

**Satisfaction with life as a considered judgement: the information brought to  
mind and the associated cognitive processes**

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### **Declaration of Authorship**

I, Charlotte Lea, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others this is always clearly stated.

Signed: \_\_\_\_\_

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## Abstract

The main aim of this thesis was to test the idea that life satisfaction judgements, one of the most commonly used indicators of well-being, are meaningfully considered judgements. Six studies used unique, or rarely-used, methods and measures to examine the processes underlying life satisfaction judgements. Study 1 (Chapters 2, 3, 4) used an inductive, qualitative method to analyse Think Aloud interviews. Thirteen categories were identified, the most common being Relationships, Job and Feelings, representing the information brought to mind as participants considered their current life satisfaction and imagined better and worse lives. Using a method previously utilised for Meaning in Life judgements (Trent & King, 2010), Study 2 (Chapter 5) found that the information used in a life satisfaction judgement did not vary if the judgement was made rapidly or thoughtfully. A vignette study (Study 3a - Chapter 6), and a conceptual replication with survey data (Study 3b - Chapter 7), found evidence consistent with the long-held assumption (Pavot & Diener, 2008; Lucas & Lawless, 2013) that life satisfaction judgements involve the weighting of information: the domains of relationships, money and contribution-to-the-world had different effects on life satisfaction judgements, and also had differential effects on happiness and meaning judgements. Study 4 (Chapter 8) used the ease-of-retrieval paradigm (Schwarz, Bless, et al., 1991) to investigate whether life satisfaction judgements rely on retrieved content versus feelings-as-information, a potential mental shortcut. While the expected results were not obtained, a post-hoc analysis led to the hypothesis that participants used whichever route provided the best life satisfaction score. Study 5 (Chapter 8) used self-reported information use following a life satisfaction judgement and identified a cognitive-bias: participants with high life satisfaction

tended to use their most satisfactory domains while those with low life satisfaction did the opposite. The implications of the findings are discussed in Chapter 10.

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## Chapter 1

### Introduction and Literature Review

#### Broad aims and overview of thesis

The aim of this thesis is to identify the information brought to mind when individuals consider whether they are satisfied with their lives, and to examine some of the associated cognitive processes that may underlie these life satisfaction judgements. Satisfaction with life is defined as “a cognitive and global evaluation of the quality of one’s life as a whole” (Pavot & Diener, 2008, p.137). The studies that comprise this thesis investigate the extent to which life satisfaction judgements are considered and meaningful judgements rather than the result of mental shortcuts.

Life satisfaction can be measured with scales that examine particular areas of life, such as the World Health Organisation Quality of Life questionnaire (WHOQOL-100, The WHOQOL Group, 1998, cited Power, Harper, & Bullinger, 1999) or with scales that are less constrained, in which respondents are free to use whatever information they wish, for example, the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Life satisfaction, measured with the SWLS, has become a widely used outcome measure. Importantly the freedom the SWLS affords to respondents sets it apart from other well-being measures, such as Psychological Well Being (Ryff, 1989). However the cognitive processes involved in life satisfaction judgements are unclear and require further research (Pavot & Diener, 2008). This thesis is comprised of six studies which take a number of steps towards a more thorough understanding of life satisfaction judgements with an aim to providing further evidence for the idea that they are considered and thoughtful

judgements, rather than simply a reflection of one's mood at the time or a judgement based on irrelevant or temporarily accessible information. A thorough understanding of the information and processes that underpin life satisfaction judgements would provide a window into the important question of what people consider to be important for a good life.

### **Overview of chapter**

The rest of Chapter 1 will review the existing literature surrounding life satisfaction judgements. In order to place life satisfaction in context the review will begin with a summary of other well-being approaches. The review will then examine life satisfaction judgements in more detail. The relationship of item-order effects and feelings-as-information with life satisfaction judgements will be addressed. Having established where research currently stands, and its limitations, the empirical questions investigated by the studies that comprise this thesis will be set out.

### **Measures of well-being**

In the last 13 years, since the publication of a special issue of the *American Psychologist* (2000), there has been a surge in empirical research with a focus on the psychology of well-being, happiness and optimal human functioning, and how they relate to “the good life” - “Positive Psychology” (Seligman & Csikszentmihalyi, 2000). The increase in such research has been so great that three dedicated journals have since been established: *The Journal of Happiness Studies*, *The Journal of Positive Psychology* and, most recently, the *International Journal of Well-being*.

The resulting wave of well-being research yielded a multitude of definitions, and associated measures, of well-being. In the psychological field, regardless of the

specific definition, well-being measures tend to be subjective judgements. In other words measures require a personal assessment from the individual of their own level of well-being, for example deciding whether they have what they consider to be the important things in life or whether they have a sense of purpose, rather than being based on objective information, such as income or employment. While most well-being measures tend to require a subjective judgement, the extent of subjectivity, how constrained respondents are in being directed to think about particular information, varies between the different approaches and measures.

Well-being measures can also be distinguished from each other to the extent to which the measure is considered “hedonic” and “eudaimonic”. Both these terms have been appropriated from Ancient Greek literature (such as Aristotle). However within the Positive Psychology literature hedonic well-being can be said to be more clearly defined than eudaimonic (Kashdan, Biswas-Diener, & King, 2008). The term hedonic refers to well-being that relies solely on pleasure or positive feelings, and a lack of pain or negative feelings, with little consideration given to where those feelings are derived from. Eudaimonic well-being is considered distinct from well-being based on pleasurable feelings, but is a fairly broad term in the current literature encompassing a wide range of concepts. One definition of eudaimonic well-being is that it is a well-being derived from fulfilling one’s virtuous potentials or living in accordance with one’s true self (Kashdan et al., 2008; Waterman, 1993), and this can involve pursuing particular activities (Waterman, 1993) or living a life that promotes personal growth and fulfilment (Ryan & Deci, 2001; Ryff & Keyes, 1995). Eudaimonia has also been defined as a happiness derived from good works, and as a result is often related to a meaningful life or a life with purpose (Kashdan et al.,

2008). Other approaches and measures that are considered eudaimonic include meaning, autonomy, self-actualisation and engagement (Kashdan et al., 2008; Ryan & Deci, 2001). While hedonia and eudaimonia are considered distinct, confusingly, however, positive feelings are considered a potential, but not necessary, side effect of eudaimonia (Ryan & Deci, 2001; Waterman, 1993).

The hedonic versus eudaimonic definitions of well-being established a conceptual schism in well-being research. A full review of the pros, cons and impact of the hedonic and eudaimonic schools of thought is beyond the scope of this thesis (for a review see Kashdan et al., 2008). Importantly life satisfaction judgements, being based on whatever the respondent deems relevant, are difficult to define as either hedonic or eudaimonic. To further emphasise where life satisfaction fits into this dichotomy, examples of these two types of well-being are outlined below.

**Balance of feelings.** According to Kahneman (1999) a measure of positive and negative affect, or feelings, should be sufficient to describe a person's assessment of their life. In this case a report of numerous positive emotions or pleasurable moments and few negative ones would indicate a "good" life. The idea that the balance of positive and negative feelings adequately reflects one's well-being is not a new one. After reading Aristotle's *Nicomachean Ethics*, in which Aristotle stated that "the highest of all human actions is eudaimonia" (Aristotle, 2004, p. 6) Bradburn (1969) decided that this universally important concept should be his main indicator when examining "difficulties in living" and "global mental health" (Bradburn, 1969, p.6). Bradburn (1969) therefore interpreted "eudaimonia" as "happiness" or "well-being", used the terms synonymously, and measured the occurrence of positive and negative feelings. For example participants were asked

whether, during the past few weeks they had ever felt: the following: pleased about having accomplished something; that things were going your way; on top of the world; bored; depressed or very unhappy; very lonely or remote from other people.

Bradburn's study was ground-breaking in that it established that positive and negative affect were distinct. That is, Bradburn (1969) found that there was not a substantial correlation between positive and negative affect. Thus, as positive and negative affect varied independently, they ought to be measured separately. Positive and negative affect are currently considered the "dominant dimensions of emotional experience" (Watson & Clark, 1994, p.1) and the most commonly used measure is the Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988). The PANAS consists of two lists of 10 emotion or feelings terms: active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud and strong for Positive Affect; afraid, scared, nervous, jittery, irritable, hostile, guilty, ashamed, upset and distressed for Negative Affect. Respondents are asked to indicate the extent they have felt the emotions using a 5-point scale ranging from *very slightly or not at all* to *extremely*.

The PANAS has been criticised for utilising high arousal positive emotion terms and lacking positive but low arousal terms such as "calm" and "relaxed" (Diener et al., 2010; Vella-Brodrick, Park, & Peterson, 2009). Furthermore some of the terms included are not feelings or emotions per se, such as "active" and "strong". These limitations have been addressed to a certain extent by the PANAS-X (Watson & Clark, 1994) which contains 60 items, including low arousal positive emotions. Both the PANAS and PANAS X can be used with different temporal instructions, such as: "right now in the present moment"; "today"; "past few days"; "past year"

and “in general”. It has been asserted that for respondents to recall actual experiences of emotions, and therefore mitigate memory bias, the time frame should be no longer than 4 weeks (Diener et al., 2010). Watson and Clark (1994) clearly state that narrow time scales measure state affect whereas the longer term time frames assess trait affect. In other words it is accepted that broader timescales rely less on episodic information and more on a general self-concept.

The Day Reconstruction Method (DRM; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004) and the Experience Sampling Method (ESM; Csikszentmihalyi, Larson & Prescott, 1977) rely on numerous measures of affect aggregated over time. The DRM asks participants to recall their day and to assign positive and negative emotion ratings to their activities. Whilst this method relies on the memory of the individual, and could therefore be influenced by memory bias, it is limited to the previous 24 hours. Furthermore the amount of data obtained via the DRM, compared to a 10 item survey such as PANAS, increases the accuracy of the measure. The ESM increases accuracy even further, compared to the DRM, by recording the emotions experienced by individuals at random intervals throughout the day. Participants are regularly signalled using electronic devices and asked to gauge how they are feeling, right at that moment, in response to certain emotion items. The average of these scores therefore eliminates the issue of memory bias.

Measures of affect, regardless of how accurate, on-line or dense the data, are hedonic measures in that they essentially define well-being as being high in positive feelings and low in negative feelings. Affect measures can include more broad terms that are open to interpretation (such as happy/sad, positive/negative) and feelings that are intended to reflect a broad spectrum of emotions (such as calm and relaxed for

positive emotions) nevertheless the idea that the balance of feelings sufficiently encapsulates the assessment of a life well lived has been contested.

**Eudaimonic measures of well-being.** If affect balance does not adequately reflect well-being or a life well-lived, then there is more to a “good life” than affect balance. A number of eudaimonic constructs and definitions of well-being seek to address this apparent limitation of affect balance measures. Certain measures of well-being, such as Psychological Well-Being (Ryff, 1989) and Self-Determination Theory (Ryan & Deci, 2000), utilise concepts such as self-actualisation and positive psychological functioning, which are not explicitly linked to affect balance, and use these to define well-being.

Ryff identified that classic humanist and developmental theories, such as Maslow's self-actualisation (Maslow, 1968 cited Ryff, 1989, p. 1070) and Rogers' fully functioning person and lifespan development theory (Rogers, 1961 cited Ryff, 1989, p. 1070), seemed to point to an idea of well-being that was not focussed on feeling good. Furthermore Ryff (1989) argued that a limitation of affective measures of well-being was that they although they were valid and reliable they lacked theoretical foundations. Ryff (1989) identified common themes or points of convergence within the humanist and life span development literature resulting in six "theoretical constructs" (Ryff, 1989, p. 1072) that point to different aspects to positive functioning. These six dimensions were: Self-Acceptance; Positive Relations with Others; Autonomy; Environmental Mastery; Purpose in Life; and Personal Growth; and together they reflect what Ryff (1989) termed Psychological Well-Being (PWB). A measure developed to assess these constructs has shown high internal and test-retest reliability (Ryff, 1989). A high scorer in Self-Acceptance

would have a positive attitude toward themselves; Positive Relations with Others reflects those with relationships that encompass love, empathy, friendship and affection; Autonomy indicates someone who values themselves as an individual and is able to self-regulate their behaviour; Environmental Mastery reflects the ability to manage and control one's everyday life and participate in external activities, Purpose in Life encompasses the idea of having pursuable goals; and Personal Growth represents an individual who continues to grow and develop as a person with regards to their behaviour and self-knowledge. Whilst PWB addresses areas of self-improvement, personal challenges and profound aspects of psychological functioning it has been asserted that PWB is inadequate in its inclusion of areas concerning interaction and does little to consider the outside world (Keyes, 1998).

Keyes (1998) asserted that as individuals are surrounded by social structures and communities, facing continual social tasks, having only one dimension of PWB concerning social interaction and the welfare of others (Positive Relations with Others) was inadequate. To address the fact that PWB largely failed to address social interaction Keyes' developed a Social Well Being scale (Keyes, 1998) consisting of five dimensions: Social Integration - one's relationship with society and community; Social Acceptance - a positive view of human nature; Social Contribution - the value of oneself within society; Social Actualisation - a positive assessment of the condition and future of society; and Social Coherence - a concern for and understanding of the world and society. The Social Well Being scale relies on an individual's subjective perception of items that encompass the concept of belonging and contributing to a community or to society at large as well as their perception of the broader attitudes of those in the community and the outlook of society. Thus

although PWB was developed to broaden the definition and measurement of well-being Keyes (1998) argued that it remained an incomplete conceptualisation.

Seligman (2011) defined well-being as an independent construct consisting of five elements: Positive Emotions; Engagement; Relationships; Meaning and Purpose; Accomplishment (PERMA). While positive emotions are self-explanatory the other four facets can be defined as follows: Engagement reflects an absorbing psychological state of focus, also referred to as “flow”; the inclusion of Relationships recognises that relationships with others and social support have consistently been found to be highly related to well-being, for all ages and cultures; Meaning and Purpose encompass the broad aspect of serving something larger than oneself or having a higher purpose; Accomplishment accounts for achievement, success and mastery (Forgeard, Jayawickreme, Kern, & Seligman, 2011). A benefit of PERMA over other definitions of well-being is that it does not have to rely purely on self-report scales, which come with the burden of various reporting biases. Whilst some elements of PERMA are measured subjectively with self-report scales (such as positive emotions) others (such as relationships, meaning and accomplishment) can be measured both subjectively and objectively, and there are ongoing attempts to develop such scales of measurement (Forgeard et al., 2011).

Another conceptualisation of well-being that aims to go beyond a simple affective account is Self-Determination Theory (SDT), sometimes also referred to as Basic Psychological Needs Theory (Ryan & Deci, 2000). Unlike PWB and PERMA this theory does not attempt to define well-being but instead denotes three factors, or universal psychological needs, that are essential for psychological growth. The three needs comprise: *autonomy*, the need to be an agent of one’s own life; *competence*,

the need to feel confident in one's skills; *relatedness*, the need to have close and secure human connections. Well-being is considered to be just one aspect of the psychological growth that the three needs contribute to, the other aspects being: intrinsic motivation, integrity, vitality and self-congruence (Ryan & Deci, 2001). In other words, the three needs - autonomy, competence, relatedness - do not define well-being, but are dimensions that foster aspects of life that contribute to well-being or positive functioning.

**The limitations of eudaimonic approaches.** The aim of all three of the aforementioned approaches was to conceptualise well-being as more than just affect balance. PWB and SDT are, arguably, two of the most well-used and tested of the well-being approaches that are defined as eudaimonic while PERMA is less frequently utilised. The aforementioned approaches have been defined as eudaimonic but, as mentioned earlier, the term currently encompasses a wide range of concepts and measures (Kashdan et al., 2008; Ryan & Deci, 2001). In fact, in their review, Kashdan et al. (2008) felt that the only common theme amongst concepts labelled as “eudaimonic” was the lack of an explicit measure of affect rather than similarities in terms of theory and approach. This is an interesting point with regards to PWB, SDT and PERMA. With the inclusion of a measure of positive emotions PERMA has a clear and intentional overlap with affect balance. Ryan and Deci (2001) assert that the satisfaction of the three needs of SDT (relatedness, competence and autonomy) engenders more positive and less negative affect as well as fostering more specific aspects of eudaimonic well-being, such as self-actualisation and positive psychological functioning. The Self-Acceptance and Environmental Mastery scales of PWB have shown a moderate to strong association with affect scales (Keyes,

Shmotkin & Ryff, 2002; Ring, Höfer, McGee, Hickey, & O'Boyle, 2006; Ryff & Keyes, 1995) suggesting that PWB may not be as empirically distinct from affect balance as expected.

Thus all three of the aforementioned conceptualisations of well-being overlap with positive and negative affect, although this was not intentional for PWB. Importantly this implies that the relationship between well-being and affect balance, as first realised by (Bradburn, 1969), may be axiomatic. In other words, whilst a good life may consist of more than just pleasurable feelings, such feelings are unavoidable in a life well-lived. Critics of affect balance neglect the fact that although the appropriateness and motivation behind the positive and negative feelings is not measured it does not mean that those feelings are invalid (Kashdan et al., 2008). Put another way, measuring the extent and frequency of positive feelings does not necessarily equate to them being short lived, insignificant or recklessly sought out. A complete definition and measure of well-being would therefore accommodate these feelings whilst also allowing for the idea that there is more to a good life than feeling good.

PWB, PERMA and SDT prescribe to the individual which aspects of well-being are relevant and important. Well-being in these cases is therefore pre-defined according to external criteria. The most obvious limitation of this type of approach is that it is not necessarily valid across different cultures. For example, while autonomy is included as an aspect of both PWB and SDT evidence is mixed as to whether autonomy is as important to well-being in many Asian and African countries as it is to Western culture (Huppert & So, 2013; Ryan & Deci, 2001). The prescriptive nature also ascribes a moral judgement as to the source of well-being: certain

activities or behaviours have been deemed “worthwhile” (Kashdan et al., 2008; Steger, Kashdan, & Oishi, 2008). The argument against such approaches would therefore be that they are not a personal assessment of one’s well-being based on one’s own values, ideals or standards.

**A subjective assessment of one’s own life.** Andrews and Withey (1976, cited Diener, Suh, Lucas, & Smith, 1999) were among some of the first researchers to ask people to use their own judgement to assess their life overall, rather than using objective measures or examining specific life areas. Questions such as, “How do you feel about your life as whole?”, with a response scale ranging from *delighted* (7) to *terrible* (1), or “Taking all things together, how would you say things are these days?”, with a response scale ranging from *very happy* to *not too happy*, meant that Andrews and Withey (1976, cited Schwarz & Strack, 1999) were using broad, open-ended questions to assess life as a whole. Subsequent studies used a myriad of single and multi-item measures to assess life satisfaction and as such comparison between studies was hindered as the concept lacked a standard format. Further issues included the moderate reliability and validity, skewed scores and response acquiescence resulting from single item measures (Diener, 1984). Whilst some measures did utilise more than one item, some of these were not considered to be “pure” measures of life satisfaction as they also included measures of affect. Also most measures of life satisfaction were designed specifically for use with geriatric populations. The Satisfaction with Life Scale (SWLS; Diener et al., 1985) was designed to address all of these issues.

Diener et al. (1985) designed and tested the SWLS as a multi-item measure for use with the general population. The SWLS consists of five items: In most ways

my life is close to my ideal; The conditions of my life are excellent; I am satisfied with life; So far I have gotten the important things I want in life; If I could live my life over I would change almost nothing, which are responded to on a 7-point Likert scale ranging from *strongly disagree* to *strongly agree*. Since its design the SWLS has been shown to have high internal consistency and variable temporal stability, and has been found to be distinct from, but related to, measures of affect (Pavot & Diener, 2008). There is now a substantial body of research on the relationship between life satisfaction and demographic factors. The following section provides a brief overview.

**Life satisfaction and demographic factors.** Comparison and integration of demographic data across different studies is sometimes made difficult by the fact that different measures of life satisfaction are used, commonly single item measures are used but also the SWLS or other multi-item measures can be used. Nevertheless broad patterns can be described.

Findings regarding the variation of life satisfaction with age have been mixed. Using cross-sectional survey data of 500,000 participants Blanchflower and Oswald (2008) found that for both Americans and Western-Europeans happiness or life satisfaction (measured with a single item) displayed a U-shape or curvilinear pattern with age, regardless of the decade in which the participants were born. In other words, controlling for the birth cohort - the general effect of being born in a “better” or “worse” era - well-being was high in the young, lowest in middle-age and then higher again in older age groups (Blanchflower & Oswald, 2008). However Baird, Lucas and Donellan (2010) found differences in the variation of life satisfaction with age between panel studies. Using the German Socio-Economic

Panel Study life satisfaction levels were consistent from late teens to early 70's, after which the levels declined sharply whereas the British Household Panel Study showed a similar pattern to Blanchflower and Oswald's (2008) U-shaped curve but with an additional decline in later life (Baird et al., 2010).

Women and men have been found to have similar levels of overall life-satisfaction (Inglehart, 2002). Interestingly, however, Inglehart (2002) found an interaction between age and gender on life satisfaction (measured with a single item) using the World Values Survey, three waves of surveys comprising 146,000 respondents across 6 continents. In most Western societies, younger women were found to be more satisfied with life than younger men, whereas older men were more satisfied than older women (Inglehart, 2002).

Educational level (number of years received or level attained) has been found to have a small but positive correlation with well-being (Argyle, 1999). However the impact of one's education on life satisfaction is also closely linked to income and occupational status. A meta-analysis of 286 studies focussing on adults in later life (the mean age of all study samples was greater than 55 years) found that greater socio-economic status - a combination of education level, income level and occupational status - was related to greater life satisfaction (Pinquart & Sörensen, 2000). When examined separately income was found to have a significantly higher relationships with life satisfaction than education, although both correlations were weak (Pinquart & Sörensen, 2000). Again there may be a moderating effect of gender. Pinquart and Sörensen (2000) found that for male participants both income and education were more closely related to life satisfaction than they were for female participants.

While ethnicity has been found to be related to well-being, with Black Americans having lower scores compared to White Americans, studies have found that the effect of ethnicity is reduced when income, education and job status are controlled (Argyle, 1999; Barger, Donoho, & Wayment, 2014; Diener, Sandvik, Seidlitz, & Diener, 1993). In sum, significant but small effects of some demographic factors have been found and, as such, one's age, gender, education and ethnic group are linked to satisfaction but there remains a lot of variability to be explained.

**Subjective Well-Being (SWB).** In combination with positive and negative affect balance a person's cognitive judgement of their own life, as measured with the SWLS, is commonly referred to in the literature as Subjective Well-Being (SWB). SWB has been found to correlate with various objective indicators of well-being such as income, self-reported physical health, cortisol levels that indicate stress, smiling and marital status (Diener et al., 1999; Kahneman & Krueger, 2006). In comparison to other well-being approaches, such as PERMA (Seligman, 2011) or PWB (Ryff, 1989), SWB is less prescriptive and therefore can accommodate the idea that the concept of well-being may vary between individuals and cultures. SWB therefore addresses some of the issues surrounding the idea that well-being should be more than simply affect balance, at the same time as avoiding the issue of prescribing what a good life should be.

SWB has come to dominate well-being research. However it has been argued by proponents of more eudaimonic approaches that as a definition of well-being SWB lacks "theoretical rationale" (Ryff, 1989, p.1069) and a "clear conceptual framework" (Ryff & Keyes, 1995, p.719). A further criticism is that as SWB does not explicitly measure concepts considered to reflect optimal psychological

functioning, and respondents can use whatever information they wish, it fails to sufficiently define well-being (Forgeard et al., 2011; Ryff & Keyes, 1995). However such criticism disregards the important point that by assessing how one thinks and feels about one's life, and with individuals having the freedom to use whatever information they wish, the life satisfaction facet of SWB potentially provides a route to a deeper understanding of what people consider to be a "good life" and how they make their judgement (Diener, Inglehart, & Tay, 2012). Importantly the key to this idea is to know what information and processes underlie the life satisfaction judgement. Thus, as the more cognitive, appraisal component of SWB, life satisfaction judgements include the potential for a more considered and reflective component of well-being, at the same time as retaining the benefit of a subjective measure. Understanding what information and processes people use to make such judgements therefore provides a window into the important question of what people consider to be important for a "good life".

### **The processes underlying life satisfaction judgements**

The information and cognitive process underlying life satisfaction judgement are not well understood (Pavot & Diener, 2008). When the SWLS was first devised it was simply assumed that respondents were making a considered judgement in which they weighed up aspects of their life. However initial studies did not find the expected strong relationships between life circumstances and well-being that would support the idea that respondents were using information about their life in their judgements of life satisfaction (Argyle, 1999; Diener, 1984; Schimmack, 2008; Suh, Diener, & Fujita, 1996). For example it was found that income was correlated between .18 and .20 with well-being (Lucas, Dyrenforth, & Diener, 2008). Different

estimates placed the variance in SWB accounted for by objective life circumstances at less than 5% and no more than 20% (Argyle, 1999; Diener et al., 1999; Schwarz & Strack, 1999). This suggested that such bottom-up, life domain information was not simply driving the life satisfaction judgement. Additionally, it has been argued that the idea of overall or general life satisfaction is too broad to be a fully and accurately considered judgement and as such individuals must instead rely on heuristics, or mental shortcuts, when assessing their life satisfaction (Diener, Scollon, & Lucas, 2003). The apparently small relationship between life circumstances and life satisfaction, along with the potential issue of large cognitive demands, has led to the suggestion of a variety of alternative sources of information for life satisfaction judgements. The evidence for these accounts of life satisfaction is discussed below.

**The use of one's current mood.** A number of correlational studies have found that responses in a life satisfaction survey were related to events that improved the participants mood, such as the weather, the success of a football team or finding a small sum of money (Fox & Kahneman, 1992; Schwarz & Strack, 1999; Strack, Martin, & Schwarz, 1988). Two possible cognitive processes were suggested to explain these findings: 1) a good mood (or increased positive affect) increased the accessibility of mood-congruent (i.e. positive) information for the judgement, or, alternatively, 2) mood was used as a direct indicator of well-being. In the case of the latter suggestion, if one's mood was used in this way in a life satisfaction judgment then it could be considered a heuristic or mental shortcut, compared to the more cognitive demands of a considered judgement using retrieved information. Schwarz and Clore (1983) demonstrated that participants were in better moods on sunny days compared to rainy days and that their general life satisfaction scores also showed this

pattern. Importantly if the participant's attention was drawn to the weather, a potential explanation for the mood, this was no longer the case: life satisfaction scores were then similar for those experiencing sun or rain (Schwarz & Clore, 1983). This finding supported the idea that the life satisfaction judgement was based directly on one's mood as an information source because identifying the source of the mood as unreliable should not affect any positive information made more salient as a result of the good mood.

Schwarz and Clore's (1983) study, which suggested that the act of highlighting that a participant's mood may be due to the weather reduces the impact of the mood on the life satisfaction judgement, has been widely cited and is still used in the current literature as an example of life satisfaction judgements being unreliable. Schwarz and Strack (1999) developed a judgement model of SWB in which mood was considered a direct information source and the first port of call in a life satisfaction judgement. Further Schwarz and Strack (1999) concluded that as well-being judgements were heavily influenced by mood their reliability was reduced. However there are a number of reasons to be cautious of Schwarz and Clore's (1983) result. According to a review of 10 studies by Lucas and Lawless (2013) the effect of weather on mood has been found to be mixed: in particular, studies with large samples of thousands of participants have found no relationship between mood and the weather at all. There has also been inconsistent support for the direct relationship between the weather and life satisfaction with the most recent study, with a sample of 1 million, not finding the expected relationship (Lucas & Lawless, 2013).

With the influence of weather on both mood and life satisfaction being called into question the direct effect of mood on life satisfaction has also been examined further. Pavot and Diener (1993) accounted for both current mood and long term, or trait, mood. Current mood was measured with a single mood item while a participants long-term or trait feelings were measured in two ways: via peer-reported life satisfaction, assumed to be an assessment of the person's general demeanour rather than a considered assessment of objective life circumstances; and a measure of well-being a month earlier. The peer-reports and previous measure of well-being were found to be more accurate predictors of life satisfaction than current mood and current mood was found to predict life satisfaction measured with a single item but had little effect on multi-item measured life satisfaction (Pavot & Diener, 1993). Via a longitudinal study and a multi-state, multi-trait, multi-construct model which accounted for variance due to error, variance that was occasion specific, and individual differences, Eid and Diener (2004) also found that current mood effects only made a small contribution to the variance in life satisfaction.

