subject. This also suggests that it may be important to look at the provision of professional development interventions, specifically interventions that develop the ability of students to articulate their transferrable skills so as demonstrate how the skills acquired through their current education can be applied to a range of possible careers. Developing further knowledge about links between psychological constructs and the construction of goal hierarchies could prove useful across a variety of settings; for example workplaces and schools as a better understanding of how goal hierarchies are linked with other constructs could help to inform the design of interventions to make them more appropriate for specific groups.

This study has provided a wide range of jumping-off points for further study. It has also suggested that there should be thought given to the design of interventions in some current areas of practice, such as teaching and learning, and professional development, for this particular sample. The ability to better understand how the psychology of PGT students is represented through their goal hierarchies could bring about a range of benefits including the better design of interventions to support the individual in the pursuit of their goals. There may even be scope in the future to develop

an ‘enhanced’ GH tool based on a better understanding of the links between goal hierarchies and psychological constructs. Whilst it is recognised that there are limitations to this study and a number of further studies are needed to explore many areas in more depth, and to confirm or refute the observations made here, the findings of this study do provide an exciting first glimpse into the possible links between psychological constructs and goal hierarchy construction.

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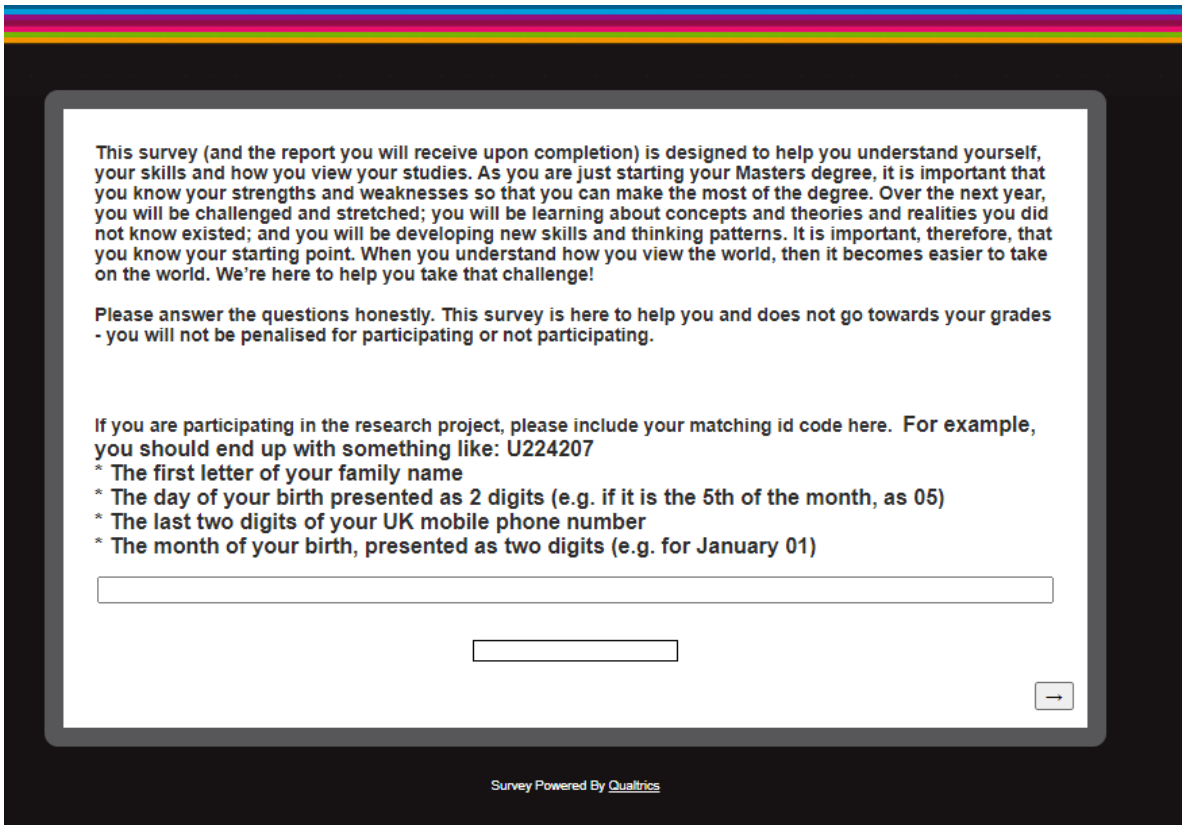
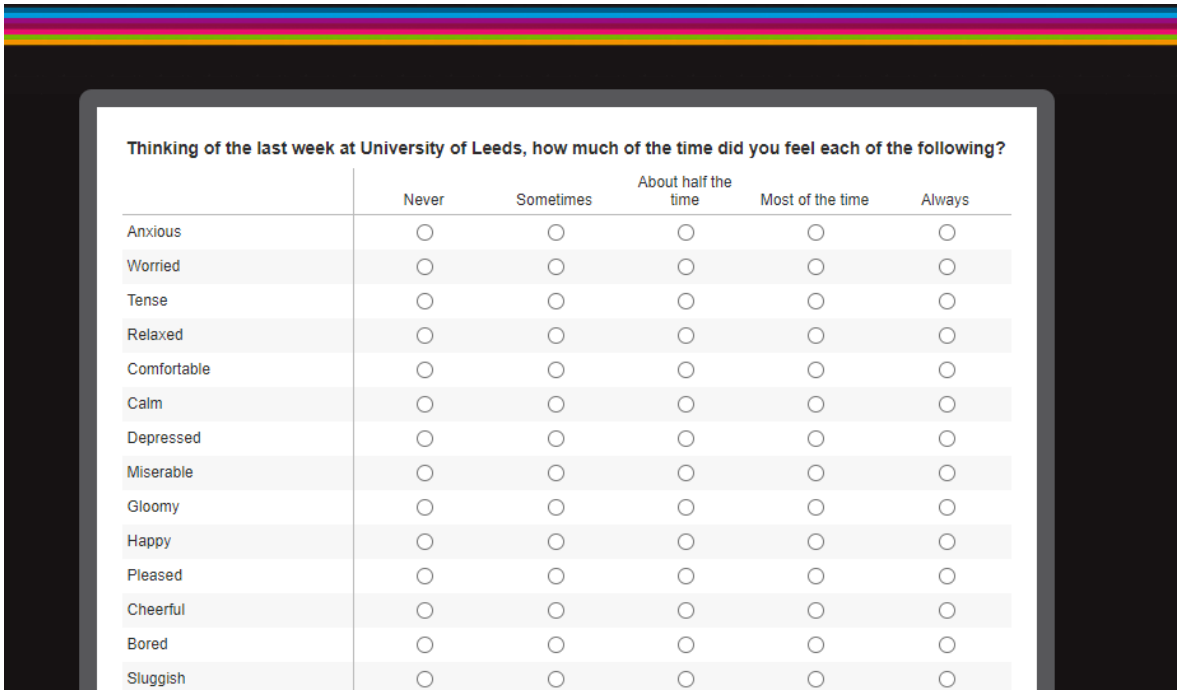
Appendix 1