More recently Gärling and Gamble (2012) found that the correlation between participants mood and life satisfaction, measured with the SWLS, was significantly greater when life satisfaction was measured before mood, rather than the other way round. This result suggested that rather than using mood in the SWL judgement, the cognitive process underlying life satisfaction affected the mood evaluation. Gärling and Gamble (2012) also found that when mood was experimentally increased, by rewarding performance in a general knowledge test, measuring mood before life satisfaction still did not affect life satisfaction scores. Different manipulations were also compared, one group was rewarded if they performed well in a general

knowledge task, thus improving their mood, the other group was asked to write down the “personal characteristics, social relations and material resources” that were important to their current life satisfaction, thus increasing the salience of life information (Gärling & Gamble, 2012). Following the manipulation tasks current mood was measured, followed by the SWLS. The correlation between mood and SWLS was significantly higher for the group who were primed to think of life areas compared to those who were not (Gärling & Gamble, 2012). Gärling and Gamble (2012) therefore provided evidence demonstrating that someone’s mood does not directly affect their life satisfaction. Further, as the life satisfaction list task was assumed to have a similar effect as completing the SWLS before the mood measure, in other words bringing the circumstances of one’s life to mind, the results also support the idea that one’s life circumstances are relevant when responding to the SWLS and that this information can itself influence one’s mood (Gärling & Gamble, 2012).

Schimmack, Diener and Oishi (2002) obtained students reports of the information used in a life satisfaction judgement by asking participants to choose from a provided list of potentially used information, directly after they had completed the SWLS (this tick-list technique is discussed in further detail in Chapter 2, p. 71). Importantly the list included current mood, as well as family relationships and academic satisfaction amongst other potential sources. Some participants reported using their mood in life satisfaction judgements and some did not (Schimmack, Diener & Oishi, 2002). Additionally Schimmack, Diener and Oishi (2002) expected the correlation between current mood and SWLS to be greater for participants who reported using mood than those who did not, but this was not

found. This result may suggest that one's mood is related to life satisfaction and that some participants were more aware of this than others. However it may also imply that the method of reporting was inaccurate. Further to this finding the participants were explicitly instructed not to use mood in the latter two months of four monthly measurements and there was a significant drop in reported use of mood corresponding to the instructions (Schimmack, Diener & Oishi, 2002). This result suggests malleability in the use of mood: one can choose to use it or not. Schimmack, Diener and Oishi (2002) also found that a number of other sources were reported as used, a result which suggests that other, bottom up, information may be used in conjunction with mood information.

In summary evidence suggests that mood may not be the short-cut or first port of call in a life satisfaction judgement, as suggested by Schwarz and Strack (1999). Current mood, or affect balance at the time of judgement, seems to have a greater influence on measures of life satisfaction that use single items rather than multi-item measures. Nevertheless current affect has been shown to be consistently related to life satisfaction (Diener, Fujita, Tay, & Biswas-Diener, 2011) and has been explicitly reported as being used by participants in their life satisfaction judgements (Schimmack, Diener & Oishi, 2002). As one's mood can be discounted by choice or via experimental manipulation it seems likely that mood is one of a number of possible sources.

**The use of metacognitive feelings.** The idea of "feelings as information", whereby one's feelings at the time inform a judgement directly (Greifeneder, Bless, & Pham, 2011; Schwarz, 2012), suggested that an individual's current mood could be a potential heuristic or mental short cut for well-being judgements. However, as

discussed above, it seems likely that mood information is used with other sources. There are other feelings experienced during a judgement process, however, which may inform a judgement. As well as affective feeling states, such as one's mood, there are also feelings which are associated with the cognitive processes of a judgement. These feelings are referred to as metacognitive feelings, and include such feelings as the feeling of knowing, and the feeling of ease-of-retrieval of information or fluency (Alter & Oppenheimer, 2009; Greifeneder et al., 2011).

Metacognitive feelings may be particularly relevant given that life satisfaction judgements are cognitive processes. Of particular interest is the feeling of ease-of-retrieval. Schwarz, Bless, et al. (1991) asked participants to assess their assertiveness after they had listed examples of their own assertive behaviour. Importantly the participants were asked to list either 6 or 12 examples, and the participants reported that the longer list was more difficult (Schwarz, Bless, et al., 1991). The retrieved content and the feelings of ease or difficulty of retrieval of the content were therefore separated. It was found that participants judged themselves as more assertive after recalling fewer examples of assertiveness (Schwarz, Bless, et al., 1991). Thus feelings of ease-of-retrieval affected the assertiveness judgement over and above the retrieved content. This study is discussed in more detail in Chapter 8. The use of feelings of ease-of-retrieval has been demonstrated in many judgements (see Greifeneder et al., 2011; Schwarz, 1998, 2004). Research also suggests that ease-of-retrieval as information is especially important for judgements of the self, rather than others (Caruso, 2008). However metacognitive feelings have not been examined in the life satisfaction judgement literature, with only one study (O'Brien, 2013) examining the use of ease-of-retrieval information to date.

**The use of preceding information.** Strack et al. (1988) found that if participants were asked about their satisfaction with dating after a general life satisfaction question then the two measures were unrelated ( $r = -.12$ ). However if the satisfaction with dating question was asked before the general life satisfaction question the correlation between the two measures increased ( $r = .66$ ). The results were replicated with marital and global life satisfaction (Schwarz, Strack, & Mai, 1991). General life satisfaction therefore appeared to be more strongly related to specific life domain satisfaction if the specific domain measure preceded the general life satisfaction measure, indicating that items preceding a life satisfaction judgement may bring to mind information that would otherwise not have been considered (Schwarz & Strack, 1999). Such context effects, along with the apparent influence of mood, contributed to Schwarz and Strack's (1999) conclusion that well-being judgements are unreliable.

However further evidence suggested that the aforementioned effects are minimal. Schimmack and Oishi (2005) investigated the influence of item-order effects on life satisfaction judgements, performing a meta-analysis limited to studies that experimentally manipulated the order of domain satisfaction questions (such as satisfaction with dating, marriage or finances) with broad life satisfaction questions: sixteen studies were identified across eight, different, published articles. Schimmack and Oishi (2005) tested whether the average correlation between the general life satisfaction and domain satisfaction scores differed significantly according to the order of the questions. If the correlation was greater when the domain satisfaction measure preceded the life satisfaction, compared to the opposite order, it would indicate that responding to the domain question brought information to mind that

would not otherwise be used in response to the life satisfaction judgement. Therefore such a finding would support Schwarz and Strack's (1999) argument that life satisfaction judgments were context dependent and unreliable. The meta-analysis found that the item-order effects were statistically significant, that is the correlation between the measures was greater when the specific domain was measured first, however the effect sizes varied widely and on average the effect was weak to moderate (Schimmack & Oishi, 2005). Further to this Schimmack and Oishi (2005) failed to replicate the, oft-cited, study in which Strack et al. (1988) showed that the responses to a question about dating satisfaction correlated more strongly with overall life satisfaction when the dating question was asked before the life satisfaction question, rather than afterwards (Schimmack & Oishi, 2005). Put simply the influence of preceding questions on life satisfaction judgements was found to be small.

Schwarz and Strack (1999) made two important and qualifying points regarding the cognitive processes underlying the effect of preceding information: firstly, that "item-order effects...are to be expected only when answering a preceding question increases the temporary accessibility of information that is not chronically accessible anyway"; secondly, that "the impact of information rendered accessible by preceding questions decreases with the amount and extremity of competing information" (Schwarz & Strack, 1999, p.63). Schimmack and Oishi (2005) also investigated these ideas. Schimmack and Oishi (2005) asked participants to list their five most important aspects of life and assessed their satisfaction in those areas. As these areas were supposedly important to each participant it was expected that they would be used in the life satisfaction judgement whether or not they were made more

accessible by measuring them before a measure of whole life satisfaction.

Schimmack and Oishi (2005) found that, as expected, the correlation between the average satisfaction of the five domains and overall life satisfaction did not significantly differ as a result of the order of the scales. While the correlation between the measures did increase in the specific-global order, the effect was small and non-significant (Schimmack & Oishi, 2005). In a follow-up experiment Schimmack and Oishi (2005) compared the item-order effects of a domains that had been previously identified as important to life satisfaction, family, and a domain identified as not important, weather (Schimmack, Diener & Oishi, 2002). Again it was found that that if the question asking about one's satisfaction with family preceded the whole life satisfaction questions there was a small and non-significant increase in the correlation between the measures. However, unlike family satisfaction, weather satisfaction did not significantly correlate with whole life satisfaction and item order had no effect the correlations (Schimmack & Oishi, 2005). Thus the results indicated that item-order effects did not occur for information that was not relevant to the judgement. Finally Schimmack and Oishi (2005) also found that item-order effects were more likely if life satisfaction was measured with single item measures that were focussed on the last month, rather than multi-item measures assessing general or global life satisfaction. In support of this finding context effects occurring with single item rather than multi item measures of SWB were also found by Pavot and Diener (1993).

Schimmack and Oishi (2005) therefore provide considerable support for the idea that the effect of information made accessible by preceding questions does not invalidate life satisfaction judgements, in the sense that they are susceptible to trivial,

transient effects. More recently Kaplan, Luchman and Mock (2012) found that placing specific questions regarding job satisfaction before more general job satisfaction questions resulted in a smaller correlation between the two measures than when the general measure came first; in other words showing the opposite effect found by Schwarz and Strack (1999). These results would appear to provide further support for Schimmack and Oishi's (2005) conclusions: item-order effects do not have a large effect on general satisfaction judgements.

**Life satisfaction reflecting a trait.** Another account of life satisfaction judgements relies on the influence of a top-down process, the idea that one's personality informs the assessment directly (Brief, Butcher, George, & Link, 1993; Costa, McCrae, & Zonderman, 1987; Feist, Bodner, Jacobs, Miles, & Tan, 1995; Heller, Watson, & Ilies, 2004). In other words a general happy or positive disposition influences both one's general life satisfaction and satisfaction with more specific areas of life, to the same extent. Personality traits have been found to account for a large amount of an individual's life satisfaction rating (Kahneman & Krueger, 2006) and life satisfaction scores tend to be strongly related to extraversion and neuroticism (Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002). The long-term stability of well-being is also often cited as support for this idea (Costa et al., 1987; Heller et al., 2004). For example, Costa et al. (1987) examined the well-being of participants in a large national survey that was followed up a decade later and found that changes in marriage, work and residence had little effect on well-being. However Costa et al. (1987) measured well-being with a multi-item measure that included very specific items such as freedom from health worry, energy level and the extent to which life was interesting, as well as including a measure of

cheerfulness. The specificity of the measure, essentially informing the participants what information they need to consider, may therefore account for the consistency of scores across a decade. Furthermore the changes in marriage, work and location were established from the responses to demographic items and as such the point at which they occurred in the time between measurements was not accounted for. In other words any impact the changes had on well-being may have been mitigated by time.

Further research has found that life satisfaction scores are stable in the short term, with stability decreasing over longer periods of time (Fujita & Diener, 2005; Schimmack & Oishi, 2005). This finding does not fit with the idea that an individual's life satisfaction results from a stable trait. Rather, this finding has been interpreted as indicating that one's life circumstances are used in life satisfaction judgements, as life circumstances are expected to not vary a great deal in the short term but expected to vary more over long periods. McAdams, Lucas and Donnellan (2012) compared how the ratings of overall life satisfaction and satisfaction in eight life domains changed over an eight year period. Comparison of the score trajectories, using multilevel modelling techniques, showed that when the overall score for the domains was aggregated it had a similar trajectory to (i.e., co-varied with) the overall life satisfaction score, whereas the individual trajectories of the eight domains were more diverse (McAdams et al., 2012). Thus while the combination of the domain satisfactions reflected general life satisfaction, not all domains were satisfactory at the same time and their individual patterns over time did not match that of life satisfaction as a whole. These results therefore are consistent with the idea that numerous bottom-up sources are used in the judgement. An overall positive disposition, or top-down source, would predict that all domains and life as a whole

would be judged similarly, that they would all be satisfactory or unsatisfactory at the same time.

Heller et al. (2004) found, via a meta-analysis that consisted of more than 70 studies, that satisfaction in job and marital domains were not only strongly related to life satisfaction but they were also weakly related to each other. This finding was also replicated in a correlation study in which participants reported their satisfaction with their job, marriage and life in general (Heller, Watson, & Ilies, 2006). It was found that job and marital satisfaction significantly predicted general life satisfaction but job and marital satisfaction were unrelated to each other (Heller et al., 2006). A weak relationship between domains implied that each domain was assessed by its own merits and was not influenced by an overall personality trait. Thus the independent relationship with general life satisfaction displayed by the domains provides support for bottom up processing rather than a positive trait.

**Summary of the possible underlying processes.** The evidence for the influence of item-order effects or an overall personality trait on life satisfaction judgements is not strong. Further to this, rather than being a widely-used, inaccurate short cut, one's mood appears to be one of a number of potential sources for a life satisfaction judgement. Other potential heuristics, such as feelings of ease-of-retrieval, have been rarely examined. Support for Schwarz and Strack's (1999) assertion that well-being judgements are unreliable is therefore mixed and as such the use of bottom-up life domain information in life satisfaction judgements needs to be re-considered.

**The use of bottom-up information.**

Lent et al. (2005) found that, for students, satisfaction with academic and social domains were the most consistent predictors of life satisfaction over other factors, such as goal progress and self-efficacy. Schneider and Schimmack (2010) took a dyadic approach and examined the domain and life satisfaction of dating couples and friendship pairs. The participants rated life satisfaction and domain satisfaction in five domains (weather, academic life, health, friends, family) for both themselves and their informant pair. Satisfaction with the domains of health, family and academic life was shown to predict both the self and informant ratings of life satisfaction (Schneider & Schimmack, 2010). In other words the findings are consistent with the participant and their pair basing their life satisfaction judgement on the same life domains. Further support comes from Suh et al., (1996) who showed, via a longitudinal two year study, that recent life events influenced life satisfaction judgments above and beyond aspects of personality. Although the use of only recent events could suggest that life satisfaction judgements account for the recent life of a person rather than their whole life, it clearly supports the use of bottom up information.

The aforementioned studies therefore provide support for the idea that bottom up information, which reflects an assessment of aspects of one's life, is related to one's life satisfaction. Due to the correlational nature of the studies though, certain information is found to predict life satisfaction but participants are not asked to report whether or not they used that information when making the judgement. To address this issue a small number of studies have used interviews and open-ended questions to establish what information people use in their life satisfaction

judgements (Dubé, Jodoin, & Kairouz, 1998; Mehlsen, Kirkegaard Thomsen, Viidik, Olesen, & Zachariae, 2005; Mellor, Cummins, & Loquet, 1999; Schimmack, Diener & Oishi, 2002). These studies are described in more detail in Chapter 2. The salient point is that studies have demonstrated that individuals report bringing various aspects of their lives to mind (Dubé et al., 1998; Mehlsen et al., 2005; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002). It has been argued that if life satisfaction judgements were made in an intuitive or implicit manner participants would be unable to report their information use (Schimmack, Diener & Oishi, 2002) and as such the results provide support for the idea the life satisfaction judgements are considered and meaningful, rather than being intuitive or unconscious judgements based on traits or moods.

Of the studies that directly ask participants what information they used in a life satisfaction judgment Schimmack, Diener, and Oishi (2002) clearly demonstrate the use of chronically salient, bottom up information in life satisfaction judgements. Schimmack, Diener and Oishi (2002) asked participants to complete the SWLS and then choose what information they felt they used in the judgement from a list of possible sources. The list contained a number of potential sources of information: use of current mood; memories of past emotional experiences; goal progress; family; housing; academic performance; romantic relationships; health; as well as two potentially irrelevant domains of information: weather and success of local sports team. Participants were also asked to complete a rating of importance and a specific satisfaction question for some of the sources: family; housing; academic performance; romantic relationships; health. These measures were completed at four intervals across a college semester, with the first and last occurrences measuring

general life satisfaction, while the second and third occurrence measured monthly life satisfaction.

Schimmack, Diener and Oishi (2002) found that the two general life satisfaction measures (Time 1 and 4) correlated more highly than the two monthly measures (Time 2 and 3). This supported the idea that fairly stable information was used in the more general judgements, but less so in the monthly assessments. Further evidence for the use of the same sources of information in each judgement was found via the consistent reported use of particular information across the four assessments, although some difference in information use was found in the monthly judgements compared to the general life satisfaction judgements. The majority of participants were found to report using: memories of past emotional experiences; goal progress; romantic relationships; academic performance. This similarity in the use of information may reflect the idea that some areas of life are generally considered important to life satisfaction, but it may also be due to homogeneity of the sample. Schimmack, Diener and Oishi (2002) concluded that life satisfaction judgements were based on chronically accessible and stable sources, at both the individual and population level. In other words individuals tend to use similar information sources when asked about life satisfaction at different times, and they tend to use similar information to each other.

Importantly Schimmack, Diener and Oishi (2002) addressed the issue of the validity of the reports. In a pilot study it was found that the correlation between family relationship satisfaction and life satisfaction was significantly greater for those participants who reported using family relationships in their judgement than those who did not (Schimmack, Diener & Oishi, 2002). The same pattern was found

for housing satisfaction: the correlation between the domain and life satisfaction was greater for users compared to non-users. In the subsequent longitudinal study, which included more potential sources to choose from in terms of self-reporting use or non-use, the same pattern was found for most domains: sources were more strongly related to life satisfaction when they were reported as being used.

Of course all studies that rely on participants describing the information they used make the assumption that the judgement is reportable and that this can be done accurately. Further, all the descriptive studies have relied on retrospection, participants are asked to recall what they thought about after they had made the judgement. Whilst this may seem like the most obvious method such retrospection may be subject to errors (van Someren, Barnard, & Sandberg, 1994). A more specific limitation of the aforementioned descriptive studies is that, despite aiming to allow participants the freedom to describe their judgements, they were somewhat restrictive. Some studies focussed on identifying the comparisons made in the judgement (e.g., Dubé et al., 1998; Mehlsen et al., 2005; Mellor et al., 1999). Other studies restricted their analysis to areas based on pre-existing theories in the literature (Schimmack, Diener & Oishi, 2002). The limitations of these descriptive studies are discussed in more detail in Chapter 2.

### **The combination of bottom-up information and top-down processes.**

While the evidence for life satisfaction judgements being accounted for by an overall personality trait is lacking, top-down influences can nevertheless be integrated into the idea that life satisfaction judgements are considered and based on bottom-up information. The personality traits of an individual may relate to their life satisfaction in two ways: 1) certain traits may make particular information more

relevant to the judgement; 2) some personality traits may have a direct effect on affect balance, which itself can be a source of information in a considered life satisfaction judgment.

Schimmack, Diener, and Oishi (2002) found that the relationship between life satisfaction and personality traits was mediated by the sources used in the judgement. The relationship of extraversion and neuroticism with life satisfaction was mediated by participants' hedonic balance score (a measure of experienced pleasure and displeasure on a typical day) and the relationship between conscientiousness and life satisfaction was mediated by academic satisfaction. This result suggested that personality traits accounted for some of the stability in information use. Similarly Oishi, Schimmack and Colcombe (2003) found that excitement experienced in the past month was more strongly related to life satisfaction for individuals high in sensation seeking compared to those who were low scorers. Thus personality traits appear to be related to life satisfaction at the level of influencing the domain sources used in the judgements. However Schimmack, Oishi, Furr, and Funder (2004) examined the relationship between life satisfaction and the narrower facets that form the dimensions of extraversion and neuroticism. The depression facet of neuroticism and the positive emotions facet of extraversion predicted life satisfaction over and above the broad traits. In other words the traits of extraversion and neuroticism were shown to be related to life satisfaction via their more affective facets rather than other facets such as anxiety, angry/hostility, warmth or assertiveness. As such it is not surprising that Schimmack, Diener and Oishi (2002) found that the traits of extraversion and neuroticism were related to hedonic balance.

As well as personality traits, other potential top-down influences on information use have been identified. The stronger a participant's values of achievement, benevolence, and conformity, the stronger the relationship between life satisfaction and the respective domains of satisfaction with grades, social life and family (Oishi, Diener, Suh, & Lucas, 1999). Thus domains that relate to one's values have greater link to one's life satisfaction. Personal values can be defined as desirable goals that serve as guiding life principles (Schwartz, 1994) and it is reasonable to assume that the personal importance of life domains is likely to be conceptually similar to one's values. However the evidence regarding the importance of certain domains and their relationship with general life satisfaction has been mixed. Schimmack, Diener and Oishi (2002) found that, in general, the reported use of sources was found to correlate with the reported importance: the sources rated most important overall were reported as being used in a life satisfaction judgement more than those rated as less important. However, in the first of two studies, Lent et al. (2005) found a difference in domain importance could not be established as the majority of participants rated the two domains being examined, academic life and social life, to be of similar importance. In the second study, participants ranked a list of life domains according to importance and the relationship between satisfaction in the first and third ranked domains with life satisfaction was compared (Lent et al., 2005). An effect of importance was not found, the first ranked domain did not have a stronger relationship with life satisfaction compared to the third ranked domain (Lent et al., 2005).

Thus, while personality traits such as extraversion and neuroticism have been found to be highly related to life satisfaction, the influence of an individual's values

and ideals regarding importance are less clear. This may be due to personality traits influencing the judgements via both the information used in the judgement and affect balance whereas importance and values should only influence the judgment via information use. A further issue may be that there may not be sufficient difference between personal importance, at any one time, and the general importance of some domains over others. For example, as found by Schimmack, Diener and Oishi (2002), most people consider relationships to be important to life satisfaction and the weather less important. Put another way certain information tends to be chronically salient for most people. The variance in use of other areas of information may be less to do with personal importance and more to do with temporary salience. For example, if one becomes ill health becomes temporarily salient but overall other areas may still be considered more important, generally, to life satisfaction.

Diener, Lucas, Oishi and Suh (2002) investigated a further possible top-down influence on life satisfaction judgements. They hypothesised that individuals may differ in the tendency to focus on the best or worst areas of their lives. Participants in two studies completed a single-item life satisfaction measure, a single item happiness measure, specific satisfaction in eight domains: health; finances; family; friends; recreation; religion; self; education; again measured with single items, and chose one domain as their best and one as their worst area of their lives (Diener et al., 2002). Having identified the best and worst domains for each participant, the remaining domains were averaged. The scores for the best domain, worst domain, and the average of the remaining domains, were then used to predict life satisfaction along with the happiness score and two interactions: the best domain score and happiness and the worst domain score and happiness. Both the best and worst domains were

found to predict life satisfaction over and above the other domains. A positive interaction was found between happiness score and the best domain, while a negative interaction was found between happiness and the worst domain. This result suggested that, when assessing life satisfaction, happier people placed more weight on their most satisfying domain, whilst unhappy people place more weight on their least satisfying domain (Diener et al., 2002).

Diener et al's. (2002) finding has not been replicated. The study is discussed in more detail in Chapter 9. A clear limitation, however, is that the measured domain satisfactions were assumed to be used in the life satisfaction judgment based on their relationship with general life satisfaction, rather than being reported as used by the participants. Diener et al's (2002) study also highlighted an area of life satisfaction judgements that lacks research. Diener et al. (2002) argued that happy individuals would not be expected to ignore their worst domains or unhappy people to ignore their best, hence the idea of simply placing more weight on particular life domains. One issue with this assumption is that individuals may not actually use all possible domains of information; individual differences in domain use have been identified (e.g. Schimmack, Diener & Oishi, 2002). While the use and non-use of information has been investigated, by Schimmack, Diener and Oishi (2002) amongst others, the idea that once information is brought to mind it is attributed different weights, as suggested by Diener et al. (2002), has been paid little empirical attention.

### **Understanding the literature and the specific aims of the present studies**

Respondents are often provided with the freedom to use whatever information they wish when they assess their life satisfaction. Understanding the information and cognitive processes underlying such life satisfaction judgments

should expose how a satisfying life is defined. The literature reviewed in the present chapter, and the converging evidence, suggests that life satisfaction judgments are a complex combination of bottom up, life domain information, personality traits and current affect influences. In summary, correlational and descriptive studies have provided some support for the idea that life satisfaction judgements are based on bottom-up, life domain information. Evidence suggests that top-down information does not colour an individual's outlook on life in general, instead personality traits may relate to both the information that is brought to mind when a life satisfaction judgement is made and balance of affect. While common sense would suggest that personal importance is related to the use of information in a life satisfaction judgement, evidence is mixed. There are, however, limitations of previous studies that can be addressed and further questions regarding life satisfaction judgments that can be asked.

Life satisfaction judgment research has focussed excessively on correlational studies at the expense of more descriptive studies. The main issue being that correlational studies assume that the relationship between domain and general life satisfaction reflects the use of the domain information in the judgement. Those studies that have attempted to ask participants directly what information they use when assessing their life satisfaction have used retrospection, probing questions and restricted analysis. There is a need for a method and analysis that allows participants the freedom to report the use of whatever information they wish, consistent with the assumptions of Diener et al.(1985) about how people complete the SWLS. Given the scarcity of studies of life satisfaction judgments that are more descriptive, a related question is whether the results from correlational studies are directly comparable to

more descriptive studies. In correlational studies the life satisfaction measure tends to be part of a battery of items and may be answered relatively quickly whereas in more descriptive studies participants can take their time to respond to open ended questions. It is therefore unclear whether the two methods actually examine two cognitively different life satisfaction judgments.

Pavot and Diener (2008) suggested that there may be general agreement amongst individuals as to what information is important or is related to life satisfaction and this has been reflected in studies demonstrating the use of chronically salient information. However the focus on correlational studies has also meant that when a number of domains are considered to be sources of information their satisfaction scores tend to be averaged and they are assumed to have equal weighting (for example, Diener et al., 2002; McAdams et al., 2012). It has also been suggested that individual judgments may differ according to the weight attributed to different sources of information (Diener et al., 1985, 2002; Lucas & Lawless, 2013; Pavot & Diener, 1993). This has been demonstrated, to a certain extent, by studies examining the moderating effect of values on the relationship between domain and life satisfaction (Oishi et al., 1999) and the relationship between importance and information use (Oishi et al., 1999; Schimmack, Diener & Oishi, 2002). It can be argued that individual differences have been the focus of studies investigating the processes of weighting in life satisfaction judgments, rather than establishing a more general hierarchy of domains. Further, the idea that some domains may generally be considered so important to satisfaction that they outweigh combinations of others has not been explored.

Some theories of life satisfaction judgements assume the use of heuristics rather than a considered judgment. In terms of potential heuristics metacognitive processes have rarely been explored with regards to life satisfaction. In particular the metacognitive feeling of ease-of retrieval may be especially useful in the investigation of life-satisfaction. The standard method for assessing the use of ease-of-retrieval in a judgement is the ease-of-retrieval paradigm which pits the use of retrieved and accessible content against the feelings of ease or difficulty experienced when retrieving the relevant information. In terms of life satisfaction this would be a test of a considered judgement versus the use of a mental heuristic.

Finally while the results of one study suggested that happy people place more weight on their best domain while unhappy people place more weight on their worst domain (Diener et al., 2002) this has not been replicated. It can also be argued that if there is a cognitive bias in terms of information use between those with high and low satisfaction then the use of particular types of information, rather than the weighting of information, needs to be examined.

To this end this thesis examined five aspects of life satisfaction judgements that were identified as warranting further examination:

- the information used in the judgement;
- the effect of speed on the judgement;
- the weighing up of the information used;
- the use of metacognitive feelings as heuristics;
- the difference in judgement processes between individuals with high or low satisfaction.

Each study utilised a different methodology as they addressed a different question. Study 1a and 1b sought to expand upon previous descriptive studies by attempting to obtain an “on-line” verbalisation of a life satisfaction judgement. An inductive qualitative analysis was then used on the obtained verbalisations to ensure the results were grounded in the data and not restricted by existing theories. Study 2 used a methodology that had previously been used to investigate the effect of speed on Meaning in Life judgements (Hicks & King, 2009). By using vignettes that described the ostensible life of another person (3a) and data from a nationwide survey in which participants judged their own lives (3b), Study 3a and Study 3b examined the idea that certain areas of information are generally given more weight than others. Study 4 used the ease-of-retrieval paradigm to examine a, to date, relatively ignored possible heuristic. Study 5 allowed participants to describe the information they used in their life satisfaction judgement and examined whether participants with high life satisfaction utilised their most satisfying domains while those with low life satisfaction used their least satisfying domains. In summary the described studies aimed to test the idea that when individuals assess their life satisfaction they use meaningfully considered judgements in which they weigh-up aspects of their life.

## **Chapter 2**

### **Study 1 background: Identifying the information used in life satisfaction judgements via a combined qualitative and quantitative approach**

#### **Overview**

The aim of Study 1 was to utilise a unique methodology, which addressed limitations of previous studies, to examine the information brought to mind by people as they consider their life satisfaction. The present chapter consists of a review of the existing literature and highlights a number of limitations of previous studies. Novel methodologies that may address these limitations are then introduced. The method and procedure for Study 1 is included in Chapter 3, along with a detailed description of the qualitative process used to develop a coding scheme. The application of the coding scheme and the resulting quantitative analysis comprise Chapter 4.

#### **Descriptive methods for examining life satisfaction**

Research investigating the information relevant to life satisfaction judgements has been dominated by survey studies using correlational analyses (e.g., Gärling & Gamble, 2012; Schimmack & Oishi, 2005; Strack et al., 1988) . However the correlational method assumes that the relationship between general life satisfaction scores and domain satisfaction scores is a suitable proxy for the information actually being used at the time of the judgement. In attempting to establish what information is brought to mind when life satisfaction is considered there have been very few studies which use the more direct method of asking the

participant what information they used (e.g., Schimmack, Diener, & Oishi, 2002; Updegraff & Suh, 2007). Further some of those studies that have addressed the issue more directly have focussed on the use of comparison in the judgement, as suggested by Schwarz and Strack's (1999) judgement model (e.g., Dubé et al., 1998; Mehlsen et al., 2005; Mellor et al., 1999).

Dubé et al (1998) investigated the cognitive basis of subjective well-being judgements by focusing on the comparisons used by students and their parents. After completing a specially designed subjective well-being scale which included the item: "At this time of my life I currently feel satisfied with my life" participants were asked to assess to what extent they felt they used nine specific types of comparison, on a scale from 0 (*That is not at all what I did*) to 8 (*That is exactly what I did*). The nine different comparisons formed sub-scales reflecting three types of comparison: "social comparison" which reflected comparison to specific people (for example, I compared my situation to people I know very well, people in general (for example, I compared my situation to what I imagine is the situation of people in general) and upward and downward social comparison (for example, I compared my situation to that of people who are more deprived than me); "temporal comparison" relating to comparison to oneself at different times (for example, I compared my present situation to what it was in a distant past) and "telic comparison", a comparison of the current situation to what one would like it to be (for example, I evaluated my present situation by comparing it to what I would like it to be). This was followed by an open-ended question which asked participants to describe what was briefly on their mind if it was different from what had already been suggested, in other words anything other than the previously assessed comparisons. For the student group the

Telic comparisons were the most common and the Social comparisons the least reported. For the parental group Social comparisons were also the least common compared to Temporal and Telic comparisons.

Dubé et al. (1998) focussed on the cognitive process of making comparisons however the results showed that, on average, the extent to which any of the comparisons were used rarely exceeded the scale midpoint. In other words, generally all participants tended to lean more towards the “that was not what I did” end of the scale (Dubé et al., 1998). These results suggest either that many participants were unable to access and report on such information, even with a survey-style measure to facilitate, or that participants rarely used the comparisons, relying instead on alternative information or processes that may be reportable. However, only 18% of the sample of 240 responded to the open-ended question which asked for any alternative thought processes that had not already been assessed. Of the 62 individual items provided in response to the open-ended question, 18 were coded as representing the three types of comparison already measured. Other responses included life events, one’s mood and consideration of the aspects of one’s life.

Taking a slightly different approach Mellor et al. (1999) performed two studies, one focussing on the use of comparisons and the other analysing the data more qualitatively. In their first study Mellor et al. (1999) interviewed 22 student participants and asked them to imagine and describe their best and worst life, providing up to 5 aspects for each. Participants were then asked to construct a scale using these lives as end-points on to which they placed their current life (Mellor et al., 1999). The transcribed interviews allowed Mellor et al. (1999) to group the aspects provided by the participants into themes and categories, creating a coding

system. By using the aspects provided in the interviews the coding system that was developed was not a prescriptive code based on pre-existing theories but based on the data from the participants. The summed frequency of the categories across best and worst lives showed that relationships with others was the most frequent followed by fulfilment, psychological attributes, financial/ material matters, health, circumstances, and activity, with role being the least frequent category. The participants mainly used the same aspects of life to generate both the best and worst scenarios (Mellor et al., 1999).

In their second study Mellor et al.(1999) looked for the use of particular comparison processes, for example, comparisons with others, or comparison between the present life circumstance and the past, as well as the previously identified aspects. After indicating how they felt about their life as a whole on a 7-point Likert scale 20 student participants took part in an interview which asked: how they arrived at their decision, what factors they took into account, and whether they made any comparisons. Again the category of relationships with others was shown to be the most frequently used area of life. Mellor et al. (1999) found comparisons with others to be the most frequently used comparison.

Mehlsen et al., (2005) provide a second example of a study using interviews with a focus on the particular cognitive process of comparison. Participants (aged 70-85 years) who had completed the Satisfaction with Life Scale (SWLS, Diener et al., 1985) 1-2 weeks earlier were asked, in a structured open interview, to identify what they considered to be the best and worst decades of their life and then explain whether the decision was based on the general qualities of the decade or related to specific events. Although participants were free to give a detailed response the

answers were then simply coded yes or no as to whether general or specific events were used. Thus the more qualitative nature of the data was lost. Participants were then asked how satisfied they were with their current lives and whether this judgement was based on specific comparisons: historical (comparison to one's parents or much older adult, i.e., viewing one's life in terms of historical changes); social (comparing oneself to others); or temporal (comparing to one's past). In terms of comparison strategies the majority of participants reported using comparisons, with social and temporal comparison being used a similar amount (62% and 59% respectively) and 37% of participants reporting using historical comparison.

In summary, the studies focussing on the use of comparison as a cognitive process provide mixed results. The results of the two interview-style studies suggested that comparing oneself to others is a common strategy across different sample types. For Mellor et al.'s (1999) student sample the most commonly reported comparison was comparisons with others. Mehlsen et al. (2005) found that older adults over 70 years of age reported using both social and temporal comparison similarly, both more often than historical comparison. However both of the interview studies used probing questions regarding the use of comparisons which may have introduced a reporting bias to the results. Further, unlike Mellor et al. (1999), Dubé et al. (1998) found that a Telic comparison, the comparison of the current situation to what one would like it to be, was the most commonly reported. This difference is of interest as both studies used student samples. The different results may be explained by the different methodologies. Dubé et al. (1998) used a restrictive tick list of comparisons while Mellor et al. (1999) used a free response method. A further issue is that while the majority of Mehlsen et al.'s (2005) sample did report using

comparisons the participants in Dubé et al.'s (1998) study, using a scale response, tended to feel that they did not use comparisons. These mixed results may indicate that the comparisons that occur cannot be accurately reported. It can also be argued that focussing on the use of comparisons in life satisfaction judgements was a fairly narrow and restrictive approach. An alternative approach was demonstrated by Mellor et al. (1999) in their first study as they attempted to examine the information brought to mind as participants imagined their best and worst lives more broadly. Similar descriptive methods were devised by Schimmack, Diener, and Oishi (2002).

Schimmack, Diener and Oishi (2002) devised an “open-ended, retrospective” method which they used in a pilot study. Student participants were asked to write down their thoughts immediately after completing the SWLS. The responses were then coded using categories derived from the subjective well-being literature: family; romantic life; relationships with friends; academic life; financial situation; housing; health; past emotional events; social comparisons; and using the past as a comparison. Schimmack, Diener and Oishi (2002) found that past emotional events, family, romantic life, friends and academic life were mentioned most frequently and that financial situation, housing, and health were mentioned less frequently. Social comparison and using the past as a comparison were found to be the least frequently mentioned. This method was unrestrictive in terms of participants’ responses, they were free to express whatever thoughts they felt came to mind. The limitations of previous studies in terms of leading questions and probes were therefore addressed to a certain extent. However, the coding categories were formed from existing well-being theories and literature. Thus although restrictions were not imposed by probe questions the resulting data were limited to categories established a priori.

Schimmack, Diener and Oishi (2002) felt that a limitation of their “open-ended, retrospective” method was that participants may not record all their thoughts due to lack of motivation or simply forgetting. To overcome this they designed a closed format questionnaire, essentially a “yes/no” tick list, with a number of potential sources of information: use of current mood; memories of past emotional experiences; goal progress; and several life domains: family; housing; academic performance; romantic relationships; health. Two potentially irrelevant domains of information, weather and success of local sports team, were also included. Student participants completed the standard SWLS, followed by the yes/no questions for each potential source, a rating of importance for each domain and, finally, satisfaction with each domain. The importance of a domain was shown to be related to use: the domains rated as more important were used more often (Schimmack, Diener & Oishi, 2002). The validity of the yes/no questions as an accurate measure of whether or not a source was used was established by correlating the SWLS score with the domain satisfaction score for users and non-users of each domain. Most correlations between the domains reported as used and the life satisfaction were significant whereas as many of the correlations between non-used domains and life satisfaction were not (Schimmack, Diener & Oishi, 2002). However Schimmack, Diener and Oishi (2002) highlighted the possibility that, due to the order of the sets of questions (the SWLS was followed by the source report questions, which was followed by domain importance and satisfaction) and the very short time lapse between them, consistency bias may have occurred: the participants may have answered the domain importance and satisfaction questions in a way that they felt was consistent with their answers to overall satisfaction and domain use.

Updegraff and Suh (2007) asked participants to complete the SWLS, list the five most important aspects of themselves or their lives that they thought about as they considered their SWLS responses and then state how each of the five aspects influenced their evaluation of their life. The responses were then coded along two dimensions: abstract-concrete and satisfied-dissatisfied. The thoughts of the participants with higher SWLS were assessed as more satisfactory and more abstract. Updegraff and Suh (2007) therefore allowed free recall (although limited the number of areas to 5), focussed on specific aspects of the responses and relied on participants recalling their thought processes retrospectively.

### **The limitations of previous studies**

In attempting to identify the information used by individuals in a life satisfaction judgement previous studies aimed to directly ask participants what information they brought to mind (for example Dubé et al., 1998; Mehlsen et al., 2005; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002; Updegraff & Suh, 2007). All these studies have one thing in common: they assume that this information can be accurately accessed shortly after the judgement has occurred and therefore rely on retrospection. This reliance may be related to the ease of administration. It is an easy and obvious method to ask participants to recall what information they used directly after a judgement and it can be achieved by either via open ended questions (such as Mehlsen et al., 2005; Mellor et al., 1999; Updegraff & Suh, 2007), or a tick list of specific information (Dubé et al., 1998; Schimmack, Diener & Oishi, 2002). However retrospection may also introduce inaccuracies. As information is recalled from long-term memory rather than working memory it may be difficult to recall exactly what was thought. As a result having to recall the

information used after the judgement has occurred encourages “*post hoc* rationalisation”, thoughts may be restructured to fit expectations (van Someren et al., 1994). Thus, despite its prevalence in the literature, retrospection may not be the most accurate method for the investigation of life satisfaction judgements.

Questions and interviews that occur after a task, rather than concurrently with the task, also encourage introspection. Introspection is described as a “reactive” process as it allows the participant to interpret their thoughts resulting in the use of additional cognitive processes. Additional processes are likely to influence the processes being examined (Fox, Ericsson, & Best, 2011). Introspection also encourages the respondent to explain and justify their thoughts. In fact both Dubé et al. (1998) and Mellor et al., (1999) explicitly instructed participants to “reflect” and “explain” their thoughts. Such instructions may result in the use of general or cultural theories rather than personal information, and may increase the effect of social desirability (Hixon & Swann, 1993). Previous studies have also used both unstructured and structured probing questions during interviews which may influence the participants’ responses. For example asking a participant whether or not they compared their life to other people while making a life satisfaction judgement, or asking them to describe their best and worst life may actively encourage the use of a comparison strategy (Mehlsen et al., 2005; Mellor et al., 1999).

Previous studies using introspective and descriptive methods to examine life satisfaction judgements have generated a large amount of qualitative data via interviews and open-ended questions. However, a clear limitation is that the rich qualitative data were then analysed with restrictive coding schemes that were

formulated a-priori based on existing literature (e.g., Schimmack, Diener & Oishi, 2002; Schimmack & Oishi, 2005) or were limited to looking for certain cognitive processes that were assumed to be used (e.g., Dubé et al., 1998; Mehlsen et al., 2005; Updegraff & Suh, 2007). The use of tick lists after participants made their judgements also restricted participants to either certain types of comparison (Dubé et al., 1998) or a limited number of potential sources obtained from existing literature (Schimmack, Diener & Oishi, 2002). As such, the benefit of asking participants directly about their life satisfaction judgement was lost; previous theories were forced upon the data and the identification of other information sources or processes was limited.

Of the studies that used a more descriptive approach only Schimmack, Diener and Oishi (2002) included measures of personality traits to examine their relationship to the information used in a life satisfaction judgement. It was found that the relationship of extraversion and neuroticism with life satisfaction was mediated by participants' hedonic balance, and the relationship between conscientiousness and life satisfaction was mediated by academic satisfaction (Schimmack, Diener & Oishi, 2002). These results suggested that an extraverted individual was more likely to use their affect balance in their judgement and a conscientious individual was more likely to use their academic success. However it is not surprising that Schimmack, Diener and Oishi (2002) found that the traits of extraversion and neuroticism were related to hedonic balance. Schimmack et al. (2004) found that extraversion and neuroticism were related to life satisfaction via their affective facets (positive emotions and depression respectively) over and above the broad traits and other facets such as anxiety or warmth. In light of the consistent use and apparent

importance of “relationships” in life satisfaction judgements (Mellor et al., 1999; Schimmack, Diener & Oishi, 2002) it could be considered surprising that extraversion was not found to be related life satisfaction via the facets of warmth or gregariousness, facets that may imply an increased tendency towards sociability and relationships (Schimmack et al, 2004). There is therefore a need for descriptive studies examining information use to consider personality traits that do not overlap with aspects of affect but instead relate to information that is likely to be involved in the judgements.

In summary the previous studies that attempted to examine life satisfaction judgements in a descriptive manner had methodological issues. Retrospection may be unreliable and probing questions may bias interview responses. There has been a focus on specific cognitive processes and a use of a-priori coding schemes at the expense of other information. Personality traits other than extraversion and neuroticism need to be examined. The rest of this chapter describes methodologies and measures that aim to address the aforementioned issues.

### **Thinking Aloud**

It can be argued that studies relying on introspection and retrospection may not accurately portray the information used in life satisfaction judgements. There is clearly a lack of studies that obtain more “on-line” access to thoughts during a life satisfaction judgement. Presumably this is due to the difficulty in obtaining such access. Describing and explaining one’s thoughts can lead to the intrusion of additional thoughts due to the process of forming coherent descriptions (Ericsson & Simon, 1998). This potential issue was evident when Schimmack, Diener and Oishi (2002) listed concurrent verbalisation as a potential method for their study but

rejected it in favour of retrospection due to concerns that the process of verbalisation would influence the judgement.

Thinking Aloud is a verbalisation technique often used for questionnaire assessment, as well as problem solving and expert systems research (Beatty & Willis, 2007; Ericsson & Simon, 1980; van Someren et al., 1994). Participants “think aloud” or speak their thoughts, to put into words the cognitive processes experienced and information used whilst performing concurrent tasks or solving problems. Thinking Aloud therefore generates a concurrent verbalisation and avoids the problem of interference from retrospection and introspection. The Think Aloud method also aims to minimise any external influence on thought processes by keeping interviewer intervention and probing questions to a minimum (Beatty & Willis, 2007). While Thinking Aloud could be considered an introspective method it has been described as being qualitatively distinct from introspection (Ericsson & Fox, 2011). This distinction mainly arises from the fact that Thinking Aloud has been shown to not be reactive, the action itself does not influence the thought processes being examined (Ericsson & Simon, 1980; Fox et al., 2011). A meta-analysis of 94 studies found that think-aloud verbalisations did not affect participants’ task performance, measured by accuracy, while verbalisations that involved explanation improved performance (Fox et al., 2011). Thinking aloud was, however, found to increase the time taken to complete a task, (Fox et al., 2011). A further benefit of the Think Aloud process is the use of a clear and replicable protocol with specific initial instructions, recommended by the literature, in order to minimise the effect of explanation and elaboration (Ericsson & Fox, 2011; Ericsson & Simon, 1998; Fox et al., 2011; van Someren et al., 1994).

### **Utilising the think aloud technique for the present study**

The Think Aloud procedure was used in the present study as it discouraged introspection and elaboration which therefore limited the effect of verbalisation on the participants' cognitive processes. The procedure also minimised interviewer interference. The full protocol is presented in the Method Section in Chapter 3 (p.87) Participants in the present study were asked to Think Aloud their thoughts to the items from the SWLS (Diener et al., 1985). The SWLS items were presented to the participants in the present study as stand-alone statements without the usual response scale. This was because Thinking Aloud is best suited to tasks or processes which cannot be solved automatically, conscious cognitive processes need to occur (Fox et al., 2011; van Someren et al., 1994). For this reason the response scale was excluded in order to prevent automatic responses to the SWLS; participants could not simply choose the extreme ends or middle of the scale without thought. Removing the response scale was also intended to have two further benefits: firstly, retrospection should have been inhibited as participants did not have a response choice to work back from; secondly, the opportunity for explanation should have been limited as participants did not have to explain why they chose a particular score. The participants in the current study were also asked "what" they were thinking, rather than "why", as "why" questions encourage explanation (van Someren et al., 1994). The phrasing of the questions and the lack of a response scale were therefore intended to facilitate the act of Thinking Aloud.

The Think Aloud literature recommends warm up tasks to provide the participant with the opportunity to practise verbalising thoughts in a task similar to the target task (van Someren et al., 1994). Examples of recommended warm up tasks

include mental arithmetic, such as long multiplication (Ericsson & Simon, 1998) and counting the windows in one's house (Willis, 2004). Two warm up tasks were created specifically for the current study. The first warm up task was to think aloud a response to a single word (winter). In essence this task was a word association task but it allowed the participants to practise identifying the thoughts that came to mind. This task also enabled the researcher to identify whether the participant began to use explanations and interpretations. The second warm up task provided the same benefits as the first task but was a statement in the style of the target items (I consider myself a morning person). As such the warm-up tasks were intended to increase in difficulty and similarity to the target task so that the participant could get used to acknowledging and verbalising their thoughts in response to a statement.

### **An inductive approach to developing a coding scheme**

Information-rich data, such as open-ended interviews, clearly provide a window to an individual's thoughts. It could be argued that this is particularly true of the Think Aloud process, as explanation and justification is avoided. In previous research the coding schemes used to analyse open-ended responses were restrictive, focussing on specific cognitive processes or categories identified a-priori (Dubé et al., 1998; Mehlsen et al., 2005; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002). Only Mellor et al., (1999) derived the categories for their coding scheme from the participants' verbatim interviews. However the description of the process they used was minimal, as follows:

The verbal descriptions were first transcribed from the audiotapes, then each aspect of life used by the interviewees in describing the worst and best life

imaginable was identified. These aspects were then grouped according to themes, and a system of categories established.

Mellor et al's (1999) method was therefore less restrictive than other studies as the categories were derived from the data, also known as an inductive approach. However it can be argued that the method used was very simple and not particularly systematic.

Glaser and Strauss developed Grounded Theory in 1967 to establish a qualitative method that was rigorous and systematic (Charmaz, 1990; Pidgeon, 1996). Grounded Theory is a method of qualitative analysis that is based on the idea that a theory can come from the data, usually participants own description of events or social and psychological phenomena. According to Urquhart (2001, p.105) Grounded Theory is basically a “bottom up technique” that finds data at the word or sentence level. Early in its development Grounded Theory diverged into the distinct but overlapping *Glaserian* and *Straussian* schools of thought, the discussion of which is beyond the scope of this thesis. The most important aspect of Grounded Theory, in terms of the present study, is that not only is it an inductive approach but that it also provides a systematic method for identifying themes and categories (Henwood & Pidgeon, 1992).

The “bottom up”, inductive, aspect is no longer limited to Grounded Theory. Both Thematic Analysis and Content Analysis can begin with the data rather than pre-formed theoretical ideas (Braun & Clarke, 2006; Elo & Kyngäs, 2008). All three techniques utilise the idea of initially “coding” the data. Coding is the process of identifying interesting or relevant aspects in the data, labelling items of potential

meaning. Compared to Thematic Analysis and Content Analysis however Grounded Theory has a particularly well-defined coding process, the constant comparative method, which is thorough and systematic (Pidgeon & Henwood, 1996). Constant comparison can be defined as a systematic method of continual identification, comparison and labelling of themes, concepts and features found within the data. The first step of the constant comparison process is “open coding”, which is also used in the inductive versions of content and thematic analysis (Braun & Clarke, 2006; Elo & Kyngäs, 2008).

Open coding involves examining the data (e.g., the transcript of an interview) line by line to ensure an analytical and systematic approach (Charmaz, 1990). Categories of potential relevance are identified, which can range from “low-level concepts to more abstract categories and themes” (Pidgeon, 1996, p.77). Identified categories are given labels that can be descriptive labels written by the researcher or can be derived directly from the language used by the participants (Charmaz, 1990, Pidgeon & Henwood, 1996). An important aspect of the constant comparison process is that data should be compared systematically, for example initially an individual’s answers to different questions within the same transcript would be compared, which would then be compared to a different transcript to provide a comparison between different participant’s answers to the same questions (Boeije, 2002). In other words in the context of analysing transcribed interviews the comparison occurs within a paragraph of an interview transcript, across a whole transcript, and between transcripts of different interviews.

The constant comparison process therefore begins with one piece of data, for example, an answer to an interview question. The categories that are initially

identified in that piece of data are then searched for in the next piece of data. If any new categories are identified in later data the researcher returns to the first piece of data and works through it systematically to identify previous examples that may fit the new category. The nature of this systematic process means that the category labels are expected to change and improve as further examples of categories are found (Pidgeon & Henwood, 1996). This is sometimes termed axial coding (Strauss & Corbin, 1990, cited Pidgeon & Henwood, 1996, p.95; Urquhart, 2001). In axial coding the relationships and differences between categories are identified, resulting in the integration of categories. The data can then be grouped, split and re-grouped in a flexible process in which labels change to best fit the examples (Pidgeon & Henwood, 1996). Throughout the process of open and axial coding memos are written which record ideas and reflections the researcher has concerning the coded categories.

Open coding continues until “theoretical saturation”, the point at which no new categories of data are identified. At this stage Pidgeon and Henwood (1996) recommend writing definitions and further category integration. Writing a definition of a category essentially summarises the reason why the particular examples have been given the category label, defining what information is included. Category integration ensures that related categories are grouped together. The step of category integration is conceptually similar to the steps in Thematic Analysis and Content Analysis which come after the open coding stage. Thematic analysis involves searching for themes within the categories identified and combining related categories (Braun & Clarke, 2006). Inductive content analysis requires that the lists

of categories are grouped under higher order categories via interpretation of similarities and differences between the categories (Elo & Kyngäs, 2008)

Constant comparison can be considered one of the main tenets of the Grounded Theory process. The other main tenet of Grounded Theory, theoretical sampling was not utilised for the current study. Theoretical sampling is an on-going sampling process by which new data are acquired in a manner led by the analysis. Pidgeon (1996) stresses that theoretical sampling does not seek to increase the sample for the purposes of generalisation but must extend or deepen the researchers understanding of the emerging theory. New cases or sources of data are sought as the analysis proceeds (for example: interviews with new participants) and the requirement for extending the theory determines what information is sought, what questions are asked and who the participants are.

### **Utilising an inductive approach to developing a coding scheme for the present study**

The aim of generating a coding scheme was to facilitate a subsequent quantitative analysis. It must be made clear that the Grounded Theory process was not used in its entirety as the premise of Grounded Theory is to generate a theory rather than a coding scheme. As it is the most systematic of a number of inductive approaches the constant comparative method of Grounded Theory was utilised for the initial coding or category identification of data within the Think Aloud interview transcripts. Following the category identification, the process of grouping and combining of categories is common to Grounded Theory, thematic analysis and inductive content analysis (Pidgeon & Henwood, 1996; Braun & Clarke, 2006; Elo & Kyngäs, 2008). However after the grouping of categories a Grounded Theorist

would develop an explanatory framework that integrates the categories into concepts and a theory. While this was not done for the present study the aim of using constant comparison was to ground the categories in the data in a systematic way. The subsequent grouping and combining of the identified categories can be considered a broad qualitative method.

Theoretical sampling was not tenable within the framework of the present study as the aim of generating a coding scheme was to facilitate a quantitative analysis. The Think Aloud interview therefore had to be the same for each participant and the questions could not be modified with each participant in order to extend the data collection. Furthermore the data collection from 57 participants was performed in advance of the transcript analysis. There were sufficient transcripts for constant comparison to be useful and for it to proceed until “theoretical saturation”, the point at which no new categories of data are identified, but this did not have to be achieved via continual sampling during the coding process. Finally as the final aim was a coding scheme relating to the information participants brought to mind in response to the SWLS, continually finding more varied data would make the code less generalisable. Thus despite the issue that “the dynamic relation between data analysis and collection is a critical characteristic of the whole approach” (Pidgeon, 1996, p.79) theoretical sampling was inappropriate for the current study.

### **Utilising trait measures for the present study**

The interaction between personality traits and self-reported information use has only been examined in terms of extraversion, neuroticism, agreeableness and conscientiousness (Schimmack, Diener, & Oishi, 2002). Further only extraversion and neuroticism have been found to be related to information use (Schimmack,

Diener, & Oishi, 2002). The present study sought to fill this gap by including measures of traits that relate to “self” and “others”. Agency can simply be defined as a focus on or orientation toward the self, relating to independence and self-assertion, and has been shown to correlate with life satisfaction (Helgeson, 1994; Saragovi, Aube, Koestner and Zuroff, 2002). Communion reflects a focus or orientation toward others but was not found to be significantly related to SWL (Saragovi et al, 2002). Bearing in mind previous studies have consistently shown relationships to be an area used when judging life satisfaction (Mellor et al, 1999; Schimmack, Diener, & Oishi, 2002) this is surprising. Whilst Communion has not demonstrated a significant relationship with life satisfaction it may nevertheless be related to the use of certain information whilst making the judgement. The apparent importance of relationships to life satisfaction also suggests that such information may be less relevant to life satisfaction for those with high Agency scores, in which case other, more self-relevant information may be brought to mind.

As Communion measures a focus on other people, the tendency of an individual towards caring for and cooperating with others in order to integrate into a larger social unit (Helgeson, 1994), the present study also included a measure that aimed to capture how people think about relationships. The Relational-Interdependent Self-Construal scale (RISC; Cross, Bacon and Morris, 2000) measures the extent to which an individual thinks of oneself in terms of their relationships. As Communion and RISC measure different aspects of the broad idea of inter-personal relationships, they are likely to correlate differently with life satisfaction and the information used in the judgement.

### **Aims and Objectives of Study 1a and 1b**

To sum up, previous methods used to investigate the cognitive processes and information used in life satisfaction judgements have been limited in the following ways: a reliance on retrospective assessments; restrictive data analysis; and a narrow examination of personality traits. The aim of Study 1 was to address these issues. To avoid retrospection the present study used an interview technique, Thinking Aloud, which has so far been ignored in the life satisfaction literature. The Think Aloud process was used to generate an un-biased, self-reported response to life satisfaction statements that was “on-line” rather than being retrospective. Rather than being overtly influenced or restricted by existing theories an inductive qualitative approach was used to generate a coding scheme from a sub-sample of participants’ responses. This coding scheme was then used for the quantitative analysis of the participants’ interviews. Measures of Agency, Communion and Relatedness were used to expand the current literature by examining personality traits that do not over-lap with affect.