Selection of screen shots from the survey used in the study (hosted by Qualtrics).

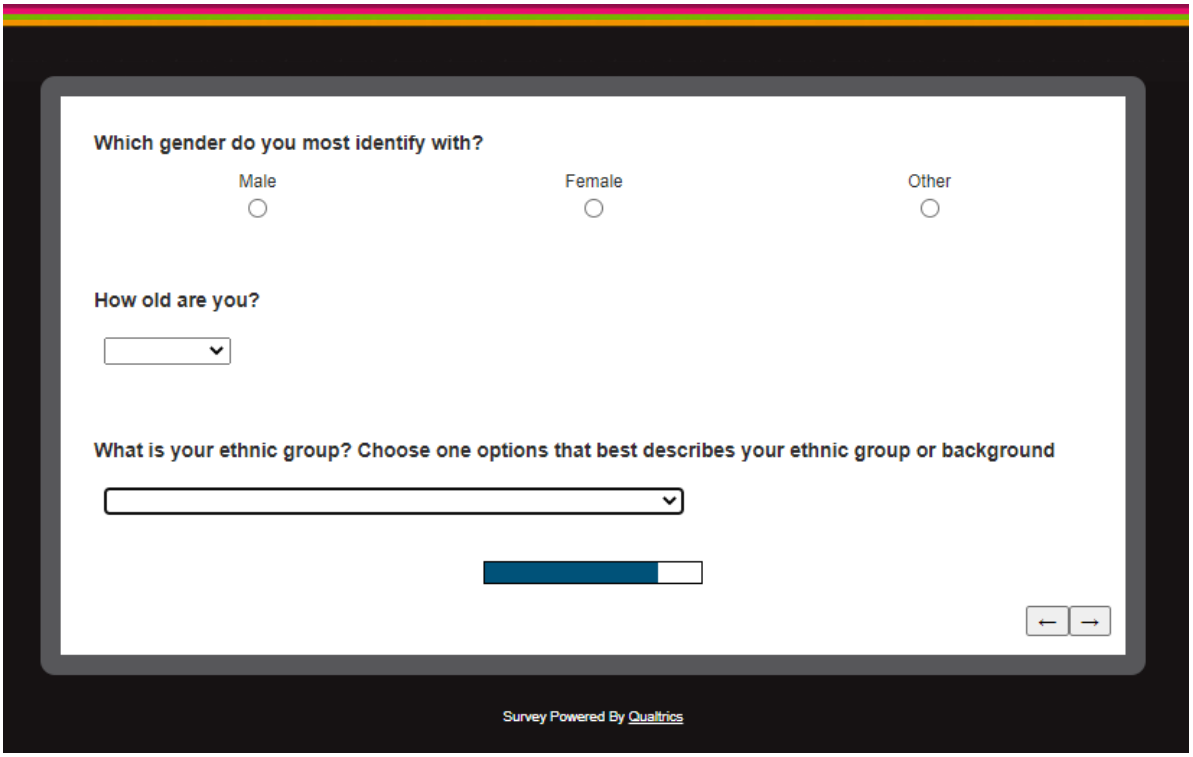


Opening page



Survey item detail

Appendix 1 cont.



Demographic data request at close

Appendix 2

Participant information Sheet.

You are invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the project?

This research seeks to discover whether there are links between your goals, subjective well-being (in very simple terms, how happy you are with life) and other constructs such as your gender, age, cultural background/nationality and various aspects of your personality. The study involves collecting data from taught postgraduate students at Leeds University Business School (LUBS) during semester 1 of the 2018/19 academic year. Analysis should be complete by January 2020.

Why have I been chosen?

The study will look at Taught Postgraduate Students (PGTs) from LUBS and so as a member of this group you are eligible to participate.

What do I have to do?

You have recently constructed a Goal Hierarchy (GH) and completed a questionnaire. You will receive the outputs of these activities whether you choose to participate in this research or not. You are being asked whether you would like to share the data that results from the GH and questionnaire, to inform this research. As you know, your GH and Questionnaire are already anonymised as you generated a unique identifier code and did not include your name anywhere. Because of this you can be assured that no data can be linked to an individual by the researcher. All that you have to do to participate in the research is give consent for your anonymised data to be used by signing and providing your unique code on the consent form.

What are the possible disadvantages and risks of taking part?

There are no foreseeable disadvantages to participating in the research as your participation is anonymous. No individual's data will be identifiable in the final study.

What are the possible benefits of taking part?

It is hoped that this work will contribute towards the better design of student interventions.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep (and be asked to sign a consent form) and you can still withdraw at any time until 31st December 2018. You do not have to give a reason for withdrawing.

Will my taking part in this project be kept confidential?/ What will happen to the results of the research project?

The researcher will not know who has and has not chosen to take part in the research as all of the data is anonymised. The collected data will be collated and stored in an encrypted form on the university OneDrive system. Signed consent forms will be scanned and stored on OneDrive in an encrypted form. Originals will be shredded.

The data collected is anonymous. You have already generated a code that is attached to the data. Should you give consent for your data to be used the researcher will not know who the codes relate to.

The results of the Goal Hierarchy and Questionnaire will be analysed from January 2020 onwards. The final research results will be presented as an MA thesis before the end of July 2020. You are free to request a copy of the results after this time. There is a possibility that this research will appear as a journal paper in the future. It is also planned that the anonymised data collected for this study will be used in further future studies.

Withdrawing

As stated previously, you are free to withdraw up to 31st December 2019. After this time it will not be possible to withdraw as analysis will have begun. To withdraw please email Prof Kerrie Unsworth stating your unique code.

Who is organising/ funding the research?

The research is contributing to the degree of MA by Research.

Contact for further information

Further information is available from [redacted]

Ethical Approval

This study has been reviewed and given a favourable opinion by the AREA Research Ethics Committee on 05/11/18 ethics reference AREA 18-027.

You will receive a copy of this information sheet and a signed consent form to keep.

Many thanks for taking the time to read through this information.

If you wish to participate please now sign the consent form.

Participant consent form

	Add your initials next to the statements you agree with
I confirm that I have read and understand the information sheet dated [insert date] explaining the above research project and I have had the opportunity to ask questions about the project.	
I agree for the data collected from me to be stored and used in relevant future research in an anonymised form.	
I understand that relevant sections of the data collected during the study, may be looked at by auditors from the University of Leeds or from regulatory authorities where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.	
I agree to take part in the above research project and will inform the lead researcher should my contact details change during the project and, if necessary, afterwards.	
I agree to provide my unique code so that my survey and goal hierarchy can be matched. My code is:	

Name of participant	
Participant's signature	
Date	

Appendix 3

All psychological construct scales in full

3.1 The Brief Resilience Scale

Please indicate the extent to which you agree with each of the following statements:

1. I tend to bounce back quickly after hard times
2. I have a hard time making it through stressful events
3. It does not take me long to recover from a stressful event
4. It is hard for me to snap back when something bad happens
5. I usually come through difficult times with little trouble
6. I tend to take a long time to get over setbacks in my life

3.2 The Mood Awareness Scale

The following statements refer to your moods and emotions. Please indicate how much you agree or disagree with each of these statements. Please base your answers on how you personally feel, and not how you think others feel or how a person should feel:

1. I have a hard time putting my feelings into words
2. I am usually "tuned in" to my emotions
3. I find myself thinking about my mood during the day
4. I am sensitive to changes in my mood
5. I have trouble explaining my feelings
6. On my way home from university, I find myself evaluating my mood
7. Right now I know what kind of mood I'm in
8. I often evaluate my mood
9. I'm never really sure what I'm feeling
10. I don't pay much attention to my moods

3.3 The Life Orientation Test (Lot-R)

Please answer the extent to which you would agree with the following statements about yourself:

1. If something can go wrong for me, it will
2. In uncertain times, I usually expect the best
3. I rarely count on good things happening to me
4. I'm always optimistic about my future
5. I hardly ever expect things to go my way
6. Overall, I expect more good things to happen to me than bad

3.4 Core Self-evaluation

Below are several statements about you with which you may agree or disagree. Using the response scale below, indicate your agreement or disagreement with each item:

1. I am confident I get the success I deserve in life
2. Sometimes I feel depressed
3. When I try, I generally succeed
4. Sometimes when I fail I feel worthless
5. I complete tasks successfully
6. Sometimes, I do not feel in control of my work
7. Overall, I am satisfied with myself
8. I am filled with doubts about my competence
9. I determine what will happen in my life
10. I do not feel in control of my success in my career
11. I am capable of coping with most of my problems

12. There are times when things look pretty bleak and hopeless to me

3.5 Affective Wellbeing

Thinking about the last week, how much of the time did you feel each of the following?

1. Anxious
2. Worried
3. Tense
4. Relaxed
5. Comfortable
6. Calm
7. Depressed
8. Miserable
9. Gloomy
10. Happy
11. Pleased
12. Cheerful
13. Bored
14. Sluggish
15. Dull
16. Enthusiastic
17. Optimistic
18. Motivated
19. Tired
20. Fatigued
21. Sleepy
22. Active
23. Alert
24. Full of energy
25. Angry
26. Annoyed
27. Aggressive
28. Placid
29. Patient
30. At ease

3.6 The Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the scale below, indicate your agreement with each item. Please be open and honest in your responses:

1. In most ways my life is close to my ideal
2. The conditions of my life are excellent
3. I am satisfied with my life
4. So far I have gotten the important things I want in life
5. If I could live my life over, I would change almost nothing

3.7 Goal Orientation

To what extent do you agree with the following statements?

1. I am willing to select a challenging work assignment that I can learn a lot from
2. I often look for opportunities to develop new skills and knowledge
3. I enjoy challenging and difficult tasks where I'll learn new skills
4. For me, development of my abilities is important enough to take risks
5. I prefer to work in situations that require a high level of ability and talent

6. I'm concerned with showing that I can perform better than my colleagues
7. I try to figure out what it takes to prove my ability to others
8. I enjoy it when others are aware of how well I am doing
9. I prefer to work on projects where I can prove my ability to others
10. I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others
11. Avoiding a show of low ability is more important to me than learning new skills
12. I'm concerned about taking on a task if my performance would reveal that I had low ability
13. I prefer to avoid situations where I might perform poorly

3.8 The Thriving at Work Scale

To what extent do you agree with the following statements? Pleas think of your experiences at the University of Leeds while answering:

1. I find myself learning often
2. I continue to learn more and more as time goes by
3. I see myself continually improving
4. I am not learning
5. I have developed a lot as a person
6. I feel alive and vital
7. I have energy and spirit
8. I do not feel very energetic
9. I feel alert and awake
10. I am looking forward to each new day

3.9 Constructive/Unconstructive Worry

We know that starting a Masters degree in a new city can cause anxiety and worry. But we can worry in different ways so would like to ask you some questions about the way you worry (but not the amount that you worry).