The development of the coding scheme from the interview transcripts is described in Study 1a (Chapter 3), while the application of the coding scheme for the quantitative analysis of the data, including the analysis of the self-report measures, comprises Study 1b (Chapter 4).

## Chapter 3

### **Study 1a: A qualitative approach to identifying the information used in life satisfaction judgements**

#### **Overview**

The literature review in Chapter 2 highlighted the limitations of previous studies that directly ask participants to describe the information they use in life satisfaction judgements. Such studies tend to be limited both in terms of how the data are obtained, often utilising retrospection, and how they are analysed, using restrictive coding schemes (Dubé et al., 1998; Mehlsen et al., 2005; Mellor et al., 1999; Schimmack, Diener, & Oishi, 2002; Updegraff & Suh, 2007). The present study addressed these issues. Study 1 had two aims: 1) to generate a coding scheme, based on the participants' responses; 2) to use this coding scheme to analyse the participants' responses more quantitatively. The present chapter addresses the first aim, the development of the coding scheme while the results of the quantitative analysis are covered in Chapter 4. The present chapter contains the following sections:

- full method and procedure for Study 1, including the protocol for the Think Aloud interview;
- a description of the inductive process used to generate the coding scheme from the data;
- a thorough description of the resulting code categories;
- the reliability of the coding scheme;
- a discussion section pertaining to the identified code categories.

## **Method**

### **Participants**

The sample consisted of 54 unpaid, volunteer participants (32 female, 22 male) aged from 24 to 68 years ( $M = 40$  years,  $SD = 10.62$ ). The participants were recruited via the social networking sites Twitter and Facebook and also via selective mailing lists and word of mouth within departments of the Civil Service and Forensic Science Service. There was no age restriction. The sample was deliberately broad in terms of age with the intention of accessing diverse information used in life satisfaction judgements. Of the 38 (70%) participants who described themselves as “in a relationship”, 21 (39% of the whole sample) were married, with the length of marriages ranging from 4 to 40 years. Sixteen participants (30%) had children, thirteen of these participants had children under 18 (24% of the whole sample). The sample was limited in its representation of different ethnic groups: 47 participants (87%) described themselves as White or White British, 2 participants described themselves as Black or Black British, 2 participants described themselves as Asian or Asian British, 1 participant identified as Chinese or Chinese British, 1 participant identified as Middle Eastern and 1 chose not to answer the question. Fifty-seven participants took part but technical errors meant that three interviews were incomplete or inaudible, resulting in the exclusion of data from three participants.

### **Materials and procedure**

The procedure took place in a location that was convenient for the participant and included rooms at the participants’ place of work, their home, the researcher’s home, and purposely hired rooms. In all cases only the participant and researcher were present, to assure privacy. There were no distractions or disturbances for any

participants during the full duration of the procedure, which lasted between 20 – 45 minutes depending on the participant's responses. As is customary for psychological interviews it was ensured that the participant was sat comfortably (van Someren et al., 1994). The interviewer and recording equipment were nearby. The interview, including warm up tasks, was recorded using a microphone attached to a Dell net book using Sound Forge 9.0 software. All self-report scales were completed with pen and paper. To ensure anonymity, once informed consent was obtained, the pen and paper scales and interview audio files were given matching numerical codes to allow the scale scores and interview transcripts to be linked for analysis. The consent forms were kept separately from the anonymised recordings, scales and transcripts. After completing the informed consent procedure participants began the Think Aloud interview.

**Think Aloud Interview.** The Think Aloud interview was conducted according to standard protocols (Ericsson and Simon, 1998; Willis, 1999). Initial instructions were read out to each participant:

You will be given a series of short statements, one at a time, and what I would like you to do is to say out loud what goes through your mind as you think about them.

You will be saying out loud what you are thinking in response to each statement.

Just say what you are thinking out loud, as if your thoughts were being broadcast straight from your head!

I am interested in what is going through your mind as you think it.

It is not a conversation with me - just ignore me.

You can give single words or short phrases or short sentences but don't try to explain or justify what you are saying or thinking, just move on to the next thought.

You do not have to use complete sentences, just say whatever words or information comes to mind.

If you do become silent I will prompt you to say what is going through your mind.

The participants were then invited to ask any questions they might have. Warm up tasks were then conducted, to give the participants the opportunity to practise thinking aloud, as recommended in the Think Aloud literature (Ericsson & Fox, 2011; Ericsson & Simon, 1998; Fox et al., 2011; van Someren et al., 1994). The instructions for the first warm up task were as follows: I am going to show you a word. After you have seen the word please say any thoughts that come to mind. In all cases the word was “winter”. Following the participant’s response, and any subsequent questions or instructions, the second warm up task was given with the following instructions: I will now give you a statement. Just as you did before, try to say out loud everything that comes to mind. In all cases the statement provided was “I consider myself a morning person”. Again, after their response, the participants were invited to ask any further questions. As they were recorded the warm up tasks

also presented the opportunity for the researcher to check sound levels and for the participant to get accustomed to being recorded. If a participant had difficulty with Thinking Aloud, for example if the participant explained and justified their answers to the statement warm up task, a second statement warm up task was performed using the statement "Technology makes my life easier". The warm up tasks were specifically designed to be neutral statements that should not bring information to mind that could influence the response to the target.

Following the warm up task the participants thought aloud their responses to each of the five items of the Satisfaction with Life Scale (SWLS; Diener et al., 1985) in turn. The instructions were given as follows: As before please try to say out loud everything that goes through your mind in response to the following statements. The SWLS items were presented in verbal and written form without the response scale. Participants thought aloud their responses until they stopped naturally. After the Think Aloud procedure the participants completed a pen and paper version of the SWLS in its standard format.

**Satisfaction with Life Scale.** (SWLS; Diener, et al., 1985) The SWLS consists of five statements: In most ways my life is close to my ideal; The conditions of my life are excellent; I am satisfied with my life; So far I have gotten the important things I want in life; If I could live my life over, I would change almost nothing. Respondents were asked to indicate the extent to which they agree on a Likert scale ranging from 1, *strongly disagree* to 7, *strongly agree*. The responses to each item were summed and the possible scores ranged from 7 to 35. This scale has consistently shown acceptable to high internal consistency (range 0.79 - 0.89; Pavot & Diener, 2008) and high temporal stability (range 0.80 - .084 for a one month

interval, 0.54 for a 4 year interval; Pavot & Diener, 2008). In the present study the scale had acceptable internal reliability ( $\alpha = .79$ ).

After completing the SWLS in its standard format the participant was reminded of the initial Think Aloud instructions before the first SWLS statement was presented again, on paper and verbally, and the participant was reminded of the scale response they had chosen. The participant was then asked to make an upward judgement, which required them to consider what would make them respond with a score two points higher, and to Think Aloud their response. The instructions were as follows, using a participant's earlier response of 5 to the first SWLS item as an example:

Just say out loud everything that goes through your mind in response to the following questions. The statement for question one was: *In most ways my life is close to my ideal*. In response to this question you gave 5, Slightly Agree. What would make it 7, Strongly Agree?

Following their response the participants were then asked to make a downward judgment, the previous instruction was repeated for a score two points lower, according to the current example: "What would make it 3?" Both upward and then downward judgements were made for each SWLS item. Any participants who had previously chosen the scores from the end of the scale, 7 or 1, were asked to imagine that the scale had two extra points and were asked what would make their answer 9 or -1 respectively. Again participants thought aloud their responses until they reached a natural stop. The upward and downward think aloud judgements were

repeated for each SWLS item. Thus each participant produced 15 responses: 5 standard items, 5 upward, and 5 downward. The total length of the interviews ranged from 4.27 to 24.40 minutes ( $M = 12.26$ ,  $SD = 4.25$ ).

Participants then completed a filler questionnaire followed by the two self-report scales below.

**Personal Attributes Questionnaire.** (PAQ; Spence, Helmreich, & Holohan, 1979). The PAQ consists of 24 pairs of contradictory characteristics. A response scale of 1-5 forms a scale between the two items, with 1 representing agreement with the item on the left and 5 agreement with the item on the right. The participant indicates where they feel they fit on the scale for each pair of items. Two 8-item subscales represent Agency (example characteristics, not at all independent – very independent) and Communion (example characteristics, not at all kind – very kind). The responses for each pair of items are summed, with one Agency item reversed scored, so that total scores ranged from 8 to 40 for each sub-scale. Both sub-scales have previously displayed high internal consistency (Agency,  $\alpha = .85$ , Communion,  $\alpha = .82$ , Saragovi et al., 2002) but were found to be moderately reliable in the present study with Communion showing acceptable reliability ( $\alpha = .70$ ) and Agency approaching an acceptable level ( $\alpha = .66$ ).

**Relational-Interdependent Self-Constructual.** (RISC; Cross, Bacon & Morris, 2000) The RISC scale is a measure of the tendency to think of oneself in terms of relationships with close others. The RISC consists of 11 items (example item, My close relationships are an important reflection of who I am) with a response scale ranging from 1-7. Two of the items are phrased negatively and are reversed scored. The responses are summed resulting in a possible range of scores from 11 - 77. RISC

has demonstrated good internal consistency, .88, and acceptable test-re test reliability, .74 - .76 over one month, .63 - .73 over two months (Cross et al, 2000). In the present study the scale had acceptable reliability,  $\alpha = .72$ .

### **The development of the coding scheme: an inductive qualitative analysis**

Each interview was transcribed verbatim including non-verbal utterances such as “er”, “erm” “um” etc. Each transcription was labelled with the participant’s numerical code. For each transcription the response to each of the 15 items (5 open, 5 upward, 5 downward) was clearly labelled. The first standard item was labelled 1, the second 2 and so on, to distinguish the upward and downward items the upward response to the first item was labelled 1a, the downward response was labelled 1b. Each line in the transcription was numbered.

Open coding and axial coding were the key elements of the constant comparison aspect of Grounded Theory (Glaser and Strauss, 1968) that were used to analyse a number of transcripts. A single transcript was chosen at random and the entire transcript, including the standard, upward and downward questions, was coded. Coding, in this case, involved the labelling of meaningful data of interest with a label that reflects the category or concept. The transcribed response to the first question, with initial coding labels, is shown in Figure 3.1. The full transcript, with initial coding, is included in Appendix A.

**Figure 3.1. Initial coding labels for Question 1 of the first transcript undergoing analysis**

1) In most ways my life is close to my ideal

1 I would say no...er I suppose it would, you have

2 ideas about what your life is going to be like er

3 erm probably from growing up and my family |

4 |like there are certain things I want that I don't

5 see in my, they're not attainable just yet but I

6 always think it will work out, I always think it

7 will happen) and I'm quite happy to bumble

8 along waiting for it to erm there is a certain I

9 dunno...awareness of my age and also what

10 people do expect of you for being that age erm

11 but I also when I think about having a family I

12 think it's something I would like but I also don't

13 feel quite ready for it yet but... then when I

14 was...aside from family, my job which is, stable

15 and nice) and scientific I like, you know I love

16 the science erm but I suppose I wanted a bit

17 more responsibility by the time I was 29 erm |

18 don't think that I have that but again I just

19 think it'll happen.

**Comment [C1]:** Expectations for life from younger self and family

**Comment [C2]:** List of wants (that assume will get in time)

**Comment [C3]:** Content to wait for expectations to be met

**Comment [C4]:** Comparison of age with expectations from self and others

**Comment [C5]:** Having family of own part of ideal life in future

**Comment [C6]:** Family part of ideal life

**Comment [C7]:** Job part of ideal life

**Comment [C8]:** Job stability

**Comment [C9]:** Positive about job

**Comment [C10]:** Aspects of job relate to likes and interests

**Comment [C11]:** Age as indicator of what should be in life

**Comment [C12]:** Responsibility as part of ideal

**Comment [C13]:** Not having achieved expectations makes life less ideal

**Comment [C14]:** Career progress

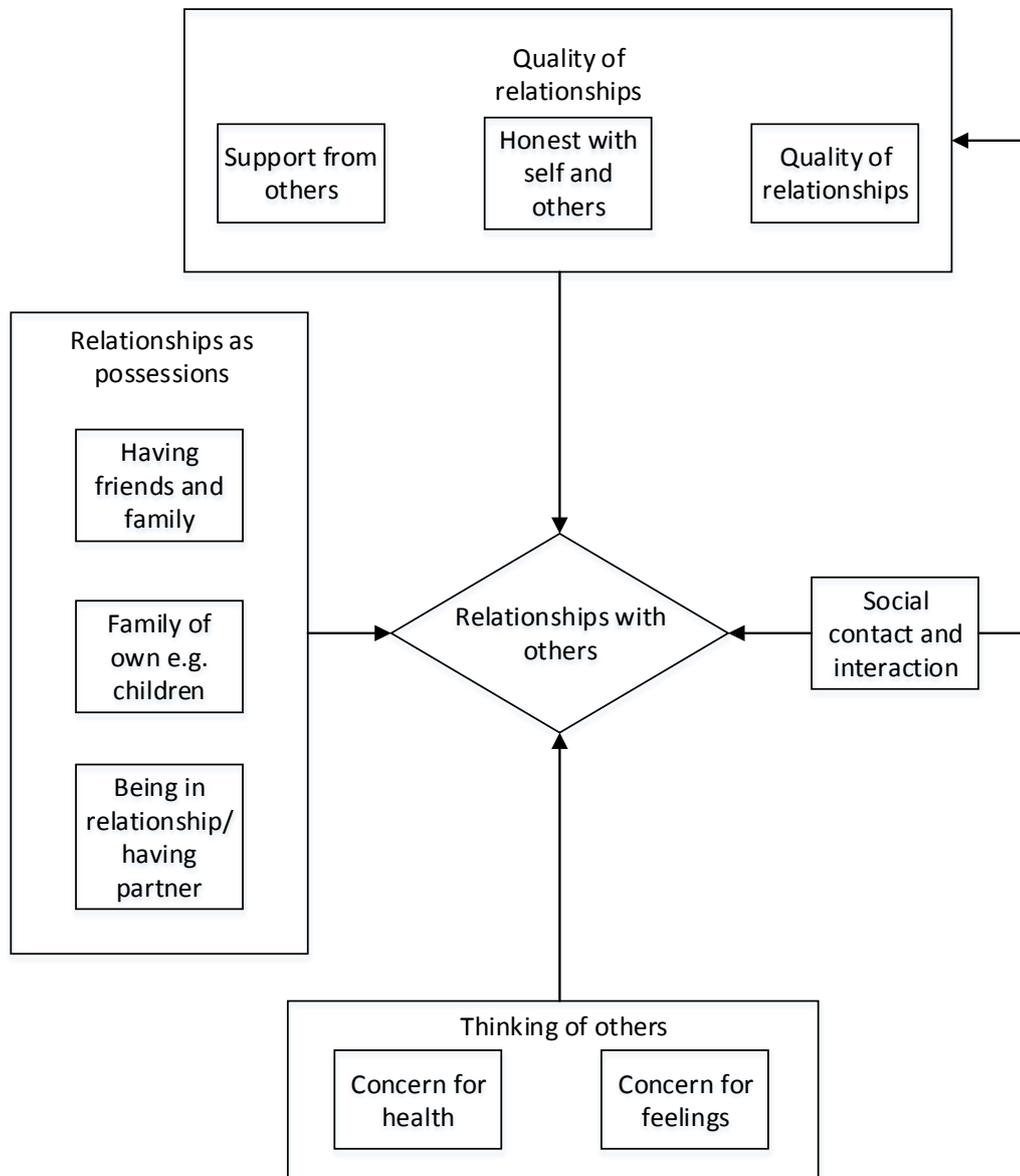
**Comment [C15]:** Positive assumptions

Using the constant comparison method the labels assigned to the first question of the first transcript were then looked for in the subsequent questions, at the same time as identifying and labelling new categories or concepts. As a result of using the constant comparison process the initial coding labels were subject to change as further questions were coded. In total 51 separate labels were generated from the first transcript, for example, assumptions about the future, money worries, support from others, self-esteem, changing aims with age, positive feelings as an indicator of satisfaction, ideals and expectations of others, continually striving, wasting time. Each code or label was noted on to a file card with the relevant extracts from the transcript. All 51 file cards are included in Appendix B.

A second full transcript was examined. Occurrences of the previously identified categories and concepts were labelled, again some labels were changed to improve the fit, and new labels were generated for any new concepts and categories not previously identified. Examples from the transcript were added on to the existing file cards or new file cards were made for newly identified labels, for example, quality of relationships, one's job as part of sense of self, personal health, negative impact on others, oneself as a source of dissatisfaction, feeling lucky, spending time in preferable way. In total 15 further labels were identified. As recommended in the Grounded Theory literature regarding constant comparison the process of identifying and labelling areas of interest continued until theoretical saturation was reached, in other words until no further new labels were identified. At the point of saturation 11 full transcripts had been examined using line-by-line coding, yielding 95 category labels. Further label integration occurred at this stage and connections, similarities and differences between the labels were identified creating 15 code categories or

broad concepts: Relationships-with-others; Job; Health; Money; Accommodation; Material Possessions; Feelings; Use of time; Contribution to the World; Influence of the Wider World; Comparison; Self-Qualities; Daily Life; Doing Things; Personal Theory. A diagram demonstrating how the labels were integrated to form the code category Relationships-with-others is shown in Figure 3.2. Diagrams for the other 14 code categories are included in Appendix C. At this point definitions for the 15 code categories were written. This is a step recommended in the Grounded Theory process (Henwood & Pigeon, 1996), inductive content analysis (Elo & Kyngäs, 2008) and thematic analysis (Braun & Clarke, 2006). The definitions explicitly stated what information was relevant to the code category and described dimensions of subcategories that were part of the code category. Rather than using these definitions to generate a theory, as would be expected with Grounded Theory, these broad definitions were then used as a coding scheme to be used on all transcripts in the sample. The definitions of the core categories are described in the Results section.

**Figure 3.2. Integration of labels to form Relationships code category**



## Results

### Definitions of code categories

The following section concerns the definitions of the 15 code categories resulting from the constant comparison process. When a transcription is referred to a numerical code is used to show the participant number, the response section and line, for example: 02.1b.62, refers to Participant 2, answer to Item 1b (the first downward item), line 62.

**Relationships-with-others.** This code category encompassed a number of labelled categories in which relationships with others were mentioned in both implicit and explicit ways.

Specific types of relationships, such as one's spouse or partner, friends, children were often referred to in terms of simply having them: "I've got a family"(1.2.8); "my own set of friends" (15.4.14); "I don't know that I necessarily wanted children, but I'm very happy with them"(01.4.22). The idea of possessing relationships was also reflected in references to losing and gaining. Participants who had particular relationships mentioned losing them: "I think..if I had..just..no friends" (02.1b.56), " but I like my family and I wouldn't want to not have them" (1.5b.194), "we've argued and whatever and say that had gone wrong, and we'd split up and I had children and I wasn't in a marriage" (01.5b.177). If certain relationships were absent from one's life the potential for gaining them was brought to mind: "if I was in a relationship, if I had a partner" (15.1a.22), "there are still things that I've not achieved erm I'm still single" (15.4.12), "no I haven't got them , kind of accepted I suppose rites of passage kind of things, like er never got married, never had children (38.4.11) .

The quality of relationships was mentioned explicitly: “I would like to have a boyfriend, um, you know, who erm who was just nice” (02.04a.115), “I’d like to be more honest with myself more and my family and my friends” (15.1b.27), “I’ve got good family, good friends erm good company in other aspects” (15.1.2), “family, friends, that’s always good” (08.1.1), “And I like my wife”. (01.5.40). Various kinds of support from significant others such as friends, family or partner were also considered to be an indication of the quality of relationships: “friends that would put me up” (02.1b.62), “if I didn’t have the support of family and friends that I have” (15.5b.61).

Aspects such as caring for others and social interaction reflected the purpose of relationships. Caring for one’s family and friends was shown via concern for the health of loved ones: “my family, my children were ill or my wife was ill” (01.2b.99), “members of my family are getting older, you don’t know how much more time you’re going to have to spend with them” (13.4.22). The feelings of close others was also brought to mind: “if the kids were having real problems with school I think I’d be unsatisfied with that and if my wife was kind of unhappy” (1.3b.125), “that those I loved most felt the same as me, that erm people that I ..I love want things that I can’t get for them hmm and what you feel about your life you can’t change it in another person” (23.1a.23). Participants also referred to socialising and interacting with others: “I’m mixing with people, socialising” (15.3b.44), “spending time with friends” (28.1.1) not “being able to go out and talk to people” (8.3b.80).

In summary the Relationships-with-others code category was defined as the dimension of relationships possession (lacking, gaining, having) and the attributes of relationships in terms of their quality and purpose.

**Job.** This code category was concerned with the labelled categories that represented various aspects of one's employment and career.

Progress and achievement with regards to one's career was mentioned in terms of career advancement: "I think if I managed to get into the career that I wanted" (02.1a.47), "achieved more at work, got to a higher level, grade" (15.1a.22). This was found to be one side of a dimension, shown by references to lack of progress: "bit of a dead end job" (02.2b.84), "I wrote a novel and lots of people said it was good but it didn't get published it wasn't seen as being commercial enough I was very disappointed about it" (01.4a.134). An assessment of one's current position also related to one's progress: "my job which is, stable and nice" (02.01.08), "but got a series on, that's good" (01.3.16), "I don't have much job security" (04.2.11).

The importance of having a job was clearly shown via the idea of an ideal or perfect job and the way in which one's job related to one's self concept. Aspects of an ideal job were mentioned: "job which is, stable and nice and scientific I like, you know I love the science" (02.1.9), "erm just doing a job that I was truly, truly engaged in and you know almost vocationally, that's what I want to do" (38.3a.67), "a job that I control" (01.2.9), "a job that you really love, that's fulfilling you in every way" (8.1.4). Both simply having a job and having a specific job was shown to be relevant to one's sense of self: "if I didn't have my job, I would feel quite lost without a job, I don't think I'm one of those people who could win the lottery and stop working" (02.1b.57), "aah I think....doing a job I, the sort of jobs that I particularly wanted to do in life , so if I was just doing a job that I really wanted to do" (38.3a.64), "I wanted to be a writer, I am a writer." (1.4.20).

To summarise, the Job category encompassed not only the general the importance of employment but the relevance of the suitability of one's job, the absorption of a job or career into one's identity and the importance of an associated sense of progress.

**Health.** This code category related to the dimension of personal health which included categories that cover illness, wellness and fitness.

Some participants made vague, unspecific references to health, implying generally being well: "but well I'd say well the important thing in have my life currently is my health but yeah you know short answer that's the important thing I've got, my health" (38.4.6), "and my health isn't bad" (01.2.9). The idea of illness, both as a current minor issue and a future major occurrence, was also mentioned: "sometimes I get quite ill, stress related ill things, if I didn't do that, if my body kind of worked a bit better" (1.2a.84), "if I was properly ill" (1.2b.100), "erm if my health went downhill that would be a definite erm, that's a fundamental" (38.1b. 42). Directly related to health and illness, the notion of health and fitness was also shown to be brought to mind: "Healthy, fit" (15.2.5).

The Health category was simply defined as information pertaining to one's healthiness, which ranged along a dimension from being fit to illness, with the intermediate or default idea of being well or not sick.

**Money.** This code category encompassed categories that related to one's financial circumstances.

There were references to a desire for more money: "you could have loads more money" (01.1.3), "if my pay went up a little bit" (02.1a.48), "money it's very

boring but more money, I don't have an enormous amount of money" (01.2a.78). These desires were linked to the feelings resulting from not having enough money: "make the rent and the bills and just that constant worry about money" (02.3b. 82), "to not have to worry about stuff erm you know about how much stuff costs" (27.3a.105). The importance of money as a basic need for living and that finances can be a limiting life factor was clear: "just find it really difficult to make the rent and the bills" (02.2b.80), "I think if I couldn't support myself" (38.3b.70), "I was in debt, I would say that, as well. It's all, all these things because money's kind of important" (1.1b.68), "if you think about what if I had unlimited money, and I could travel all over the place" (1.2a.80).

The Money category incorporated the general importance or relevance of financial means to the individual and the concerns people have regarding a lack of money.

**Accommodation.** This code category incorporated references to one's home in terms of the basic need of having a roof over one's head and also in terms of a more broad assessment of quality.

The idea of simply having somewhere to live, as opposed to being homeless, was identified: "I've got a house" (01.4.23), "if I had nowhere to live" (02.4b.62), "I think I would live in a hole" (02.2b.81), "I have my own flat, my way of life is pretty ok" (15.2.6). As well as the acknowledgment of having a home an assessment of quality was made: "I'm not living where I would expect to be living but it's, I enjoy it and it's comfortable" (02.2.14), "and I kind of think in terms of just, conditions I think are just comfort in a way so er I'm thinking I am quite comfortable" (38.2a.47). The assessment of quality was also extended to the

location: “if I lived into the centre of London” (02.2a.86), “I live in a good country” (15.2.6). In other words the idea of where one lived or “home” was interpreted along a spectrum.

The code category of Accommodation was defined as the acknowledgement and appreciation of where one lives along a narrowing dimension from one’s country to one’s house.

**Material Possessions.** This category accounted for the differing importance of material possessions.

Ownership of material things was brought to mind by some participants: “and I have nice things” (02.2a.77), “I think if I didn't have my own car, my own means of getting around” (15.2b.35), “I’d like a sports car” (13.2a.54). On the other hand a disinterest in such things was also explicitly mentioned: “... which comes across, which comes to mind more than any kind of material things. Er, don't really care very much about cars or anything” (01.4a.138). Explicitly mentioning the importance, or lack of importance of material possessions was considered to be the two ends of a dimension, the half-way point can be exemplified as follows: “I don't really aspire to have that many material things apart from big TV's and expensive electronic equipment” (27.4. 35).

In summary the category Material Possessions was defined as the acknowledgment and varying relevance of material possessions.

**Feelings.** This code category encompassed a number of categories that identified the use of feelings and emotions.

Positive emotions tended to be identified as indicators of satisfaction: “erm I don't think I would be enjoying my life as much as I am” (15.3b.45), “I enjoy, I enjoy my work I enjoy being at home, I enjoy doing stuff with (girlfriend's name) , my friends” (27.3.29), “I am fairly satisfied with my life. I I think I'm quite happy” (01.3.15), “Feeling content ...feeling settled, feeling mature, feeling knowledgeable” (23.3.10), “I would say that I’m definitely erm definitely content ..with my life” (27.1.2). As well as the presence of these feelings as a positive sign their absence was also brought to mind: “erm I think if I lost the ability to have anything to feel remotely positive about” (26.3b.74).

The relevance of feelings was not limited to those that can be interpreted as positive, the presence and absence of negative emotions and broad negative feelings was also relevant: “I would be annoyed about that” (1.3b.24) “I’m just trying to think what would make me miserable” (02.1b.60), “and not unhappy, dissatisfied with anything” (28.2.9), “no worries except for stress sometimes” (28.2.9), “not sort of being overburdened by stuff” (28.3.17), “contented feelings..no fear, no worry or negativity” (23.5.18).

The Feelings code category was defined as the use of emotional states and feelings as indicators of satisfaction.

**Use of time.** This category related to the different ways participants verbalised the relevance of rest and recreation and how they fit in with other aspects of life.

Some participants referred to their work-life balance: “more me time and erm have to devote less time to just pure earning money” (38.2a.49), “and if you spend

the best part of your day, all day , every day at work and don't do things you enjoy, creative things , time with friends, family” (13.4.22), and “being able to have a work life balance” (28.3.15). Other participants considered time as a commodity that should be used appropriately: “I think if I just wasted, wasted time” (02.4b.127), “doing exercise, having free time and I’m thinking of just having enough time to do everything” (28.4.22), “lucky I have more time after work now to speak to friends and inside work I have a lot of time to speak to other people” (28.4b.80), and “I’d be doing more things rather than sport” (15.3a.41)

The code category Use of Time was defined as implicit and explicit references to the relative time spent on the various areas of one’s life.