Please take a moment to think about recent times (roughly the past 3 months) where you have worried about something. For example, you might have worried about a test you had to take, a performance appraisal meeting you were going to attend, or an upcoming bill that you knew you might struggle to pay. In this survey, we will use the words ‘key events’ to refer to the things or events that you might have worried about.

We appreciate that the way you experience worry might change, depending on what you are worrying about, but please try to reflect on how you generally experienced any recent worry.

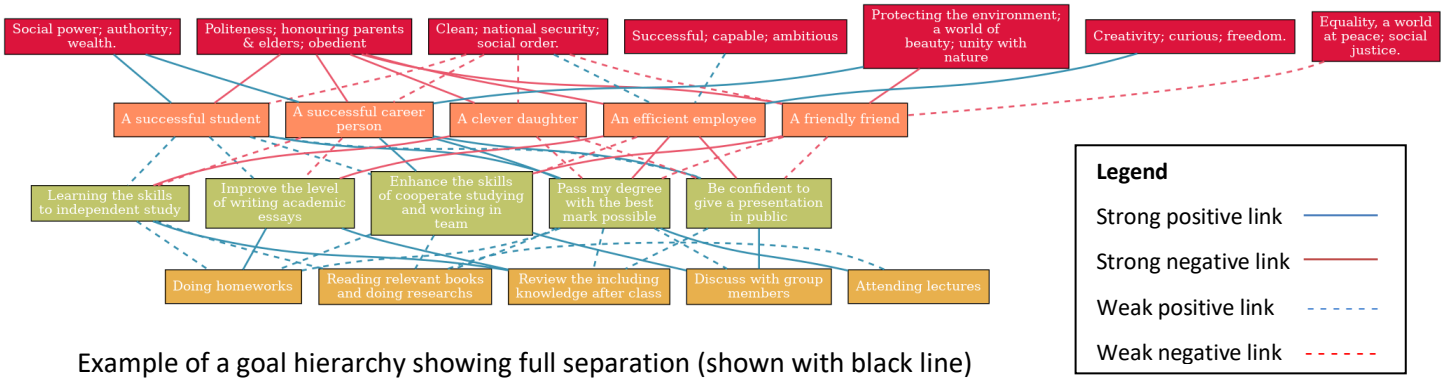
1. When I worry I tend to ask myself "Why can't I handle things better?"
2. When I worry, I tend to wonder why I have problems that other people don’t have
3. When I worry I tend to have thoughts such as 'I can't deal with this worry right now'
4. Even if I know that something bad cannot be avoided, I still tend to worry about it
5. When I worry, it tends to involve thoughts about bad things that might happen if I make a mistake
6. When I worry, I find myself thinking about how worried I am
7. I tend to worry about things I feel I can't do anything about
8. When I worry, it tends to involve thoughts about how my personal situation could become worse than it currently is
9. When I worry, it tends to be very broad in nature (e.g. I repeatedly think why is this key event happening to me?)
10. When I worry, it tends to involve thoughts about how my personal situation is not as good as it could be
11. When I worry, it tends to make me think about how to solve the issue that is making me worry

12. My worrying tends to be very process-focused in nature (e.g. I go through my worry by looking at the causes, then looking at steps I can undertake to reduce the worry, etc.)
13. When I worry, I tend to think about ways to reduce my worry.
14. When I worry, I try to identify precisely what it is about the key event that has me worrying
15. When worrying about a future key event, I usually try to overcome my worry by thinking about all the possible things that could go wrong, and working out how I could prevent these things from happening
16. Worrying about things is part of what drives me to solve problems in my life
17. Worrying is my mind's way of telling me that I need to take action or make a decision on something
18. Worrying about key events helps me to anticipate all the things that could potentially go wrong with these events, and plan accordingly