**Contribution-to-the-world.** This category related to the influence one feels one has beyond one’s immediate life.

People can have a meaningful influence on the world. This can be in a positive way, related to the notion of “giving something back”, for example: “I think it would be about making more of a contribution” (13.3a.69), “contributing to something significant in the world” (13.4a.90). However it is also possible to have a far reaching negative impact: “well I would have to have done something actually detrimental to other people or another person which I haven’t done but on quite a big scale I’d have to you know we’re talking about really having done some harm to others, to an individual or a group of people erm some gross act that really impacts on other people” (38.5b.95).

The Contribution-to-the-world category was defined as an individual having a positive or negative impact on some aspect of the wider world, beyond the confines of their personal life, such as the local community.

**Influence of the Wider World.** This category related to external influences on one's life that are beyond the control of the individual, for example: "not being in a recession" (8.3a.71), "I was almost made redundant last week and it's made me think" (13.1.1), "if I suddenly got made redundant and couldn't afford to live away from home" (26.1b.46). "I'd have to have won the lottery" (1.1a.47), "you can't buy time, you can't buy health" (13.4.22).

The Influence of the Wider World category was defined as the perceived effect of outside or external forces on one's life.

**Comparison.** This code category comprised a number of categories in which participants implicitly or explicitly used comparison to assess their lives.

Participants compared themselves and their life directly to other people, to both general un-defined "others" and to specific groups: "and you also always know people are doing better than you" (01.1a.52), "objectively the conditions are quite good, compared to a lot of people" (01.2.10), "there are people starving around the world, people living in war torn areas" (13.2.10). Comparisons were also made with oneself in the past: "I think that if you'd asked me this a few months ago when I didn't have a series on" (01.4.24), "yeah so probably a year ago yeah like a year ago when I didn't have a job I would've thought the conditions are really bad" (28.2b.64). Ideals and expectations relating to external expectations, such as what is considered "normal" were also sources of comparison: "awareness of my age and also what

people do expect of you for being that age” (02.01.7), “no I haven’t got them kind of accepted I suppose rites of passage kind of things” (38.4.10).

In sum the Comparison code category incorporated the various ways people judge aspects of their lives against various standards, such as: the lives of generic “other” people or distinct groups or individuals, their own earlier life, the expectations of other people and accepted social norms.

**Self-Qualities.** This code category encompassed a number of labelled categories that are connected via their association with the self-concept of the individual.

Aspects of ones’ self as a barrier to satisfaction was a major theme. Some participants identified specific flaws in their personality: “erm being a more relaxed person and not being so easy to wind up” (15.5a.58), “if I’d operated in a different way in life, if I’d been able to, to be more proactive, to take control of situations , to lead in relationships” (38.5a.89) . Other participants appeared to blame themselves in a more general way: “People like me, they don't, they're never happy completely” (01.1.2), “ No, could be better, but that’s my fault in a way” (38.3.6).

Self-esteem was considered a source of satisfaction as well as a potential barrier: “if I lost all belief in myself” (02.01b.56), “and if my confidence had not developed as it has in the last couple of years” (15.5b.62), “and I would feel confident that I was using my talents and skills that I’ve been given to the best that I can” (13.1a.44). Particular character traits were also considered positively: “if I didn't have... emotional stability” (23.1b.30), “I would've been less satisfied if I was more isolated or yeah I didn't feel comfortable talking to other people” (28.3b.83).

Some participants highlighted a lack of clarity in terms of thinking about their life: “I think the problem with me is not always knowing exactly what I want” (38.4.8), “I think I need to have a better, I think I need to have more realistic grasp of what my ideal is” (26.1a.38). Personal philosophy regarding life satisfaction was also apparent in the optimistic and pessimistic outlooks that were disclosed: “but I know eventually that I’ll be very satisfied with my life” (02.03.25) “but I always think it will work out, I always think it will happen” (02.01.3), “you’re always going to have something that’s not going as well as you want” (1.1.2), “things are never ideal because things can always be a bit better” (1.1a.58).

In summary the code category of Self-Qualities was defined as the positive and negative perception of one’s characteristics or personality and the influence of one’s attitudes or outlook.

**Daily Life.** This category related to the influence of every day or commonplace experiences on satisfaction.

At the most basic level there were aspects of daily life that had an impact on satisfaction: “um possibly not having to commute to work um because that is a bind” (15.2a.33). There were other sources of irritation that, whilst not part of the daily routine, could be considered “everyday” life: “no good secondary schools around here and that’s going to be something that’s going to be a hassle, a lot of hassle” (01.2a.90). The idea of the difficulties of everyday life was also mentioned in more general terms: “just not struggling with anything and things going easy” (28.2.7) “not sort of being overburdened by stuff” (28.3.17).

Daily Life as a code category was defined as the impact of everyday life and its associated difficulties.

**Doing Things.** The code category of Doing Things was comprised of categories that identified themes of striving and achievement.

Achievement of goals was brought to mind: “I think for a long time my main focus was making sure that I got my degree and my education...so I’ve achieved a big part of my life, the important things that I wanted to achieve” (26.4.23), “the only thing I've ever really wanted was to make my living as a writer, and I do” (04.4.33). A lack of achievement was also mentioned: “family wise erm haven't met anyone I’d like to do anything long term with and have children, so that's something to aim for” (08.4.18), “more successful in achieving at work erm getting on to the higher grades” (15.4a.49).

To sum up the Doing Things code category reflected the idea of activity in order to achieve certain aims.

**Personal theory.** This code category combined a number of labelled categories that related to the use of assumptions, generalisations, specific world views and clichés.

Some participants brought to mind beliefs about the way other people may think about life: “most people could identify with having a bit more” (02.2a.78), “some people think having an important job and money coming in is really important” (13.4.20). There were also more general assumptions regarding lives other than one’s own: “who does have an ideal life? Nobody” (01.1.1), “no life is ideal”. (01.1.5), “I don't think that ever applies to anyone” (8.5.23)”.

The idea of learning through life experiences was a recurring concept: “there's always going to be regrets no matter what but that's part of learning, you kind of adapt and learn from it” (08.5.25), “early on in your life if you haven't had that experience and that knowledge” (13.5.35), “but there are moments where you, everyday experiences where you, afterwards you learn through them” (28.5a.117). Another example of a personal theory was the sense that one should feel grateful or lucky for certain aspects of one’s life: “I think I'm lucky” (04.3b.114) “Well not excellent, good, fortunate”, (38.2.4), “there's lots of things I wouldn't change to be honest I think I'm quite lucky” (01.5.41). Feeling grateful was identified as an aspect of the appreciation of life, “feeling of being lucky, er having more than I thought, having more than I thought I'd ever have” (23.2.5), existing on a dimension with the acceptance that life is imperfect, a compromise: “What's ideal, there's not really such a thing” (08.1.1), “I’m just working towards it and so I don't really expect my ideal to be met just yet” (02.1a.52), “Not really I think it's erm a compromise really erm it could be worse it could be better but it's certainly not ideal” (38.1.1), “nothing's perfect” (1.1b.62). The idea of a compromise was seen to be related to a more positive interpretation, general contentment: “thinking what I want to do one day but just being happy with what I’m doing currently” (28.1.4), “I try not to set a kind of yardstick erm and goals as to what, where I should be at this point or what an ideal is er, I, just kind of you know I’m happy, happy with where I am” (27.1.3).

To summarise the code category of Personal Theory comprised the various schemes people used when contemplating life as a whole. These included assumptions or folk concepts regarding other people and the appreciation of life.

### The application of the coding scheme

Having defined the code categories the full sample of transcripts (N= 54, including the sub sample used to generate the code) was coded by the researcher. For each of the five SWL items every participant had three responses, according to question type: a response to the standard item, a response to the upward question and a response to the downward question. Thus every participant had 15 responses in total which were coded for the presence of each code category. A response could contain multiple code categories. Examples of coding are shown in Figures 3.3 – 3.5.

**Figure 3.3. Example of coding SWLS statements**

Transcription Participant 20100621

*1) In most ways my life is close to my ideal*

1 No not really um cos I'm at home erm (want to move out) **Comment [CL1]: Accommodation**

2 erm (money worries), but I still (get to go on holiday) erm I **Comment [CL2]: Money**

3 got (extra money) being at home so that's ideal, I still live | **Comment [CL3]: Use of Time**

4 (with my family so that's ideal) suppose hmm that's it. **Comment [CL4]: Money already mentioned – only counted once**  
**Comment [CL5]: Relationships with Others**

Transcription Participant 20100605

*1) In most ways my life is close to my ideal*

1 Erm, so that requires me to take a snap shot and where as I

2 still feel like I'm in a process, so if I had to then I would say

3 yes, it is, it is, yes (because I think I'm someone who likes to

4 be in engaged in a process of some kind, have a goal and **Comment [CL6]: Self-qualities**

5 (be working towards it and I've got that going on) so yeah. **Comment [CL7]: Doing Things**

**Figure 3.4. Example of coding Upward statements**

Transcription Participant 20100629

1) *In most ways my life is close to my ideal – response was 5*

a) *What would make it 7*

1 what would make it 7? Um job stability um.. and...i suppose,

2 yeah my main obstacle is job stability and financial security, total

3 financial security )

Comment [CL13]: Job

Comment [CL14]: Money

4 *3) I am satisfied with my life. Response was 5*

5 a) *What would make it 7*

6 that would be more to do with, I'd love my job, I'd be living

7 exactly where I wanted to be living, I'd be in a most perfect

8 relationship, I'd have the best relationship with my friends and

9 my family) that I could possibly ask for that'd be it, all the things

10 surrounding it

Comment [CL15]: Job

Comment [CL16]: Accommodation

Comment [CL17]: Relationships with Others

**Figure 3.5. Example of coding Downward statements**

Transcription Participant 20100632

2) *The conditions of my life are excellent. Response was 5*

b) *What would make it 3*

1 erm that would er less excellent hmm...it's tough that

2 one..I suppose, something to do with...family, if I had less

3 family.. maybe, if I had less support that'd be less

4 excellent

**Comment [CL8]: Relationships with others**

Transcription Participant 20100611

1) *In most ways my life is close to my ideal – response was 5*

b) *What would make it 3*

1 Erm I would think if I had loads of problems in my life or I

2 felt unhappy like desperately unhappy about things in my

3 life like financially or emotionally or relationship wise

4 things like that I'd probably say slightly disagree but hmm

5 no that's probably it

**Comment [CL9]: Daily life**

**Comment [CL10]: Feelings**

**Comment [CL11]: Money**

**Comment [CL12]: Relationships with Others**

**Inter-rater reliability.** A second coder was trained by the main coder and researcher. Training required the second coder to code transcripts from the full sample with the inter-rater reliability informally calculated until an adequate level of agreement was reached. In this manner five transcripts were coded in training before 20% of the full sample (11 transcripts) were coded by the second coder and used to calculate the inter-rater reliability. The 11 transcripts were not chosen at random but were chosen to ensure that all the categories were present. The resulting Cohen's Kappa values are shown in Table 3.1 in the “pre-modification” column. Table 3.1 shows that six categories (Influence of the World, Self-Qualities, Comparison, Doing Things, Personal Theory and Daily Life) initially had a very low inter-rater reliability, Kappa less than 0.6. As a Kappa of over .75 can be considered “excellent”, a Kappa of .6 to .75 can be considered “good”, and .4 to .6 “fair”, .6 was identified as a reasonable cut-off point (Robson, 2002). The categories with low agreement were re-examined.

**Table 3.1. Inter-rater reliability correlations between the first and second coder for all code categories**

Code Category	Cohen's Kappa	
	Post- modification	Pre- modification
Money		0.91
Accommodation		0.88
Job		0.87
Health		0.84
Feelings		0.83
Relationships-with-others		0.81
Material Possessions		0.73
Contribution-to-the-world		0.70
Use of time		0.69
Influence of world		0.53 <sup>b</sup>
Self-Qualities	0.70 <sup>a</sup>	0.47
Comparison	0.52 <sup>ab</sup>	0.45
Doing Things	0.60 <sup>a</sup>	0.35
Personal Theory	0.67 <sup>a</sup>	0.32
Daily Life	0.61 <sup>a</sup>	0.12

Notes: <sup>a</sup> Kappa value established following recalibration of code, <sup>b</sup> code not used in main analysis due to low reliability.

### **Modified definitions of code categories with low reliability**

Disagreements between coders in the identification of information relating to these categories were addressed and modifications to their definitions were agreed upon by both coders. The modifications to the definitions are described in full in the following section.

**Influence of the World.** The Influence of the Wider World category was excluded from the final coding scheme. Aspects of this category were more suited to Personal Theory, as they were essentially folk concepts and attitudes to life, for example: “you can't buy time, you can't buy health” (13.4.22). Other components, although they concerned external influences, were implicit comparisons with other possible lives: “not being in a recession” (8.3a.71), “I was almost made redundant last week and it's made me think” (13.1.1), “if I suddenly got made redundant and couldn't afford to live away from home” (26.1b.46). “I'd have to have won the lottery” (1.1a.47). Thus facets of the Influence of the World category were merged with the categories of Personal Theory and Comparison; there was no clearly separate category of Influence of the World.

**Comparisons.** Two modifications were made to the Comparisons code category. One change was the aforementioned merging of the implicit comparisons to other possible lives, previously part of the Influence of the World category, into the Comparisons category. Although comparison to earlier in one's own life was already part of the Comparisons category, for example, “yeah so probably a year ago yeah like a year ago when I didn't have a job I would've thought the conditions are really bad” (28.2b.64), it was established that this facet failed to acknowledge more subtle or implicit comparisons to alternatives to the status quo, such as, “not being in a recession” (8.3a.71), “I was almost made redundant last week and it's made me think” (13.1.1). The second change was the broadening of the category with the addition of comparisons to personal ideals. It was identified that expectations and ideals not only came from other people and social norms but also from the individual themselves: “I think that it would be good if I had by this point in my career created

certain things that were making me money in royalties” (01.4a.143), “I suppose I wanted a bit more responsibility by the time I was 29” (02.1.11).

The modified Comparisons code category was re-defined as the ways in which people judge aspects of their lives against standards, such as: the lives of others, their own earlier life or alternatives, and expectations and ideals of their own and of other people or social norms.

**Personal Theory.** This category was modified in two ways. As previously mentioned, aspects of Influence of the World that were interpreted as folk theories or clichés were merged with Personal Theory. The Personal Theory category was also expanded to include what had previously been part of the Self Qualities category, the general attitude of the individual which colours one’s outlook: “but I know eventually that I’ll be very satisfied with my life” (02.03.25) “but I always think it will work out, I always think it will happen” (02.01.3), “you’re always going to have something that’s not going as well as you want” (1.1.2), “things are never ideal because things can always be a bit better” (1.1a.58). Optimistic and pessimistic outlooks were therefore equivalent to a personal philosophy and included in the Personal Theory category.

The code category of Personal Theory was re-defined as the assumptions, generalisations, folk concepts and over-riding attitudes that are brought to mind when contemplating life as a whole.

**Self-Qualities.** The code category of Self Qualities was narrowed, as a result of the merging of the general attitude facet with Personal Theory. The code category

of Self Qualities was re-defined as the perception and relevance of one's characteristics or personality.

**Daily Life.** The Daily Life category related to the influence of everyday or ordinary experiences on satisfaction. This category was broadened to encompass relevant ideas that stemmed from the more general difficulties of everyday life. The more general issues of everyday life related to managing or controlling one's life. Elements of life that result in constraints or restrictions were identified: "If I was more successful as a writer I would be able, I would have so much more control over my life" (04.2a.81), "work happening but not the sort of thing I want to do" (23.2b.36). On the other hand a lack restrictions and an element of control was also recognised: "if I wanted to do anything I can do it" (28.2.9), "I'm not very much aware of anything that I really want to do that I am not able to do" (28.4.24).

Daily Life as a code category was therefore re-defined as the impact of everyday life on satisfaction, encompassing the extent to which one feels in control of one's life.

**Doing Things.** The Doing Things core category was expanded. The idea of a productive life was not limited to specific accomplishments but also related to being dynamic or generally active. In other words doing something was an antidote to perceived laziness rather than for specific achievements: "everything just feels kind of average er and I hate to think of myself as doing that and just blobbing along I want to be I want to be doing something" (02.5b.154), "if I was just ambling along" (27.2b.27). This was also demonstrated by simply being pro-active: "and there's not really anything stopping me except actually getting on my arse and doing something erm so not being able to move on not being able to do things" (8.3b.77). "I do like

my life I think I would just feel better if, again, if I'd just done a few more things” (02.5a.136).

The core category of Doing Things was re-defined as encompassing both the achievement of specific aims and activity to maintain a general sense of progress.

**Inter-rater reliability post-modification.** The full sample was re-coded using the modified code categories. A further 11 transcripts, again not chosen at random but chosen to ensure all the categories were present, were re-coded by the second coder and the inter-rater reliability for Self-Qualities, Comparison, Doing Things, Personal Theory and Daily Life was recalculated. The “Post-modification” column of Table 3.1 shows that the Cohen’s Kappa values for the re-defined code categories increased following the modification of the definitions. However, as the score for Comparison was less than .6 (Robson, 2002), it was dropped from the quantitative analysis. The results and discussion of the quantitative analysis comprise Chapter 4. A summary of the final code categories and their definitions is presented in Table 3.2.

**Table 3.2. Summary of the 13 code category definitions**

Code Category	Definition
<b>Relationships-with-others</b>	The dimension of relationships possession (lacking, gaining, having), the attributes of relationships (quality) and the purpose of relationships (caring for others and socialising).
<b>Job</b>	The importance of employment, the suitability of one's job, the absorption of a job or career into one's identity and the associated sense progress.
<b>Health</b>	Information pertaining to one's healthiness, along a dimension from being fit to illness, with the intermediate or default idea of being well or not sick.
<b>Money</b>	The relevance of adequate financial means and the concerns people have regarding a lack of money.
<b>Accommodation</b>	The acknowledgement and appreciation of where one lives in a narrow and broad sense.
<b>Material Possessions</b>	The acknowledgment, and varying relevance, of material possessions.
<b>Feelings</b>	The use of emotional states and feelings as indicators of satisfaction.
<b>Use of time</b>	The relative time spent on certain areas of one's life and specific references to how one's time is used.
<b>Contribution-to-the-world</b>	An individual having an impact on something other than their personal life, such as the local community or wider issues.

Code Category	Definition
<b>Self-Qualities</b>	The positive and negative perception of one's characteristics or personality
<b>Daily life</b>	The impact of everyday life and its associated difficulties. The ability to manage one's life: control, constraints and restrictions.
<b>Doing things.</b>	Activity in order to achieve certain goals or to maintain a general sense of progress.
<b>Personal theory.</b>	The various schemas people use when contemplating life as a whole, these included assumptions regarding other people and folk concepts as well as the influence of one's general attitude.

### Discussion

From the participant responses to the SWLS items and their consideration of a life that would produce higher or lower scores for those items, 13 code categories were generated using an inductive approach: Health, Money, Contribution-to-the-world, Doing Things, Daily Life, Personal Theory, Use-of -Time, Accommodation, Job, Material Possessions, Self-Qualities, Feelings, Relationships-with-others. These categories represent the varied information that was brought to mind by participants whilst they assessed their own life satisfaction.

Having been generated from a sub-sample of participants using an inductive, constant comparison method the code categories were based in the qualitative data and were not overtly influenced by existing theories. The 13 code categories therefore represent the breadth of information brought to mind by participants in

response to the SWLS items (Diener et al., 1985) and when considering a better or worse life.

Mellor et al. (1999) performed the only previous study investigating life satisfaction judgements that used both a verbal interview and identified categories grounded in the participants' responses. There is a clear similarity between some of the categories found by Mellor et al.: relationships, psychological attributes, financial/ material matters, health and employment, and some of those found in the present study: Relationships-with-others; Self-Qualities; Money; Health; and Job, respectively. Similar categories of information were identified by Martikainen (2008) in participants' responses to open-ended questions which asked about sources of satisfaction and dissatisfaction following a single item measure of satisfaction. Martikainen (2008) did not directly ask about the judgement process and it was not clear to what extent these categories were based on previous literature or based on participants responses. Nevertheless of the 8 categories used by Martikainen (2008), work, health, family, material factors, hobbies, friends, studies, and substance abuse, all except substance abuse can be mapped on to one of the 13 code categories emerging from the present study. There is thus a clear overlap between the categories generated from different sources of qualitative data. This consistency suggests that whether or not participants Think Aloud or are allowed to explain and reflect, certain areas of information (Relationships, Job, Health, Money) are consistently brought to mind in connection with life satisfaction. Importantly, though, the present study found areas of information not previously identified via similar methodologies: Feelings; Daily Life; Personal Theory and Contribution-to-the-world.

A number of the categories identified in the present study are also similar to some of those used in the tick-lists, derived from the “subjective well-being literature”, provided to participants by Schimmack, Diener, and Oishi (2002). In this case family and romantic life clearly relates to a code category found in the present study (Relationships-with-others), similarly housing (Accommodation), health (Health), goal progress and academic performance (Doing Things), current mood and memories of past emotional experiences (Feelings) are all represented by both studies. The clear similarity between some of Schimmack, Diener and Oishi's (2002) tick list domains and the code categories of the present study suggests that lay theories of life satisfaction, people's views as to what is relevant and important, have some overlap with more theoretical concepts. Again, though, there are clearly some areas that are brought to mind by individuals that were not identified in the literature by Schimmack, Diener and Oishi (2002), for example, Contribution-to-the-world or Use of Time. However as Schimmack, Diener, and Oishi (2002) were not necessarily attempting to include all domains relevant to life satisfaction, and were aiming to use domains that would be used by most participants, their absence may not be meaningful. For example Schimmack, Diener, and Oishi (2002) dropped financial satisfaction from their list after a pilot study found it was not used very frequently.

Certain code categories also overlap with aspects of eudaimonic list theories of well-being. Most obviously Relationships-with-others features in PWB (Ryff, 1989), PERMA (Seligman, 2011), and SDT (Ryan & Deci, 2000). Further the code category of Feelings accounts for both the positive emotions of PERMA and feelings that are not explicitly measured by the PWB but are included in certain items, such as “I enjoy making plans for the future” and “I feel disappointed about my

achievements”. Further overlap is suggested by Self-Qualities which includes the positive perception of one’s characteristics in its definition while a high scorer in PWB’s self-acceptance would have a positive attitude toward themselves. The ability to manage one’s daily life is reflected in both PWB’s environmental mastery and the present study’s Daily Life code. Doing Things is defined by achieving goals and making progress which is also represented by PWB’s purpose in life. The autonomy and competence aspects of SDT, and the accomplishment facet of PERMA, are also somewhat reflected in Daily Life and Doing Things. None of the code categories can be said to wholly represent the presence of, or search for, meaning in life (Linley & Joseph, 2011; Steger, Oishi, & Kesebir, 2011). However aspects of the Relationships-with-others, Feelings and Personal Theory categories can reasonably be thought to be related to information relating to meaning in life judgements (Baumeister, Vohs, Aaker, & Garbinsky, 2013). Also Contribution-to-the-world, defined as an individual having an impact on something other than their own life, can be related to specific aspects of PERMA’s meaning and purpose.

Whilst not clearly overlapping with previously found areas of information or eudaimonic theories the Personal Theory code category includes optimistic outlooks and more specific attitudes such as feeling lucky or grateful for life. These aspects show some similarity with the broad idea of gratitude. Gratitude can be conceptualised at the state level, the emotion of gratitude (or grateful affect), but has also been conceptualised at both the trait level, demonstrating the extent to which the emotion of gratitude is felt and the level of activity or actions required to stimulate it, and the “life orientation” level, which reflects a broad attitude towards noticing and appreciating the positive in the world (Wood, Froh, & Geraghty, 2010; Wood,

Maltby, Stewart, Linley, & Joseph, 2008). It should also be noted that Personal Theory also encompasses the negative schemas or world views that the participants brought to mind, for example, “things are never ideal because things can always be a bit better”.

The present study therefore identified a much broader array of information compared to methodologically similar studies (such as, Martikainen, 2008; Mellor et al., 1999). Further the apparent overlap between the code categories generated by the present study and theories of well-being supports the idea that the information individuals bring to mind has some overlap with theoretical approaches. This also suggests that the information used by people in life satisfaction judgements can be “eudaimonic” in nature. Put another way the code categories reinforce the idea that life satisfaction should not be defined as a hedonic measure, it does not focus on exclusively feelings and individuals use a wide variety of information. The present study also improved upon past studies via the method used and the sample of participants, both of which are discussed below.

Previous studies have restricted the participants responses in various ways: by utilising an open response method but then restricting analysis to looking for examples of certain cognitive processes (Mehlsen et al., 2005; Mellor et al., 1999; Updegraff & Suh, 2007); by using probe questions that limit and introduce bias to an interview (Mellor et al., 1999); or by limiting responses with self-report lists (Dubé et al., 1998; Schimmack, Diener & Oishi, 2002). Further all of the aforementioned studies have relied on asking the participants for their responses after the life satisfaction judgement has taken place and may be subject to memory distortions and other biases. The present study posed no restrictions on the responses and the Think

Aloud process used meant that the responses were obtained as the judgement occurred rather than retrospectively. Also an inductive process was used to generate the code categories. The present study therefore improves and extends the previous literature by being the only completely open response method that avoids retrospection and which also analyses the data using a coding scheme grounded in the data itself.

The age of the participants in the present study ranged from 24-68 years, with a mean age of 40, and the participants also varied in terms of relationship status and whether or not they had children. Previous studies examining life satisfaction using descriptive and open methods have used student samples, participants over the age of 70 years, students and their parents, and young adults (Dubé et al., 1998; Martikainen, 2008; Mehlsen et al., 2005; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002; Updegraff & Suh, 2007). By obtaining a broad and varied sample it can be asserted that, compared to previous studies, the code categories found in this study provide the most generalisable results to date. Furthermore in the most methodologically similar previous study by Mellor et al. (1999) the sample consisted of students aged between 18-25. The overlap in areas of information suggests that similar information is brought to mind whether one is a student or middle aged. The apparent tendency for both students and middle aged professionals to use some similar information further supports the idea of universally relevant information (Schimmack, Diener & Oishi, 2002).

One limitation of the present study is that the researcher's previous knowledge of well-being research and life satisfaction literature may have introduced bias into the inductive process. This would mean that the discovered categories are

not truly based in the data. This may explain the apparent overlap between some of the code categories and eudaimonic list theories. However the aim of using the inductive process was to ensure that the analysis of the responses was unrestricted by previous knowledge. In other words the qualitative technique was used to avoid the limitations that would result from a coding scheme based on existing theories or particular information types or processes. To this end the constant comparison process was fit for purpose. It ensured that the transcripts were analysed line-by-line, and that all identified data were clearly labelled, allowing recurring themes and categories to be identified both within and between participants and non-recurring information to be recorded. As such, the analysis was not limited to the most common themes; rarely mentioned information was included in the process. Thus the robust and systematic constant comparison process ensured that the code categories were based in the data. Any bias that may have been introduced as a result of previous knowledge may have occurred at the combining stage, as the code categories were formed. At this stage the inter-rater reliability process demonstrated that most of the code categories were identifiable and understood by a coder who was unfamiliar with the literature. Whilst it cannot be shown that the inductive process was entirely free from influence of existing theories it can be argued that the process resulted in considerably less bias and restriction than a coding scheme developed a priori.

The aforementioned aspects of the study that minimised bias in the inductive process should be considered strengths as they also provide support in terms of the trustworthiness of the qualitative analysis (Elliott, Fischer, & Rennie, 1999; Elo & Kyngäs, 2008). The line by line coding, use of memos, file cards, the mapping of

label integration and writing of definitions all contribute to the auditability of the process (Elo & Kyngäs, 2008). Further the inter-rater reliability provides a level of validity, similar to member checking or triangulation (Elliott et al., 1999; Elo & Kyngäs, 2008; Krefting, 1991).

A general issue with verbal protocols such as Thinking Aloud is that the accuracy of the reports cannot be validated, and this is true of the present study (Wilson, 1994). Even though steps were taken to ensure that Thinking Aloud occurred, explanation and elaboration may not have been avoided and may have interfered with the judgement and affected the accuracy of the responses (Schooler, 2011). In fact the occurrence of explanation and reflection would explain the overlap between the code categories found in the present study and areas identified in studies that used more retrospective and introspective methods. In addition the Think Aloud process is intended to be used for tasks that have both a definitive end point and sufficient reportable steps (Ericsson & Simon, 1998; Fox et al., 2011; van Someren et al., 1994). Thus it can be argued that life satisfaction judgements are not suitable for the Think Aloud process and that the participants' responses may not be a true reflection of the life satisfaction judgement. It is also not possible to verify definitively whether, by avoiding the influence of memory errors, accessing the relevant thoughts as they were occurring produced more accurate accounts of the life satisfaction judgement compared to previous studies that used retrospection. Importantly the transcripts showed that participants made frequent uncorrected speech and grammatical errors including incomplete sentences and phrases. Such "incoherent discourse" is considered an indicator of Thinking Aloud as Think Aloud verbalisations are not mentally monitored by the individual; a coherent discourse is

not expected (Ericsson & Fox, 2011). This finding suggests that Thinking Aloud did occur for most of the participants. Nevertheless whether Thinking Aloud is a true proxy for the mental processes underpinning the judgement, and therefore is a genuine improvement compared to other methods, cannot be stated definitively.

Schooler (2011) points out that the particular mental processes that link one thought to the next may not be accessible via any kind of verbalisation, including Thinking Aloud. Schooler's point relates not only to Thinking Aloud but also to the validity of previous studies that directly ask participants what kind of comparisons they may have used in their judgement (Dubé et al., 1998; Schimmack, Diener & Oishi, 2002). Essentially the specific cognitive processes that occur during a life satisfaction judgement may not be accessible via any method. When considering the accuracy of the Think Aloud method a pertinent point may be that, according to Willis (1999), it is impossible to know in an absolute sense what transpires in a respondents mind but that verbalisation may provide clues as to the types of processes involved. To put another way Thinking Aloud may not allow access to particular cognitive processes, but does provide a commentary of some of the information that is brought to mind. We know that retrieval is occurring not because a participant describes the retrieval process but because information is actively retrieved.

The Think Aloud process used in the present study should therefore not be considered a perfect method for accessing the precise thought processes. Rather than being an accurate proxy it can be thought of as slowing down a process that, when the SWLS is presented as a self-report scale, is usually completed in less than 60 seconds (Diener, Napa Scollon, Oishi, Dzokoto, & Suh, 2000). Thus rather than

relying on retrospection to accurately recall a past judgement the process used in the present study allows the participants to identify the information they bring to mind when the life satisfaction statements are presented in a context that allows more time for consideration. In summary, it cannot be verified without considerable further research that the Thinking Aloud in the present study was entirely non-reactive or that the cognitive processes during the judgement are accessible. As such Thinking Aloud may not provide a perfectly uncontaminated insight into life satisfaction judgements. However Thinking Aloud, even if it resulted in introspection, can be reasonably considered a more “on-line” method compared to previous studies. The method therefore addresses the issue that descriptive research into life satisfaction judgements has, so far, relied on retrospection. Life satisfaction is defined as a subjective, cognitive judgement (Pavot & Diener, 2008) and the code categories discovered provide evidence of the breadth of information that can be brought to mind rather than the processes that are involved. Further, using the inductive approach meant that the code categories were generated from the information provided by a sub-sample of participants, basing the codes in the data rather than existing literature.

## Chapter 4

### **Study 1b: A quantitative approach to identifying the information used in life satisfaction judgements**

#### **Overview**

This chapter presents the application of the coding scheme outlined in Chapter 3 to the Think Aloud interview responses of all participants.

#### **Method**

The final code categories and their definitions are reproduced in Table 4.1. The process of coding the full sample of 54 is described in Chapter 3, p. 111. For the main ANOVA analyses the sample of 54 provided a power of .82, for a medium effect size with alpha of .05. Having coded all the responses, index scores were calculated for each participant. The index scores required that the presence of each code category for each item was summed within the three question types, standard, upward and downward. For example, a participant who mentioned information coded as Health in two of the five standard SWL questions would score 2 for the standard SWL index. If the responses of this participant were also coded as having information relating to Health in just one of the upward questions and four of the downward questions then they would have an upward question index score of 1 and downward question index score of 4 respectively.

**Table 4.1. Summary of the 13 code category definitions**

Code Category	Definition
<b>Relationships-with-others</b>	The dimension of relationships possession (lacking, gaining, having), the attributes of relationships (quality) and the purpose of relationships (caring for others and socialising).
<b>Job</b>	The importance of employment, the suitability of one's job, the absorption of a job or career into one's identity and the associated sense progress.
<b>Health</b>	Information pertaining to one's healthiness, along a dimension from being fit to illness, with the intermediate or default idea of being well or not sick.
<b>Money</b>	The relevance of adequate financial means and the concerns people have regarding a lack of money.
<b>Accommodation</b>	The acknowledgement and appreciation of where one lives in a narrow and broad sense.
<b>Material Possessions</b>	The acknowledgment, and varying relevance, of material possessions.
<b>Feelings</b>	The use of emotional states and feelings as indicators of satisfaction.
<b>Use of time</b>	The relative time spent on certain areas of one's life and specific references to how one's time is used.
<b>Contribution-to-the-world</b>	An individual having an impact on something other than their personal life, such as the local community or wider issues.

Code Category	Definition
<b>Self-Qualities</b>	The positive and negative perception of one's characteristics or personality
<b>Daily life</b>	The impact of everyday life and its associated difficulties. The ability to manage one's life: control, constraints and restrictions.
<b>Doing things.</b>	Activity in order to achieve certain goals or to maintain a general sense of progress.
<b>Personal theory.</b>	The various schemas people use when contemplating life as a whole, these included assumptions regarding other people and folk concepts as well as the influence of one's general attitude.

## Results

### Frequency of core categories

Due to technical issues two participants had missing values: one participant was missing their responses to questions 4 and 5 of the standard SWL statements, another participant was missing their response to item 4b, the downward statement of item 4 of the SWL.

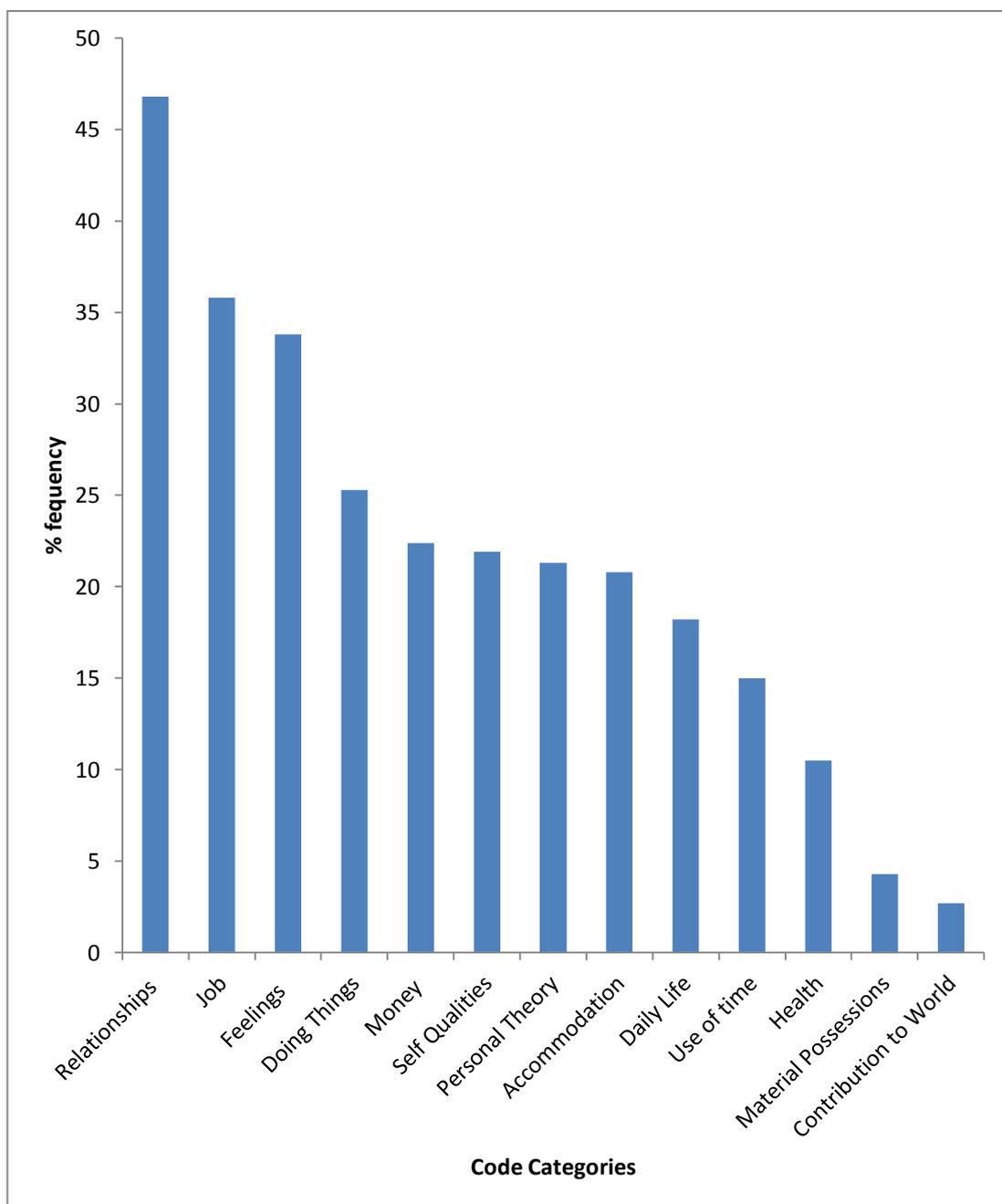
Considering the 15 responses as a whole (5 standard, 5 upward, 5 downward) all participants were found to have brought to mind information that could be assigned a code category. In other words there were not any participants who brought to mind information that could not be coded. The overall frequency of a code category across the whole sample was the percentage of overall responses containing a code category out of a total of 807 responses (54 participants, with 15

responses each resulting in 810 possible responses, minus the 3 missing responses). For example Relationships with Others, the most common code category was coded as being present in 378 of the 807 responses (46.8%). The overall frequency of each of the core categories is shown in Table 4.2. Relationships-with-others, Job and Feelings were the most common core categories. There is also a clear point of inflection, shown in Figure 4.1, demonstrating that Relationships with others, Job and Feelings stand apart from the other code categories in terms of frequency. It is also clear that Material Possessions and Contribution-to-the-world are considerably less frequent than the rest.

Frequencies were also calculated for the occurrence of code categories within the separate question types. In this case there were 268 possible standard SWL responses (54 participants, with 5 responses each resulting in 270 possible responses, minus the 2 missing responses). There were also 270 possible upward responses and 269 possible downward responses (due to one downward response being missing). As shown in Table 4.2 the frequency of the Relationships-with-others code category was broadly similar for all three question types: it was present in 122 responses for both the standard SWL and Upward questions and 134 of the Downward responses, increasing the percentage frequency to 49.6%. Some categories, such as Relationships-with-others and Feelings, did not vary a great deal with question type whereas other categories increased or decreased in frequency for a particular question. For example, Use of Time was more frequently used when participants were asked about a better life, included in the Upward column of Table 4.2, compared to when they were asked about their present life or a worse life.

**Table 4.2. Frequencies (%) of code categories across all questions and according to question type**

Code category	All questions	Question type		
		Standard	Upward	Downward
Relationships-with-others	46.8	45.5	45.2	49.6
Job	35.8	31.3	38.5	37.5
Feelings	33.8	37.3	33.7	30.5
Doing Things	25.3	23.1	30.4	22.2
Money	22.4	18.3	29.6	19.3
Self-Qualities	21.9	19.8	23.0	23.0
Personal Theory	21.3	30.2	18.9	14.9
Accommodation	20.8	23.5	20.7	18.2
Daily Life	18.2	12.3	20.0	22.2
Use of time	15.0	12.7	21.1	11.2
Health	10.5	10.4	5.6	15.6
Material Possessions	4.3	4.9	5.9	2.2
Contribution-to-the-world	2.7	1.9	5.6	0.7

**Figure 4.1. Overall frequency of code categories**

### **The effect of question type on frequency of core category**

The upward and downward questions were included to encourage more information from the participants. These questions differed in terms of reference to the initial standard questions, representing a better or worse life rather than present life. As it was possible that these questions would encourage different information to be brought to mind the difference in code category occurrence between the question types was examined.

Many of the index scores were shown to be significantly skewed, all of the index scores were shown to have significant Kolmogorov-Smirnov tests of non-normality and for the less frequent code categories (for example: Material Possessions and Contribution-to-the-world) most participants had index scores of 0. Parametric tests were therefore inappropriate and Friedman's ANOVAs were used to establish whether the index score for each code category varied according to the type of question (standard, upward, downward).

The means and mean ranks are presented in Table 4.3. Some of the code categories were found to vary with question type: Health,  $\chi^2(2) = 7.74, p = .021$ ; Money,  $\chi^2(2) = 8.28, p = .016$ ; Contribution-to-the-world,  $\chi^2(2) = 8.59, p = .014$ ; Doing Things,  $\chi^2(2) = 6.37, p = .041$ ; Personal Theory,  $\chi^2(2) = 14.23, p = .001$ ; Use-of-Time,  $\chi^2(2) = 12.56, p = .002$ . The frequency of the remaining code categories was not affected by the question type: Daily Life,  $\chi^2(2) = 5.48, p = .07$ ; Accommodation,  $\chi^2(2) = 3.46, p = .18$ ; Job,  $\chi^2(2) = 3.34, p = .19$ ; Material Possessions,  $\chi^2(2) = 4.79, p = .09$ ; Self-Qualities,  $\chi^2(2) = 2.22, p = .34$ ; Feelings,  $\chi^2(2) = 2.62, p = .27$ ; Relationships-with-others,  $\chi^2(2) = 1.36, p = .51$

**Table 4.3. Mean, standard deviations (SD) and mean ranks of code category index scores**

Code category	Question Type								
	Standard			Upward			Downward		
	Mean	(SD)	Mean Rank	Mean	(SD)	Mean Rank	Mean	(SD)	Mean Rank
Health	.52 <sup>ab</sup>	(.75)	2.03	.28 <sup>a</sup>	(.60)	1.81	.78 <sup>b</sup>	(1.09)	2.17
Money	.91 <sup>a</sup>	(.85)	1.86	1.48 <sup>b</sup>	(1.19)	2.28	.98 <sup>ab</sup>	(1.09)	1.86
Contribution-to-the world	.09 <sup>ab</sup>	(.29)	1.97	.28 <sup>a</sup>	(.63)	2.14	.04 <sup>b</sup>	(.19)	1.89
Doing things	1.15 <sup>ab</sup>	(1.12)	1.88	1.52 <sup>a</sup>	(1.34)	2.22	1.11 <sup>b</sup>	(1.11)	1.90
Personal Theory	1.50 <sup>b</sup>	(1.24)	2.33	.94 <sup>a</sup>	(.98)	1.94	.74 <sup>a</sup>	(.81)	1.72
Use of Time	.63 <sup>a</sup>	(.92)	1.88	1.06 <sup>b</sup>	(1.14)	2.31	.56 <sup>a</sup>	(.82)	1.81

Code category	Question Type								
	Standard			Upward			Downward		
	Mean	(SD)	Mean Rank	Mean	(SD)	Mean Rank	Mean	(SD)	Mean Rank
Accommodation	1.17	(.95)	2.16	1.04	(1.13)	1.97	.93	(1.08)	1.87
Daily Life	.76	(1.16)	1.79	1.00	(1.05)	2.10	1.12	(1.22)	2.11
Job	1.56	(1.25)	1.83	1.93	(1.46)	2.15	1.87	(1.36)	2.02
Material Possessions	.24	(.51)	2.03	.30	(.54)	2.10	.11	(.37)	1.87
Self-Qualities	.98	(1.04)	1.86	1.15	(1.05)	2.06	1.17	(1.00)	2.08
Feelings	1.87	(1.10)	2.15	1.69	(1.41)	1.98	1.52	(1.33)	1.87
Relationships-with -others	2.28	(1.37)	1.90	2.26	(1.22)	2.01	2.50	(1.31)	2.09

\* Horizontally, non-matching superscripts differ significantly at the  $p < .0167$  level.

For the code categories that showed significant differences between the question types Wilcoxon tests were used to further explore the differences. Bonferroni corrections were applied, resulting in a .0167 level of significance for each code category.

It was found that compared to thinking about one's present life, via the standard SWL questions, Health was no more or less common in response to thinking about a better (Upward questions,  $z = -2.20$ ,  $p = .03$ ,  $r = -.30$ ) or worse life (Downward questions,  $z = -1.59$ ,  $p = .11$ ,  $r = -.22$ ). However Health was more frequently mentioned when thinking about a worse life compared to a better life ( $z = -3.01$ ,  $p = .003$ ,  $r = -.41$ ). Money was found to be more frequent when participants thought about a better life than when assessing their present life ( $z = -3.26$ ,  $p = .001$ ,  $r = -.44$ ) with no other significant differences between the question type (Down and Upward,  $z = -2.09$ ,  $p = .04$ ,  $r = -.28$ ; standard and Downward,  $z = -.32$ ,  $p = .75$ ,  $r = -.04$ ). The use of Contribution-to-the-world was found to be similar between thinking of one's present life and a better ( $z = -2.00$ ,  $p = .05$ ,  $r = -.27$ ) or worse life ( $z = -1.34$ ,  $p = .18$ ,  $r = -.18$ ) but when comparing the two imagined lives Contribution-to-the-world was more frequently brought to mind when participants thought of a better life than a worse life ( $z = -2.67$ ,  $p = .008$ ,  $r = -.36$ ). Doing Things was also significantly more common when thinking of a better life compared to thinking of a less satisfying life ( $z = -2.85$ ,  $p = .004$ ,  $r = -.39$ ), but there was no significant difference in use between the present life and better ( $z = -2.03$ ,  $p = .04$ ,  $r = -.28$ ) or worse life questions ( $z = -.23$ ,  $p = .82$ ,  $r = -.03$ ). It was found that participants tended to use information related to Personal Theory significantly more when thinking about their present life than when thinking about a better

( $z = -2.89, p = .004, r = -.39$ ) or worse life ( $z = -3.69, p < .001, r = -.5$ ). It was also found that Personal Theory was just as common when considering a better or worse life ( $z = -1.22, p = .22, r = -.17$ ). Participants were found to bring Use of Time related information to mind significantly more when thinking of a more satisfying life compared to when they thought of their present life ( $z = -2.41, p = .016, r = -.33$ ) or a worse life ( $z = -2.61, p = .009, r = -.36$ ), while Use of Time was found to be brought to mind as much when thinking about one's present life or a worse life ( $z = -.435, p = .67, r = -.06$ ). The results of the comparisons are summarised in Table 4.4.

**Table 4.4. Summary of significant differences in code category frequency found in the post-hoc comparisons between questions types**

Comparison of question types		
More frequent	Less frequent	Code categories
Standard	Upward	Personal theory
Upward	Standard	Money Use of Time
Standard	Downward	Personal theory
Downward	Standard	
Upward	Downward	Contribution-to-the-world Doing things Use-of-time
Downward	Upward	Health

### The relationship of the core categories with Life Satisfaction, Agency, Communion and Relatedness

The relationships between the measures of SWL ( $M = 24.5$ ,  $SD = 5.6$ ), Agency ( $M = 19.09$ ,  $SD = 4.12$ ), Communion ( $M = 22.78$ ,  $SD = 3.81$ ) and RISC ( $M = 53.4$ ,  $SD = 7.56$ ) are shown in Table 4.5. Both Agency and RISC were found to be significantly correlated with SWLS, participants with who scored highly in terms of life satisfaction also scored highly in Agency and RISC. However using Steigers Z the correlations between the trait measures and SWLS were found not to differ from each other significantly: Agency versus Communion ( $z = .17$ ,  $p = .43$ ,  $q = .02$ ); Agency versus RISC ( $z = -.39$ ,  $p = .65$ ,  $q = -.04$ ); RISC versus Communion ( $z = -.57$ ,  $p = .71$ ,  $q = .06$ ).

**Table 4.5. Correlations between SWLS, Agency, Communion and RISC scores**

Scale	SWLS	Agency	Communion	RISC
SWLS	-	0.28*	0.25	0.35*
Agency	-	-	0.09	0.01
Communion	-	-	-	0.08

*Note.* \*  $p < .05$

To investigate whether the use of information, in terms of the occurrence of code categories, was related to life satisfaction the SWLS scores were correlated with the code category index scores for each question type. Kendall's Tau was used due to the large number of tied ranks in the data (Field, 2009). Due to the high number of correlations ( $N = 39$ ) the significance level was lowered to .001. The correlation coefficients, shown in Table 4.6, were all weak and non-significant.

The use of any particular information was not found to be related to greater life satisfaction.

**Table 4.6. The Kendall's Tau correlation co-efficients between SWLS score and the code category index scores**

Code category	Question type		
	Standard	Upward	Downward
Health	.13	.19	.02
Money	.15	-.02	-.16
Accommodation	.03	-.02	-.17
Contribution-to-the-world	-.10	.06	-.02
Daily Life	.14	.03	.03
Doing Things	.10	.05	.06
Feelings	.26	.01	.11
Job	.22	-.08	.08
Material Possessions	.19	.15	.09
Self-Qualities	-.16	.02	.11
Personal Theory	.11	.09	-.06
Relationships-with-others	.22	-.20	.03
Use of time	.11	.28	.22

The code category index scores were also correlated with the measures of Agency, Communion and RISC to establish whether information use was related to these personality measures. Again the correlation co-efficients, shown in Table 4.7 were weak and were not significant, with a significance level of .001. The combination of the numerous core categories and three question types with the resultant reduced significance levels meant that with a sample size of 54 the correlations were underpowered. However most of the effect sizes were small suggesting that effects were unlikely to be significant even with a larger sample.

**Table 4.7. The Kendall's Tau correlation co-efficients between scores in Agency, Communion and RISC and the code category index scores**

Coding Category	Scale	Standard	Question type	
			Upward	Downward
Health	Agency	.01	.23	.08
	Communion	-.06	-.19	-.12
	RISC	.11	.21	.01
Money	Agency	.11	.16	.02
	Communion	-.05	-.03	-.10
	RISC	.17	-.01	-.03
Accommodation	Agency	-.10	-.04	-.13
	Communion	-.10	.02	-.12
	RISC	.03	-.10	.12
Contribution-to-the-world	Agency	-.10	.01	.15
	Communion	-.22	.07	.13
	RISC	-.02	-.11	-.08

Coding Category	Scale	Question type		
		Standard	Upward	Downward
Daily Life	Agency	.15	.05	.18
	Communion	.06	-.04	-.13
	RISC	.00	-.13	-.15
Doing Things	Agency	.24	.28	.20
	Communion	.06	-.03	-.06
	RISC	-.01	-.13	-.08
Feelings	Agency	.05	-.02	-.16
	Communion	.03	.16	.09
	RISC	.10	.03	-.02
Job	Agency	.09	.10	.02
	Communion	.11	.10	-.05
	RISC	.06	-.16	-.02
Material Possessions	Agency	.11	-.02	-.13
	Communion	-.05	-.11	-.06
	RISC	.20	.02	-.12
Self-Qualities	Agency	.21	.14	-.13
	Communion	-.09	-.10	-.15
	RISC	-.29	-.21	-.02
Personal Theory	Agency	.11	.18	.27
	Communion	-.10	-.08	.03
	RISC	.04	.21	.01

Coding Category	Scale	Question type		
		Standard	Upward	Downward
Relationships-with-others	Agency	.03	-.06	-.01
	Communion	.10	.03	-.02
	RISC	.14	.00	.12
Use of Time	Agency	.27	.08	.25
	Communion	-.03	.22	.05
	RISC	.10	.08	.00

### Discussion

The present study examined the occurrence of 13 code categories: Relationships-with-others; Health; Money; Contribution-to-the-world; Doing Things; Daily Life; Personal Theory; Use of Time; Accommodation; Job; Material Possessions; Self-Qualities; Feelings; when participants thought aloud both their responses to the standard SWLS items and their responses when asked to consider a higher or lower score to those items. In terms of overall frequency Relationships-with-others, Job and Feelings were the top three code categories and a clear point of inflection meant that they stood apart from the other categories. The least frequent categories, overall, were Contribution-to-the-world and Material Possessions.

The Higher and Lower score questions provided the opportunity to identify whether considering a better or worse life brought to mind different information compared to considering one's present life. Some categories were found to be used to the same extent for all questions: Daily Life; Accommodation; Job; Material Possessions; Self-Qualities; Feelings and Relationships-with-others. In other words

once these areas of information were used in response to the SWL items they seemed to be equally relevant to a better or worse life. This group also contained the three most common code categories: Relationships-with-others, Job and Feelings. Their lack of variation between the question types also suggests that these three areas of information are persistently relevant to life satisfaction, whether it be judging one's present life or imagining a better or worse life. Six code categories, Health, Personal Theory, Contribution-to-the-world, Doing Things, Use of Time and Money were found to differ significantly in terms of their use across the three different questions types. However there may be reason to be cautious of these results. With a bonferroni-corrected  $p$  value of .004, to account for the 13 tests, only the use of Personal Theory and Use of Time would differ significantly.

Personal Theory was the only code category found that was more frequently used by participants when thinking about their present life than when thinking about a better or worse life. The Personal Theory code category represented the various broad schemas or world views that the participants brought to mind when contemplating life in general. This included assumptions about others, for example, "who does have an ideal life? Nobody" and one's general attitude towards life, for example, "things are never ideal because things can always be a bit better". Thus it can be suggested that when participants were asked about a better or worse life the information they brought to mind became more specific; abstract thoughts or broad descriptions were used to assess general life satisfaction. Thinking about one's life in an abstract way has been previously associated with life satisfaction judgements, it was found that greater abstraction was related to higher satisfaction (Updegraff & Suh, 2007). This was not found in the present study, the increased use of Personal

Theory was not found to be related to higher life satisfaction scores. The increased frequency of Use of Time related information when thinking of a more satisfying life suggests that how one's time is used and divided up, for example one's work-life balance or hobbies, was highly relevant to participants' ideas of a better life. Unlike other code categories Use of Time does not clearly map on to previously identified relevant areas of information (e.g., Mellor et al., 1999; Schimmack Diener & Oishi, 2002) or list theories of well-being.

The other code categories whose frequency differed with question type also warrant discussion, whilst being cautious due to the number of tests being conducted. Health was the only category found to be more frequently mentioned when thinking about a worse life, compared to a better life. This result may reflect the fact that individuals who are generally fit and well do not have their health at the forefront of their mind, but worsening health comes to mind when thinking about lower life satisfaction. Contribution-to-the-world, Doing Things, and Money were all found to be more common in response to the better life questions, compared to either the worse life questions (Contribution-to-the-world, Doing Things) or present life questions (Money). The Doing Things category related to achievements, goals, activity and progress, therefore the result suggests that this kind of information is more associated with improving, rather than worsening life satisfaction. As Contribution-to-the-world was found to be mentioned very rarely overall it may be particularly interesting that it should be mentioned more when considering a better life. The result suggests that there may be aspects of the Contribution-to-the-world category, defined as "an individual having an impact on something other than their personal life, such as the local community or wider issues", that for some people

relates to the idea of a more satisfying life. The increased frequency of Money when participants thought about a better life does not necessarily mean that participants felt that more money would make them more satisfied. As the code category also encompasses concerns about money for many a better life may simply be one without money worries, rather than huge riches. This result may also suggest that while money is considered relevant to improved life satisfaction people may be reluctant to explicitly mention money in relation to their present satisfaction. The importance of money can be considered a contentious issue in well-being research and evidence has been mixed with regards its importance to life satisfaction (Diener et al., 1999; Diener, Tay & Oishi, 2013; Lucas et al., 2008). That the Money code category was found to be moderately frequent overall suggests that it is considered a relevant source of information for a life satisfaction judgement.

No significant relationships were found between the SWLS score and the frequency of the code categories. These results suggest that using particular areas of information was not related to greater general life satisfaction. Participants who scored highly in terms of life satisfaction also scored highly in Agency and RISC. However while Communion was not found to be significantly related to SWL the size of the correlation was similar. Thus although a discrepant pattern was expected, due to the Communion and RISC scales measuring different aspects of relatedness, it was not found. Agency, Communion and RISC were also not found to be related to the use of particular code categories. This suggests that areas of information such as Relationships-with-others, that may have been expected to be more relevant to individuals with high scores in Communion or RISC, may be more universally important.