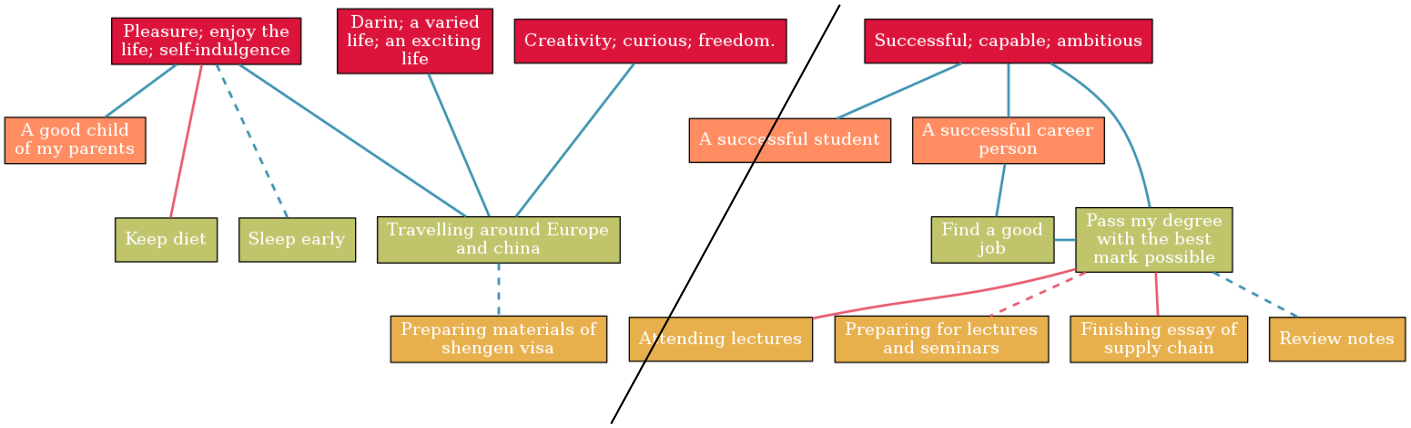
Appendix 4

Example goal hierarchies from the study

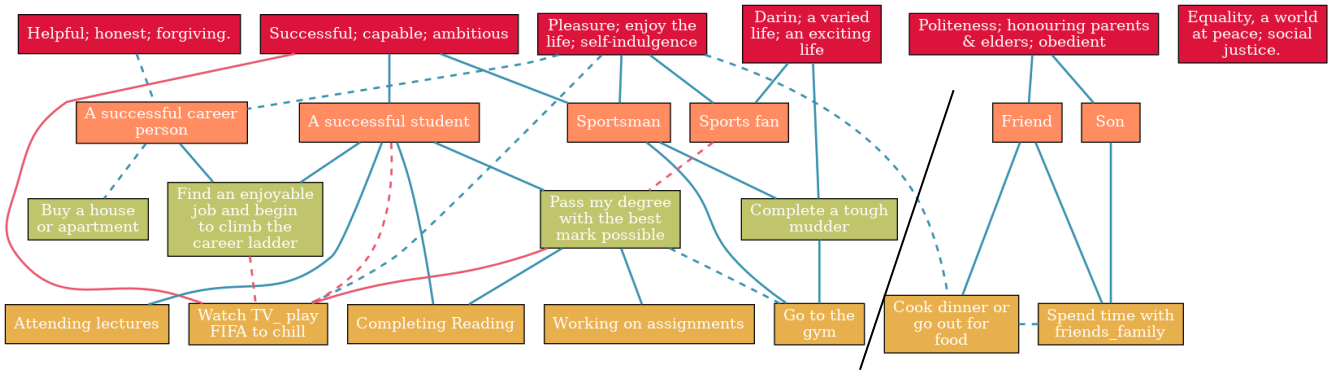
Example of a well-integrated goal hierarchy



Example of a goal hierarchy showing full separation (shown with black line)



Example of a goal hierarchy showing partial separation (shown with black line)



Appendix 5

List of ethnic identities presented in survey

- English/Welsh/Scottish/Northern Irish/British
- Irish
- Gypsy or Irish Traveler
- Another other white background; please describe
- White and Black Caribbean
- White and Black African
- White and Asian
- Any other missed/multiple ethnic background; please describe
- Indian
- Pakistani
- Bangladeshi
- Chinese
- Any other Asian background; please describe
- African
- Caribbean
- Arab
- Any other ethnic group; please describe