The results of the present study provide support for the importance of satisfaction in job and relationship domains to general life satisfaction which has previously been demonstrated by correlational studies (for example, Heller et al., 2006; McAdams et al., 2012; Schneider & Schimmack, 2010) and descriptive interview studies (Mellor et al., 1999). That these areas have been found to be relatively more frequent than others across studies using different methods and samples (such as Martikainen, 2008; Mellor et al., 1999) suggests a clear and persistent association of these areas with life satisfaction. Furthermore in the present study the use of Relationships-with-others did not increase with trait measures (Communion and RISC), supporting the idea that this is a universally important area for life satisfaction.

There are a number of limitations of the present study, however. One limitation is that the code categories do not assess the valence of the information present. For example, regarding aspects of Relationships-with-others, the use of positive information (e.g., "I've got a lovely family") or negative information (e.g., "my relationships with my family got worse") was not differentiated. This limitation may explain the lack of relationship between the traits of RISC, Communion and the Relationships-with-others code category. It is likely that any individuals with high RISC or Communion scores who brought to mind negatively valenced Relationships-with-others information would have low life satisfaction as a result. Put another way the use of information reflected by the code categories does not reflect whether this information increases or decreases life satisfaction. Along similar lines the importance or relevance of the code categories to life satisfaction was established by comparing the relative frequencies, as previously demonstrated

by Mellor et al., (1999). For example Relationships-with-others was more frequent than Contribution-to-the-world, which implies greater importance. However the ease and frequency with which information is brought to mind may not necessarily reflect the importance of that information.

The Think Aloud methodology used in the current study may not be an accurate proxy for the processes that actually occur when completing the SWLS. The SWLS is usually a 5-item measure with Likert scales that can be answered in less than a minute (Diener et al, 2000). Thinking Aloud was used to avoid retrospection, encourage a more “on-line” assessment and to minimise any modification of the cognitive processes caused by introspection. However, arguably, it is not clear that the resulting cognitive processes are the same as those used when completing the scale in the usual way. Fast scale assessments may essentially be a conceptually different kind of life satisfaction judgement to one which allows more time and thought.

A further limitation of the present study is that the interview involved the participant responding to the five SWLS items one after another. An important issue in terms of information use in judgements is the effect of “conversational norms” in which participants automatically assume that individual questions are part of the same conversation and as such each is considered to be asking for new information (Schwarz, Strack & Mai, 1991). In the context of the present study this implies that having brought certain information to mind in response to the first question, the subsequent question would illicit new information. The possible influence of this effect is exacerbated by the coding process as the frequencies of the code categories represent the whether or not each category was present in the response to each item.

Conversational norms could therefore have two effects: the frequency of highly relevant information may be artificially decreased if it was mentioned in response to the first question and then not brought up in further responses; the frequency of some information may be artificially increased if it is mentioned due to the perceived need for new information rather than being truly relevant. However the possible effects of conversational norms should have been counteracted by some of the methodological aspects of the study. The Think Aloud process, which encouraged participants to say aloud whatever came to mind and discouraged self-monitoring (Ericsson & Fox, 2011), should have ensured that participants restated the information brought to mind regardless of potential repetition. Furthermore the code categories were deliberately broad and this means that participants may have mentioned information that they considered different but was actually encompassed by one code category. For example: simply having relationships, “Um I’m thinking of friends”, may be an initial response to the first item whereas the quality of relationships may be brought up in response to later questions, “I have support from other people and friends”. The nature of the SWLS items may also minimise any effect of conversational norms in that they are all general, rather than specific, statements and the effects tend to be strongest with specific questions that follow general questions (Schwarz, Strack & Mai, 1991). Finally, and most importantly, the intention of the 5-item SWLS was to encourage participants to access different information that in combination relates to an overall judgement (Diener et al., 1985). As such it should be expected that participants do not necessarily use the same information in response to each item.

A similar limitation is that the higher and lower questions were not counterbalanced. All participants were asked to consider a better life followed by a

worse life. It is therefore possible that differences in information use between the question types could be attributed to the question order, rather than a genuine difference in relevant information. Previous studies using open-ended questions have both used (e.g., Mellor et al., 1999) and not used (e.g., Martikainen, 2008) counterbalancing when asking valenced questions concerning life satisfaction. The order of the higher and lower questions may have resulted in a tendency to consider the worse life as the opposite of the better life, in other words to refer to the absence of certain circumstances in a worse life that had already been brought to mind for a better life.

The 13 code categories may also be limited in terms of their generalisability. The current sample lacked ethnic diversity and also consisted mainly of mature employed individuals. However overlap between the information used by the middle aged sample in the present sample and that used by a student sample in a different study (Mellor et al., 1999) suggests the code categories are not limited to the life satisfaction of mature adults. Further compared to previous studies (Martikainen, 2008; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002) the 13 code categories account for a much broader array of information.

The identification of code categories that appeared to be more relevant to a life with higher life satisfaction may provide useful routes for interventions and public policy. While it can be argued that individuals themselves may not be the best people to suggest what would make their lives more satisfying, the present study suggests both eudaimonic (Contribution-to-the-world, Doing Things) and material aspects (Money). Assuming that individuals are the best judges of their satisfaction

then these routes can also be investigated on the basis that they are part of real life conceptions of how to improve life satisfaction.

The Think Aloud process may result in a conceptually different judgement process occurring, compared to the fast completion of the standard SWLS scale. Trent and King (2010) found that making a judgement thoughtfully or rapidly moderated the use of information in a Meaning in Life (MIL) judgement, a judgement assumed to be similar to that for SWL (Trent & King, 2010). MIL, like satisfaction with life, is a subjective measure of a broad concept and as such the cognitive processes involved in both kinds of judgements are thought to be similar (Trent & King, 2010). Thus, to address a limitation of the present study, it should be established whether the act of making a life satisfaction judgement rapidly or taking one's time affects the use of information. In other words the act of verbalising the response may slow the judgement down producing an apparently measured and considered judgement. To this end the circumstances that yield considered and accurate life satisfaction judgement should be established. Study 2 seeks to address this issue.

The issue of whether or not the present study addresses the idea of weighting of information was a further limitation. A key aspect of the measurement of life satisfaction is that an individual should be able to "determine their own criteria for inclusion in the judgement process, and to weight them in the manner they choose" (Pavot & Diener, 2008, p.140). However the present study and previous studies (Mellor et al., 1999; Schimmack, Diener & Oishi, 2002) have relied on comparing occurrences of used information rather than establishing whether certain domains are considered more important, and therefore carry more weight than others. A further

area of research is whether the valence of the information, also not measured in the present study, affects the weighting. For example, is positive relationship information given more weight than negative money information? Study 3 seeks to address this area of interest.

In summary when people consider their life satisfaction Relationships-with-others, Job and Feelings tend to be the main areas of information that come to mind. Some areas of information appear to be more relevant when thinking about a better or worse life. Use of Time was brought to mind more frequently in response to the better life question, suggesting an association between how one uses one's time and the idea of a more satisfying life. Personal Theory was more commonly used in response to the general questions suggesting the use of more abstract thoughts, generalisations and clichés when one assesses one's general life satisfaction. Further differences in information use according to question type were theoretically interesting, but the risk of Type I error to multiple testing and the failure of some of the effects to survive the, albeit very stringent, bonferroni correction, suggests caution in interpreting these differences. In line with some eudaimonic theories of well-being Contribution-to-the-world and Doing Things were brought to mind more when people thought about a more satisfying life. However Money was also associated with a better life, supporting recent research suggesting that income and finances are more importance to life satisfaction than first thought (Diener et al., 2013). For a sample that was, presumably, relatively fit and well Health seemed to be more strongly associated with the idea of a less satisfying life. The present study provided evidence that life satisfaction judgements, in the context of the study, are considered and reportable judgements that use bottom-up life domain information.

## Chapter 5

### **Study 2: Does the speed of a life satisfaction judgement influence the information used?**

The results of Study 1 provide support for the idea that life satisfaction judgements are thoughtful, considered and use bottom up information. However, it can be argued that the novel methodology artificially slowed down the judgement. If the information used in SWL judgements is moderated by the speed of the judgement then investigative methods that cause the judgement to be slowed down would only be revealing information specific to that type of judgement. The findings would therefore not be generalisable to the faster judgement processes expected to occur under normal circumstances. Importantly a moderating effect of the speed of a judgement on information use has been found for meaning in life (MIL) judgements (Trent & King, 2010). MIL is, like satisfaction with life, a subjective measure of a broad concept and as such the cognitive processes involved in both kinds of judgements are thought to be similar (Trent & King, 2010). Establishing whether a similar moderation effect occurs for SWL would address the potential limitation of the Study 1 methodology.

Trent and King (2010) asked student participants to complete an 8 item measure of MIL which included items such as, ‘I have a system of values and beliefs that guide my daily activities’; ‘I feel I have found a really significant meaning in my life’; ‘In my life, I have clear goals and aims’. Participants indicated their agreement to the items on a 7-point scale ranging from 1 (not at all) to 7 (extremely). The participants were randomly assigned to groups with different instructions.

Participants were asked to either respond to the MIL items as fast as possible (“...please read each of the following items and ANSWER AS QUICKLY AS POSSIBLE!”), Trent & King, 2010, p.442), or thoughtfully, taking their time and fully considering their responses (“...please read each of the following items very carefully. Take your time and really think about each question and indicate how true it is for you. Try your best to give the most accurate answer possible that is the best indication of who you really are”, Trent & King, 2010, p.442). Trent and King (2010) also obtained participants’ scores in measures of potential sources of information, namely positive affect (PA) and the satisfaction of basic needs relevant to well-being (Ryan & Deci, 2000). The measure of state positive affect, the participants’ mood “right now”, was included as a possible information source because high positive mood had been consistently shown to be related to high MIL (Hicks & King, 2008, 2009). Trent and King (2010) also included measures of three basic needs, relatedness, competence and autonomy, that are considered essential for optimal functioning, social development and personal well-being (Ryan & Deci, 2000). These were thought to represent more “enduring sources of meaning” (Trent & King, 2010, p.440) than current mood.

Trent and King (2010) found that PA was a better predictor of MIL for participants in the thoughtful group, that is, those who took longer to think about their responses. The relationship between MIL and two of the basic needs, autonomy and relatedness, was stronger in the fast-thinking condition. These results can be considered surprising as the use of mood as information is often considered to be a mental shortcut or heuristic (Schwarz, 2012). As such it would be expected that PA would serve as a heuristic for MIL when thinking time was limited and that more

enduring sources of meaning, such as needs, would be used as sources when time allowed. The unexpected results were explained by Trent and King (2010) with speculation about the information that may have come to mind first as the participants responded to the MIL scale. Trent and King (2010) explained that the information relating to the basic needs of autonomy and relatedness came to mind first, as it was most immediately relevant to MIL, and as such was used in the rapid assessment. According to Trent and King (2010) in a thoughtful judgement this information was then discounted in favour of the positive affect information. With reference to the consistent relationship that has been demonstrated between PA and MIL Trent and King (2010) asserted that in a more thoughtful judgement PA may serve as a “bottom line” or summary of whether one experiences meaning.

Trent and King's (2010) findings regarding MIL judgements can be clearly related to the aforementioned limitation of Study 1. If the use of information in life satisfaction judgements varies according to the speed of the judgement then conclusions based on studies that actively slow down the judgement may be called into question. Furthermore if the speed of the judgement moderates the information used in a life satisfaction judgement then this could also explain the mixed evidence relating to the idea that life satisfaction judgements are not carefully considered. Some studies have shown that life satisfaction assessments can be manipulated by temporarily accessible information. The influence of earlier questions, the weather, finding a small sum of money, and mood manipulations, suggests that the judgement is made on the spot and is based on temporarily available information (Fox & Kahnemann, 1992; Schwarz & Clore, 1983; Schwarz & Strack, 1999). Schimmack and Oishi (2005) showed that although they could not replicate some previously

found item-order effects, temporarily accessible information did have an effect in some situations but not others; such effects were more likely for single item measures of satisfaction or for measures that focussed on short time periods such as monthly satisfaction, rather than global life satisfaction. It is possible that a fast judgement is a further situation in which temporarily accessible information is used and the judgement is not carefully considered.

Given the potential similarity between MIL and SWLS judgements the methodology used by Trent and King (2010) was used in the present study. To measure the extent to which the basic needs of relatedness, competence and autonomy were met in one's life Trent and King (2010) used the General Need Satisfaction Scale (Gagne, 2003). This measure asked participants how true certain items were for them, in their life at the moment. Items for relatedness, for example, include: "I really like the people I interact with" and "I get along with people I come into contact with". It can be reasonably assumed that participants are basing their responses to the items on their current life circumstances. As such the measure represents satisfaction in specific areas of one's life. The General Need Satisfaction Scale (Gagne, 2003) was therefore used in the present study to represent bottom up life information, rather than asking participants to rate their satisfaction in specific life domains.

In terms of life satisfaction there is conflicting evidence as to the contribution one's current mood makes to a life satisfaction judgement. Gärling and Gamble (2012) found that when measured before the life satisfaction judgement, as opposed to after, current mood was found to not be significantly correlated with life satisfaction. This result suggested that current mood was not used in the judgement.

On the other hand Schimmack, Diener and Oishi (2002) found that not only did participants report using their current mood but that, when measured before life satisfaction, it did correlate with their life satisfaction score. Furthermore it was demonstrated that the source of the mood determines the extent of its relationship with life satisfaction: a positive mood that results from thinking about positive life circumstances has a greater relationship with life satisfaction than a positive mood induced by success in a task (Gärling & Gamble, 2012). A measure of trait mood has been shown to be more consistently related to life satisfaction than is current mood (Schimmack, Radhakrishnan, et al., 2002; Suh, Diener, Oishi, & Triandis, 1998). This can be explained by general emotion measures reflecting a semantic emotion knowledge that is separate from the episodic emotion knowledge used when responding to more specific state emotion questions (Robinson & Barrett, 2010; Robinson & Clore, 2002). Put another way, more general emotion questions reflect beliefs about ones' self, whereas specific emotion questions, such as those concerning current positive affect, reflect a retrieval of episodic information. This explanation assumes that traits contribute more to an assessment of life satisfaction than does the information from one's current mood. To establish whether the relationship of state and trait mood with life satisfaction differed with the speed of the judgment measures of trait positive feelings were included in the present study as well as a measure of state PA, as used by (Trent & King, 2010).

Depending on how great the similarity is between SWL and MIL the same results could be expected in the present study as were found by Trent and King (2010), in which case state PA would be expected to be a better predictor of SWLS for the thoughtful group. An alternative prediction can be made however as the

relationship between current mood and SWL is less robust than the relationship between mood and MIL (Schimmack, Radhakrishnan, et al., 2002; Suh et al., 1998). As such participants may not consider state PA to be highly relevant or accurate information for a life satisfaction judgement. This idea predicts that PA would have a greater relationship with SWL in the rapid condition compared to the thoughtful. This prediction is also supported by mood as information research which has found that affective feelings are more likely to be used as information when processing motivation is low, for example, when time pressure is high (Greifeneder et al., 2011). Based on the Trent and King (2010) results the measures of basic needs would be the stronger predictors of SWL in the fast-thinking condition. Alternative predictions can be made however if state PA is the first information to come to mind in response to SWL. Given more time the bottom up life information represented by the measures of basic needs should be considered and this would result in a stronger relationship between the domain information and SWL in the thoughtful compared to the rapid condition. Trent and King (2010) did not include a measure of trait feelings. A consistent relationship has been shown between general, trait mood and SWL. Also, beliefs about the self may be the first thoughts to come to mind and the most accessible. It can therefore be predicted that the measures of trait feelings are likely to be the most relevant information to SWL and therefore have a similar relationship to SWL in both the rapid and thoughtful conditions.

### **Aims and Objectives**

The aim of the present study was to examine whether the length of time spent thinking about the items from the SWLS influenced the information used in the judgement. Measures of state positive affect, basic needs satisfaction and general,

trait positive affect represented the possible sources of mood, life domain information and beliefs about one's self, respectively. The following predictions were made:

- 1) Following Trent and King (2010), State PA should be more strongly related to SWL in the thoughtful condition; however there are reasons why PA could be more strongly related to SWL in the rapid condition.
- 2) Following Trent and King (2010) autonomy, competence and relatedness should be more strongly related to SWL in the rapid condition; again however there are reasons why autonomy, competence and relatedness could be more strongly related to SWL in the thoughtful condition.
- 3) The relationship between Trait PA and SWL should not vary with condition.

## **Method**

### **Participants**

A sample of 118 participants (79 female, 39 male) with an age range of 18 - 63 years ( $M = 31$  years,  $SD = 11.19$ ) were recruited online. The participants were all unpaid volunteers who responded to requests for participants posted on experiment recruitment websites and their associated mailing lists, Facebook groups and Twitter feeds. Specifically the following websites were used: Psychological Research on the Net (sponsored by Hanover College Psychology Department); the Social Psychology Network (maintained by Wesleyan University); Web Experiment List (hosted by Universidad Deusto); the Psychology Postgraduate Affairs Group, and Science in the Pub. The sample consisted of 84 respondents (71.2%) who identified as White or White British, 14 (11.9%) as Black or Black British, 7 (5.9%) as Mixed Ethnicity, 5

(4.2%) as Asian or Asian British, 6 (5.1%) as “Other Ethnicity – not specified”, and 2 participants chose not to answer the question regarding ethnicity. For a medium effect size, with alpha of .05, the sample of 118 provided a power of .95 for the main regression analyses.

One hundred and twenty nine participants completed the online procedure. An initial screening process was used to identify participants who may not have been fully focussed on the task. One participant, for example, took 23451 seconds to respond to a single item, indicating that they had left the web page open for a number of hours before returning and completing the tasks! In order to identify similar, but less extreme, behaviour a maximum reaction time (RT) of 60 seconds was set for any individual item; 60 seconds is a commonly used cut-off point in cued response studies (e.g., Williams & Broadbent, 1986). Nine participants were excluded. Following this screening process the RT's were then averaged across all five SWLS items to create an average RT. Two participants with outlying average RT (3 standard deviations greater than the mean) were identified and removed to correct the significant skew identified by exploratory data analysis (Field, 2009).

## **Materials**

The study was conducted entirely online using a specially written programme and included the following measures:

**Satisfaction with Life Scale.** (SWLS; Diener et al., 1985) The SWLS is described in Chapter 3, p 90. In the present study the scale had high reliability,  $\alpha = .84$ .

**State Positive Affect.** (Diener & Emmons, 1984). Four positive mood adjectives, happy, pleased, enjoyment/ fun, joyful were used to measure state PA. In

previous studies this scale has shown high and acceptable internal consistency ( $\alpha = .89$ , Diener & Emmons, 1984;  $\alpha = .76$ , Trent & King, 2010) and acceptable temporal stability (.79 across a 3 week interval, Diener & Emmons, 1984). In the present study the scale had high reliability,  $\alpha = .88$ . While enjoyment/ fun differed from the other adjectives in terms of tense it was confirmed that the reliability of the scale was not improved if this item was excluded ( $\alpha$  if deleted = .87). Participants were asked to indicate “to what extent you feel this way today” on a 7 point scale which had the 2 extremes and mid-point labelled: 1 (*Not at all*), 4 (*Moderate*), 7 (*Extremely*). The responses for each item were summed resulting in a minimum score of 4 and a maximum score of 28.

**Basic Need Satisfaction.** (BNS; Gagne, 2003). The participants responded to 21 items comprising 3 sub-scales assessing one’s need for autonomy (7 items e.g., I feel like I am free to decide for myself how to live my life), competence (8 items e.g., Most days I feel a sense of accomplishment from what I do) and relatedness (6 items e.g., People in my life care about me). Participants were asked to read the statements and indicate “how true it is for you” on a 7 point scale with the 2 extremes and mid-point labelled: 1 (*Not at all true*), 4 (*Somewhat true*), 7 (*Very true*). The responses for each sub-scale were averaged resulting in a minimum score of 1 and a maximum score of 7. Each subscale has been found to have adequate to good internal consistency (autonomy,  $\alpha = .69$ ; competence,  $\alpha = .71$ ; relatedness,  $\alpha = .86$ ; Gagne, 2003), although Trent and King (2010) found lower reliability (autonomy,  $\alpha = .47$ ; competence;  $\alpha = .65$ ; relatedness  $\alpha = .71$ ). In the present study all three scales had acceptable reliability: autonomy,  $\alpha = .73$ ; competence,  $\alpha = .72$ ; relatedness,  $\alpha = .78$ .

**Trait Positive Affect.** In an attempt to assess broad positive trait affect or mood, rather than purely positive activation or arousal, the present study used items from the PANAS X (Watson & Clark, 1994). The PANAS X contains 60 items representing feelings or emotions which form 13 sub-scales, two of which are the general dimensions of positive and negative affect (PANAS, Watson et al., 1988). Whilst the PANAS has been found to be highly reliable it has come under criticism for a bias towards high activation (or arousal) terms, and also for using items that are not considered emotions or feelings, for example *active* and *strong* (Diener et al., 2010; Vella-Brodrick et al., 2009). Of the 11, equally reliable, lower-order scales that also comprise the PANAS X, three measure basic positive emotions (Joviality, Self-assurance, Attentiveness) and two measure other positive affective states (Serenity, Surprise). The scales for Self-Assurance (e.g., bold, daring), Attentiveness (e.g., concentrating, determined) and Surprise (e.g., amazed, astonished) represent very specific emotional states that do not reflect the more broad positive trait required for the present study. The Joviality scale contains eight items, four that reflect general positive feelings (happy, joyful, delighted, cheerful), two items that are included in the PANAS (excited, enthusiastic) and a further two that may also represent high activation (lively, energetic). The Serenity scale represents positive emotions that can be considered to have low activation or arousal status (calm, relaxed, at ease). Thus in the present study the three items that comprise the Serenity scale were combined with the four general positive feelings that assess Joviality (delighted, cheerful, happy, joyful) creating a broad positive trait measure. The resulting seven item measure had high internal reliability in the present study ( $\alpha = .88$ ). To respond to each item participants were asked to “indicate to what extent you feel this way in general, that is, on average” on a 5 point scale: 1 - *Very slightly or*

*not at all*, 2 - *A little*, 3 - *Moderately*, 4 - *Quite a bit*, 5 - *Extremely*. The scores for each item were summed making the minimum and maximum scores for the two scales 7 and 35 respectively.

## **Procedure**

As the study was on-line participants were prevented from proceeding to the questionnaire screens unless they had agreed to the informed consent questions and confirmed that they were over 18.

Participants were then asked to read an instruction page that gave specific directions regarding how to complete the SWLS (Diener et al., 1985). The directions differed according to the randomly assigned control, rapid or thoughtful condition. Those in the control condition were presented with the following initial instructions:

You will now be shown 5 statements, one at a time, which you may agree or disagree with.

Using the scale provided indicate your agreement with each item.

In the rapid condition the participants were presented with the following initial instructions (emboldened text was used as shown):

You will now be shown five statements, one at a time, which you may agree or disagree with.

It is sometimes possible to spend some time thinking about your responses but in this study we are interested in the **FIRST RESPONSE THAT COMES TO MIND**.

Please read each statement and answer **AS QUICKLY AS POSSIBLE**.

You will be reminded to answer as quickly as possible before each statement as it is very important that you give the first response that comes to mind.

Using the scale provided indicate your agreement with each item.

In the thoughtful condition the participants were presented with the following initial instructions:

You will now be shown five statements, one at a time, which you may agree or disagree with.

It's often possible to make quick judgements about these statements but here we would like you to **GIVE IT LOTS OF THOUGHT AND TAKE YOUR TIME** to make sure that you choose the best fitting answer for you before making a judgement. Don't just select the first response that comes to mind.

You will be reminded to think carefully before each statement as it is very important that you take your time to consider your response.

Using the scale provided indicate your agreement with each item.

Following the initial instruction page the items from the SWLS were presented in the following order: In most ways my life is close to my ideal; The conditions of my life are excellent; I am satisfied with my life; So far I have gotten the important things I want in life; If I could live my life over, I would change almost nothing. As shown in Figure 5.1 each item was presented on an individual page, with the response scale, accompanied by reminder instructions for the relevant condition at the top of each page. The control condition had the following reminder instructions on each page:

Using the 1- 7 scale that will appear please indicate your agreement with the statement below.  
Please be open and honest in your responding.

The rapid condition had the following reminder instructions on each page (capital letters were used for emphasis as shown):

**QUICKLY CHOOSE THE FIRST  
RESPONSE THAT COMES TO MIND**

**Figure 5.1. Response scale and reminder instructions for the thoughtful condition**

TAKE YOUR TIME AND THINK ABOUT IT CAREFULLY BEFORE SELECTING A RESPONSE

In most ways my life is close to my ideal.						
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next

The thoughtful condition had the following reminder instructions on each page:

TAKE YOUR TIME AND THINK  
ABOUT IT CAREFULLY BEFORE  
SELECTING A RESPONSE.

Reaction times (RT, in seconds) were recorded for the time taken to respond to each SWLS item. The time was measured from the revealing of the item page to when the participant clicked the “next” button. Participants were prevented from proceeding to the next item unless they had chosen a response from the scale provided. The final SWLS item was followed by a timed anagram distracter task. After completing the anagram task participants completed the State Positive Affect, Basic Need Satisfaction and Trait Positive Affect measures, in that order and presented on separate pages.

## Results

### Demographic distribution

A one way ANOVA indicated that there was no significant difference between the experimental conditions: control (N = 40), rapid (N = 30) and thoughtful (N = 48) in terms of the age of the participants,  $F < 1$ . The sample mainly consisted of participants who identified as White or White British (68.7%) and it was statistically necessary to combine the small number of people in each of the other ethnic groups. Ethnic diversity did not significantly differ between experimental groups,  $\chi^2 = 2.56$ ,  $df = 2$ ,  $p = .28$ ,  $V = .20$ . The distribution of gender was also found not to differ between the groups,  $\chi^2 = .14$ ,  $df = 2$ ,  $p = .93$ ,  $V = .05$ .

### Manipulation check

A one way ANOVA on the mean RT's found that the experimental manipulation produced differences between the three groups ( $F(2,115) = 4.67$ ,  $p = .01$ ,  $\eta^2 = .08$ ). The means, and the results of Bonferroni post-hoc tests, are presented in Table 5.1. The Thoughtful and Rapid conditions differed significantly from each

other but neither condition showed a significant deviation from the control group. The manipulation therefore worked in terms of separating the Thoughtful and Rapid groups from each other, in the expected direction, although not from the baseline control.

**Table 5.1. Means, standard deviations (SD) and pairwise comparisons of the average RT (in seconds) for each condition**

	Condition		
	Thoughtful	Control	Rapid
Average RT	10.53 <sup>a</sup>	8.80 <sup>ab</sup>	7.39 <sup>b</sup>
(SD)	(5.35)	(4.23)	(3.14)

Note. Similar means share superscripts horizontally, means differ at the  $p < .05$  level.

### Variable scores between groups

Table 5.2 displays the means and standard deviations of the continuous variables. All of the variables were found to be normally distributed with no univariate outliers. One way ANOVAS confirmed that none of the variables varied according to condition: Autonomy,  $F < 1$ ; Competence,  $F < 1$ ; Relatedness,  $F < 1$ ; State PA,  $F < 1$ ; Trait PA,  $F < 1$ . These results indicate that, as hoped, the manipulation did not exert an influence on the measures of Basic Needs (autonomy, competence, relatedness) and state and trait feelings that were measured after the anagram distracter task. The mean and standard deviations of the SWLS scores, according to condition, are also shown in Table 5.2. A one way ANOVA confirmed that the manipulation did not affect the SWLS scores,  $F(2,115) = 2.14$ ,  $p = .12$ ,  $\eta^2 = .04$ ).

**Table 5.2. Means and standard deviations (SD) of the continuous variables**

Variable	Condition					
	Control (N = 40)		Thoughtful (N = 48)		Rapid (N = 30)	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Autonomy	4.71	(.86)	4.71	(.87)	4.75	(1.33)
Competence	5.00	(1.10)	4.78	(1.05)	4.88	(1.20)
Relatedness	5.37	(.88)	5.30	(.92)	5.16	(.99)
State PA	12.03	(3.52)	11.73	(3.70)	11.67	(4.04)
Trait PA	23.13	(4.55)	22.42	(5.54)	22.20	(5.36)
SWLS	23.83	(5.51)	20.90	(6.72)	21.53	(8.35)

**Correlations between variables**

The correlations between all the continuous variables across the entire sample are shown in Table 5.3. All of the predictor variables, representing relevant sources of information to the life satisfaction judgement, were shown to be significantly correlated with SWL and with each other.

**Table 5.3. Correlations between all the continuous variables across the full sample**

Variable	Autonomy	Competence	Relatedness	State PA	Trait PA
SWLS	.41*	.50*	.53*	.45*	.52*
Autonomy		.49*	.47*	.28*	.43*
Competence			.51*	.42*	.45*
Relatedness				.38*	.50*
State PA					.54*

Note. \* Correlations significant at the  $< .002$  level, N=118

### **Main Analyses - the moderating effect of group**

Following Trent and King (2010) a separate hierarchical regression for each predictor variable was used to examine the effects of condition on each potential source used to judge SWL. All the predictor variables were centred around their mean. A dummy variable, "Group", was created to represent the three different conditions: participants in the Rapid group were assigned +1, those in the Thoughtful group were assigned -1, those in the Control group were assigned 0. The interaction between the condition and the predictor variables was represented by the product of the predictor variable score with the dummy variable. For the first step of each hierarchical regression the SWLS scores were regressed on to each predictor variable and the dummy variable representing the conditions. This was followed by an interaction score in the second step. Assumptions were evaluated for each regression.

All regressions met the assumptions for normality, linearity, homoscedasticity and multicollinearity. Cook's distances were within the expected boundary.

The results in Table 5.4 show that Autonomy and the group explained a significant amount of variance in SWL score, accounting for 17% of the variance in SWL. The partial regression coefficients showed that a high Autonomy score predicted higher SWL. Adding the interaction term in the second step did not result in a significant change. Thinking rapidly or thoughtfully about SWL did not affect the relationship between Autonomy and SWL.

**Table 5.4. Multiple hierarchical regression predicting SWL from Autonomy and experimental condition**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .17$ ( $p < .001$ )								
Autonomy	2.84	.58	.41	<.001	2.94	.59	.43	<.001
Condition	.473	.73	.06	.52	.48	.73	.06	.52
Model 2								
<b><math>R^2 = .18</math>, <math>R^2</math> change = .007</b> ( $p = .31$ )								
Autonomy x Condition					-.70	.68	-.09	.31

The results of the regression for Relatedness are presented in Table 5.5. Relatedness and group accounted for 29% of the variance in SWL. The partial regression coefficients showed that Relatedness made a unique and significant contribution to a SWL with high Relatedness predicting high SWL. Again adding the interaction term in the second step did not result in a significant change. Thinking rapidly or thoughtfully about SWL did not affect the relationship between Relatedness and SWL.

**Table 5.5. Multiple hierarchical regression predicting SWL from Relatedness and experimental condition**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .29$ ( $p < .001$ )								
Relatedness	3.96	.58	.53	<.001	4.04	.59	.54	<.001
Condition	.76	.68	.09	.27	.80	.67	.09	.24
Model 2								
<b><math>R^2 = .29</math>, <math>R^2</math> change = .007 (<math>p = .29</math>)</b>								
Relatedness x Condition					.75	.71	.08	.29

The results in Table 5.6 show that Competence and group accounted for 25% of the variance in SWL. It was found that a high Competence score predicted higher SWL. Again adding the interaction term in the second step did not result in a significant change. Thinking rapidly or thoughtfully about SWL did not affect the relationship between Relatedness and SWL.

**Table 5.6. Multiple hierarchical regression predicting SWL from Competence and experimental condition**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .25$ ( $p < .001$ )								
Competence	3.12	.50	.50	<.001	3.15	.51	.51	<.001
Condition	.35	.69	.04	.62	.36	.69	.04	.61
Model 2								
<b><math>R^2 = .26</math>, <math>R^2</math> change = .002 (<math>p = .54</math>)</b>								
Competence x Condition					.38	.62	.05	.54

Table 5.7 presents results demonstrating that State PA and group account for 21% of the variance in SWL. The partial regression coefficients showed that a higher State PA score predicted higher SWL. Adding the interaction term in the second step did not result in a significant difference. Thinking rapidly or thoughtfully about SWL did not affect the relationship between State PA and SWL.

**Table 5.7. Multiple hierarchical regression predicting SWL from State PA and experimental condition**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .21$ ( $p < .001$ )								
State PA	.84	.15	.45	<.001	.84	.16	.45	<.001
Condition	.53	.71	.06	.45	.53	.72	.06	.46
Model 2								
<b><math>R^2 = .21</math>, <math>R^2</math> change = .000 (<math>p = .98</math>)</b>								
State PA x Condition					-.00	.19	-.00	.98

Trait PA and group were found to account for 27% of the variance in SWL, and these results are presented in Table 5.8. High Trait PA predicted high SWL.

Adding the interaction term in the second step did not result in a significant change, although the partial regression coefficient approached significance. The time spent thinking about SWL did not moderate the relationship between Trait PA and SWL.

**Table 5.8. Multiple hierarchical regression predicting SWL from Trait PA and experimental condition**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .27$ ( $p < .001$ )								
Trait PA	.69	.11	.52	<.001	.74	.11	.55	<.001
Condition	.56	.68	.07	.41	.63	.68	.07	.36
Model 2								
<b><math>R^2 = .29</math>, <math>R^2</math> change = .021</b> ( $p = .07$ )								
Trait PA x Condition					.23	.13	.15	.07

To account for the finding that the mean RT's of the Rapid and Thoughtful conditions differed significantly from each other but did not differ from the control condition the regressions were re-run with the control condition excluded in order to contrast the rapid and thoughtful groups. For a medium affect size, with alpha of .05, the sample size of 78 provided a power of .81. Again all the continuous variables were centred around their mean and the interaction between the condition and the

predictor variables was represented by the product of the predictor variable score with the condition variable which assigned -1 to the Thoughtful condition and 1 to the Rapid condition. Assumptions were evaluated for each regression. All regressions met the assumptions for normality, linearity, homoscedasticity and multicollinearity. Cook's distances were within the expected boundary.

The results in Table 5.9 show that Autonomy and the group explained a significant amount of variance in SWL score, accounting for 18% of the variance in SWL. The partial regression coefficients showed that a high Autonomy score predicted higher SWL. Adding the interaction term in the second step did not result in a significant change. Thinking rapidly or thoughtfully about SWL did not affect the relationship between Autonomy and SWL.

**Table 5.9. Multiple hierarchical regression predicting SWL from Autonomy and experimental condition (with control group excluded)**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .18$ ( $p < .001$ )								
Autonomy	2.87	.72	.42	<.001	3.00	.74	.44	<.001
Condition	-.26	.79	.03	.75	.26	.79	.03	.75
Model 2								
<b><math>R^2 = .19</math>, <math>R^2</math> change = .01</b> ( $p = .35$ )								
Autonomy x Condition					.69	.74	-.10	.35

The results of the regression for Relatedness are presented in Table 5.10. Relatedness and group accounted for 29% of the variance in SWL. The partial regression coefficients showed that Relatedness made a unique and significant contribution to a SWL with high Relatedness predicting high SWL. Again adding the interaction term in the second step did not result in a significant change. Thinking rapidly or thoughtfully about SWL did not affect the relationship between Relatedness and SWL.

**Table 5.10. Multiple hierarchical regression predicting SWL from Relatedness and experimental condition (with control group excluded)**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .29$ ( $p < .001$ )								
Relatedness	4.17	.76	-.54	<.001	4.30	.77	.55	<.001
Condition	.61	.73	-.08	.41	.63	.73	.08	.40
Model 2								
<b><math>R^2 = .30</math>, <math>R^2</math> change = .01 (<math>p = .34</math>)</b>								
Relatedness x Condition					.75	.77	.10	.34

The results in Table 5.11 show that Competence and group accounted for 22% of the variance in SWL. It was found that a high Competence score predicted higher SWL. Again adding the interaction term in the second step did not result in a significant change. Thinking rapidly or thoughtfully about SWL did not affect the relationship between Relatedness and SWL.

**Table 5.11. Multiple hierarchical regression predicting SWL from Competence and experimental condition (with control group excluded)**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .22$ ( $p < .001$ )								
Competence	3.13	.68	.47	<.001	3.17	.68	.48	<.001
Condition	.16	.76	.02	.83	.16	.77	.02	.84
Model 2								
<b><math>R^2 = .23</math>, <math>R^2</math> change = .004 (<math>p = .55</math>)</b>								
Competence x Condition					.41	.68	.06	.55

Table 5.12 presents results demonstrating that State PA and group account for 23% of the variance in SWL. The partial regression coefficients showed that a higher State PA score predicted higher SWL. Adding the interaction term in the second step did not result in a significant difference. Thinking rapidly or thoughtfully about SWL did not affect the relationship between State PA and SWL.

**Table 5.12. Multiple hierarchical regression predicting SWL from State PA and experimental condition (with control group excluded)**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .23$ ( $p < .001$ )								
State PA	.92	.20	.48	<.001	.92	.20	.48	<.001
Condition	.35	.76	.05	.65	.35	.77	.05	.65
Model 2								
<b><math>R^2 = .23</math>, <math>R^2</math> change = .00 (<math>p = .97</math>)</b>								
State PA x Condition					.01	.20	.00	.97

Trait PA and group were found to account for 24% of the variance in SWL, and these results are presented in Table 5.13. High Trait PA predicted high SWL. Adding the interaction terms in the second step did not result in a significant change and the partial regression coefficient clearly did not show a significant relationship with SWL. The time spent thinking about SWL did not moderate the relationship between Trait PA and SWL.

**Table 5.13 Multiple hierarchical regression predicting SWL from Trait PA and experimental condition (with control group excluded)**

	Model 1				Model 2			
	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1								
$R^2 = .24$ ( $p < .001$ )								
Trait PA	.66	.12	.49	<.001	.72	.14	.53	<.001
Condition	.39	.76	.05	.61	.40	.75	.05	.59
Model 2								
<b><math>R^2 = .27</math>, <math>R^2</math> change = .03 (<math>p = .11</math>)</b>								
Trait PA x Condition					.22	.14	.17	.11

## Discussion

The present study found that all the measured information sources were related to SWL. A participant's SWL score increased with Autonomy, Competence, Relatedness, State PA and Trait PA. The relationship between the sources of information and SWL was not found to be moderated by participants thinking rapidly or thoughtfully.

The present study did not replicate the results of Trent and King (2010) who found that for MIL judgements State PA (or current mood) was a stronger predictor of MIL in the thoughtful condition, and that Autonomy and Relatedness were stronger predictors in the fast condition. The lack of moderating effect of judgement type in the present study may indicate that SWL judgements do not use exactly the same processes as MIL judgements. Whilst both SWL and MIL are likely to be considered and constructed judgements it is possible that satisfaction with one's life is an idea that has more obvious and easily retrievable information than meaning in one's life. Satisfaction with life has been shown to be based on such chronically accessible information (Schimmack & Oishi, 2005). If we assume that MIL is not based on chronically accessible information then this may explain why the length of time spent on the judgement affects the information used in a MIL judgement but not a SWL judgement.

The failure of the present study to show the expected moderating effect of condition indicates that all the potential information sources examined remain equally relevant to one's life satisfaction regardless of the length of time spent making the judgement. This suggests that either the information sources measured were not used as heuristics, or that heuristics are not used at all in the judgement.

This interpretation provides some support for the results of descriptive studies (such as Study 1) in which the method used to examine the judgement may slow the judgement down compared to the response to a number of Likert scale items. If information use is not affected by the speed of the judgement then the findings of such studies are not necessarily restricted to slow judgements. However the strength of this conclusion is limited by the fact that the Rapid and Thoughtful groups in the present study only differed by three seconds, which may be considerably smaller than the difference between the completion of the SWLS under normal circumstances and an open-ended interview. It is possible however that the lack of an interaction effect is a consequence of flaws and limitations in the experimental procedure and as such these need to be considered.

The mean times in the present study were considerably longer than those in Trent and King (2010). In the present study the mean RT's were as follows: thoughtful, 10.53; control, 8.8; rapid, 7.39; whereas Trent & King (2010) found the following: thoughtful, 3.60; control, 3.28; rapid, 2.88. All three conditions in the present study actually had a mean RT longer than that generated by Trent & King's (2010) thoughtful group. Compared to Trent and King (2010) then all three groups in the present study could be considered thoughtful and this limitation could be the source of the lack of moderating effect.

The difference in mean RT's between the present study and Trent and King (2010) may be due to methodological differences between the studies. Unlike Trent and King's (2010) study the present study was conducted on-line. The on-line administration may account for the present study's relatively long RT's as it introduces some element of technical variance as a result of the different computers,

web browsers and net connections (Reips, 2000). However this aspect of conducting the study on-line therefore increased the random error rather than having a clear elongating effect on the RT's. Thus while conducting the study online may account for the longer RT's in the present study it does not account for the lack of expected group effect.

A further methodological difference is that the RT in Trent and King (2010) was measured from the revealing of the item to when the response was chosen from the scale. The RT in the present study involved an extra step: the time was measured from the revealing of the item but then, after they had made their choice from the response scale, the participant had to click next before the RT was recorded. Again this extra step may account for the difference in mean RT between the two studies but it does not clearly explain the lack of predicted effect. As this step occurs after the choosing of one's response it may simply add to the RT whilst not actually increasing the time spent responding to the item. However it is possible that the extra step of clicking next after making their choice may have encouraged participants to ruminate over their choice, thus making each condition "thoughtful". As such, it can be considered an oversight that the RT in the present study was not recorded from the revealing of the item to the choosing of a response.

The lack of an effect of condition in the present study may be due the absence of a priming effect. Trent & King (2010) pointed out that the significant effect found in their study could be the result of priming effects resulting from measuring basic needs prior to the experimental manipulation. Thus in Trent and King's study the information used to respond to the needs satisfaction measure may have been more accessible than other information when responding to the SWLS.

This recency effect may have been responsible for the apparent effect of the rapid condition, with the thoughtful condition allowing the less recent measure of positive affect to be accessible. In the present study SWLS was measured before the continuous variables, mitigating this priming effect. There are reasons to doubt the priming explanation, however. Firstly, a recency effect does not fully account for Trent & King's (2010) results as it would also predict that competence would be related to SWLS in the rapid condition and that all three needs, as well as positive affect, would predict SWLS in the thoughtful condition; these results were not found. Thus it is highly unlikely that a lack of priming would cause the lack of effect seen in the present study. Secondly, rather than attenuating potential priming effects the order of measures in the present study could actually exacerbate such effects. Schimmack, Diener and Oishi (2002) recommend that a participant's current mood should be measured before life-satisfaction judgements to avoid order effects resulting from: a) the life satisfaction judgement bringing information to mind that changes one's mood; b) participants feeling obliged to be consistent and match their later mood responses to their earlier life satisfaction scores. This recommendation from Schimmack, Diener and Oishi (2002) is supported by Gärling & Gamble (2012) who showed that the correlation between SWL and mood was greater when SWL was measured first, compared to when mood was measured before SWL. Thus, rather than being a consequence of a lack of a priming effect, the failure of the present study to replicate the results of Trent & King (2010) may be due to the measurement of SWL before the predictor variables.

The idea that completion of the SWLS makes such a variety of information salient, to the extent that it influenced the mood, autonomy, relatedness, competence

and trait feelings measures, explains the lack of effect of condition. This idea also allows for the same information being brought to mind regardless of whether the SWLS was answered rapidly or thoughtfully. However, this explanation relies on the completion of the SWLS influencing not only participant's mood, which has been previously found (Gärling & Gamble, 2012), but also their reports of needs satisfaction and trait feelings. Despite ensuring mood was measured before the SWLS Schimmack, Diener and Oishi, (2002) were unconcerned with the possible effects of SWLS on other measures, illustrated by their measuring of numerous variables after the SWLS, including domain satisfaction and personality measures. Gärling & Gamble (2012) also only focussed on the effects of SWLS on mood. Given that current mood is based on episodic information, whereas needs satisfaction and trait feelings are based on more stable sources, a measure of mood may be more susceptible to order effects. Evidence to this effect is shown by Schimmack and Oishi (2005) who showed that general life satisfaction measures were less susceptible to item-order effects than monthly satisfaction, a narrower time frame. It is therefore less likely that the measures of needs satisfaction and trait feelings were influenced by the preceding measure of SWLS. However Schimmack, Diener and Oishi (2002) suggested both salience and participant consistency as possible sources of order effects and although the measures of traits and needs may not be affected by salience there could still be an influence of consistency. Having completed the SWLS participants may respond to further scales with their earlier SWL responses in mind and answer accordingly. It could also be argued that even if temporarily salient information or participant consistency did not influence the predictor variables the measure of mood in the current study did not reflect how the participants felt that day but how they felt after completing the SWLS. This mood may then have

influenced the retrieval of information for the trait and needs measures. The salient point is that the order of the measures in the present study is a limitation that could, in various ways, account for the lack of experimental effect.

The on-line administration of the study may also limit the generalisability of the results as the sample was limited to individuals who had access to, and were capable with, a computer. This may imply a greater level of education and ability within the sample, compared to the general population. Further there is an issue of self-selection and increased drop-out rate that is associated with on-line data collection (Reips, 2000). The use of recruitment sites based within academic institutions, that are specific to psychological studies, suggests a further bias in the sample as individuals need to be sufficiently engaged to frequent such sites. However it can be argued that the use of Facebook and Twitter feeds by these organisations may increase the recruitment of a broader selection of people who passively receive recruitment requests, rather than actively seeking them out. A final drawback was that some of the participant recruitment sites were based outside of the UK but the nationality of the participants was not recorded. This issue prevents the investigation of a potential confounding factor - the participants may have been from a number of countries.

In summary the speed of the judgement was not shown to moderate the relationships between the source variables and life satisfaction. As such the results of a previous study (Trent & King, 2010) that used meaning in life rather than life satisfaction were not replicated. The lack of effect of condition may indicate that the information used in a life satisfaction judgement is the same whether the judgement is fast or slow. This would provide support for the results of studies that potentially

slow down the judgement, such as Study 1. If slowing down the judgement does not fundamentally change the information used then the results of such studies can be generalised to more usual life satisfaction judgements. The consistency of information use can also be linked to the use of chronically salient information, as shown by Schimmack et al. (2002). Put another way, certain life information can be considered to be highly relevant to one's life satisfaction whether or not the judgement is made swiftly or deliberately slowly. However the lack of effect of condition may have resulted from the order of the measures in the present study. The initial measurement of SWL may have affected the responses to the later measures, masking any effect of condition. In order to verify that the results are due to the nature of the SWL judgement, rather than the order of the measures, the present study would have to be repeated with SWL measured after the predictors, as in the original study by Trent and King (2010). However the predicted result of this replication would be a lack of moderating effect, which may also occur due to other limitations, so it is not clear that such a line of enquiry would produce any findings to help clarify the central question of interest.

## Chapter Six

### Study 3a: The weighing up of life domains using vignettes

A key aspect of the measurement of life satisfaction is that an individual should be able to “determine their own criteria for inclusion in the judgement process, and to weight them in the manner they choose” (Pavot & Diener, 2008, p.140). It can be argued that research has focussed on the “determine their own criteria” component whilst comparatively few studies have broached the issue of the respective weight attributed to various domains. When describing an intuitive model of life satisfaction judgements Lucas and Lawless (2013, p.873) stated that “the respondent would examine the various aspects of his or her life and then average across these domains, *perhaps* weighting by importance”. This caveat of *perhaps* also suggests that the weighting aspect of life satisfaction judgements has been under-researched.

A number of correlational studies have found that satisfaction with various aspects of life, such as job and marital satisfaction (Heller et al., 2004, 2006) and academic life and social life (Lent et al., 2005) are related to life satisfaction over and above personality traits, such as self-esteem, extraversion or neuroticism. These studies have therefore focused on the different relationships that life domains (or bottom-up information) and personality (or top-down information) have with general life satisfaction, rather than a difference between the different domains (i.e., job versus marital satisfaction). More recently McAdams et al. (2012) used multilevel modelling techniques to compare the ratings of overall life satisfaction and satisfaction in eight life domains over an eight year period. It was found that the individual trajectories of the eight domains were diverse, differing both from each

other and from overall life satisfaction. However when the overall score for the domains was aggregated it had a similar trajectory to the life satisfaction score (McAdams et al., 2012). The combination of the domain satisfactions therefore reflected life satisfaction, but as their scores were averaged they were assumed to have equal weighting.

More descriptive studies, involving interviews, open ended questions and tick-lists of potential sources, have also neglected the idea of weighting in a life satisfaction judgement. Domains, such as family and friends, finances, one's work life, one's health and that of close others, appear consistently despite the variation in methods, coding schemes and sample populations that occur between different studies (Martikainen, 2008; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002). The aforementioned descriptive studies, and also Study 1 in this thesis, demonstrate the overall frequency of information being brought to mind but not whether all the information brought to mind is given equal weighting in the judgement. For example, Study 1 found that information relating to Relationships-with-others was brought to mind more often and by more participants than any other area of information. Whilst the relevance of relationships to life satisfaction and well-being is in line with previous studies (Mehlsen et al., 2005; Mellor et al., 1999; Schimmack, Diener and Oishi, 2002) it has not been established whether this is over and above other information.

The weighting of domain information has therefore not been the focus of much research into life satisfaction judgements. Furthermore those studies that have considered the weighting of information have focussed on the individual differences that may affect information use. Happy people have been found to place more weight

on their most satisfying domains, whilst unhappy people place more weight on their least satisfying domains (Diener et al., 2002). The stronger a participant's values of achievement, benevolence, and conformity the stronger the relationship between life satisfaction and the respective domains of satisfaction with grades, social life and family (Oishi et al., 1999). Oishi et al. (2003) found that excitement experienced in the past month was more strongly related to life satisfaction for individuals high in sensation seeking compared to those who were low.

A similar pattern has also been found for the more specific measure of satisfaction with particular life domains, rather than life as a whole. Hofer and Busch (2011) examined the effect of implicit motives, which have been defined as unconscious preferences for situations with specific incentives, on the information used in a domain satisfaction judgment. It was found that implicit motive scores moderated the relationship between a specific domain satisfaction and satisfaction in a related basic need, which can be considered a source of information for that domain. The implicit motive of affiliation reflects a preference to seek warm and close interpersonal contact and sensitivity to rejection. Hofer and Busch (2011) found that the greater the affiliation motive scores the greater the association between relationship domain satisfaction and Relatedness Need Satisfaction (RNS), one's satisfaction with belongingness and connectedness with others (Ryan & Deci, 2000). Furthermore the greater the implicit motive of achievement, a preference for seeking challenging tasks and personal improvement, the greater the association between job domain satisfaction and Competence Need Satisfaction (CNS), one's satisfaction with mastering challenges within one's environment (Ryan & Deci, 2000). Put simply the relationship between potential sources of information, (RNS

and CNS), and the domain satisfactions to which they were relevant (relationships and job), increased with greater associated implicit motive scores (affiliation and achievement). Whilst these results relate to domain satisfaction rather than general life satisfaction it reflects the same mechanism suggested for values and general life satisfaction by Oishi et al., (1999).

Studies therefore suggest that the weighting of information in a life satisfaction judgement may be related to individuals' traits, values and implicit motives (Diener et al., 2002; Hofer & Busch, 2011; Oishi et al., 1999, 2003). However there is an underlying assumption that the relationship between the potential information source (e.g., domain satisfaction, need satisfaction or excitement) and general life satisfaction reflects the use of that information in the judgement. Furthermore assumptions were made in terms of importance of information, for example, Oishi et al. (2003) assumed that excitement would be important to sensation seekers. Attempts to measure the importance of domains to a life satisfaction judgement have proved unreliable, however. Lent et al. (2005) relied on participants' own rating and ranking of importance, rather than making an assumption, but failed to find a moderating effect of importance on the relationship between different domain satisfactions and life satisfaction. In the first of two studies by Lent et al. (2005) the difference in the importance of domains could not be examined as the majority of participants rated the two domains being examined - academic life and social life - to be of similar importance. In the second study, participants ranked a list of life domains according to importance and the relationship between satisfaction in the first and third ranked domains with life satisfaction was compared. An effect of importance was not found, the first ranked

domain did not have a stronger relationship with life satisfaction compared to the third ranked domain (Lent et al., 2005). This result does not necessarily indicate that a domain's importance does not moderate its relationship with life satisfaction however. Despite being rank-ordered both the life domains may have felt "highly consequential" to the participants and therefore lacked sufficient "psychological distance" between them (Lent et al., 2005, p.440). In other words the first and third ranked domains may have been similarly important, just as the domains were in Lent et al's first study.

There are clearly difficulties in establishing the importance of a domain to a judgement. A list of domains can be ranked by participants but in the case of Lent et al. (2005) it was found to be an imprecise method as there was potentially little difference in importance between a domain ranked first or third. Furthermore asking participants to rate or rank domains in terms of importance, in isolation from questions concerning satisfaction, may encourage participants to treat domain importance as a distinct concept unrelated to their own life satisfaction. The importance of a particular domain to one's life satisfaction may differ from one's general beliefs or values about that domain. For example, an individual may consider the concept of money not to be very important in terms of a broad value system, general beliefs or personal morals (i.e., "in the grand scheme of things") but money as a life domain may still be personally important and therefore have a large impact on one's life satisfaction. Another simple reason why an explicit measure of personal importance failed to show an effect is that the process of weighing up may not be accessible via introspection or be reportable. A method that utilises the importance

of domains relative to each other, without an explicit, self-report measure of importance would address the limitations of domain importance.

Vignettes that portray a hypothetical situation in which to imagine oneself (for examples see Bouazzaoui and Mullet, 2005 or Wood et al., 2008) or ostensibly depict the life of another person (for example, King and Napa, 1998) allow particular information to be depicted and the levels of that information to be manipulated. For example, to examine the relationship between provisions of help, the extent to which that help was judged as beneficial, and whether that benefit appraisal was related to feelings of gratitude, Wood et al. (2008) provided participants with vignettes describing a hypothetical situation in which another person could help them. The vignettes varied according to the value of the help provided, the cost to the helpful person and the extent to which the help was genuine helpful (Wood et al., 2008). Along similar lines the systematic variation of vignettes has previously been used in the well-being literature to assess broad, complex judgements, such as the assessment of a “good life” (King & Napa, 1998) and life satisfaction (Bouazzaoui & Mullet, 2005). The use of vignettes therefore provides the opportunity to separate the satisfactory information provided by different domains, so that individual and combined domains can be compared. For example: one domain can be positively valenced or highly satisfactory while the others can be portrayed negatively. This method also means that the correlation between general life satisfaction and a potential information source, in the form of satisfaction in a specific domain, is not being relied upon as an indicator of information use. Put another way using vignettes allows the importance of certain information to a life satisfaction to be assessed indirectly, via the manipulation of the presented information.

The areas of Relationships, Money and Contribution-to-the-world, based on the code categories from Study 1, were chosen to be represented in the vignettes used in the present study. As previously mentioned, the overall frequency of reported information does not necessarily demonstrate how the information is weighted in the judgement. However the overall frequency with which certain domains are endorsed or mentioned as being used may provide a rough estimate or suggestion of general importance, that is, if most people bring a certain domain to mind then, in general, it appears to be considered highly relevant to life satisfaction. Study 1 found Relationships-with-others was the most common area of information mentioned and Contribution-to-the-world was the least frequently used. The use of Money was exactly between these two areas in terms of overall usage. Previous studies using different methodologies also seem to support the idea that these three domains differ in terms of their importance or relevance to life satisfaction. In interviews or extended question studies relationships are the most common life domain brought to mind when considering life satisfaction, money is occasionally mentioned and information relating to contributing to the world (e.g., volunteer work) has rarely been brought up (Martikainen, 2008; Mellor et al., 1999; Schimmack et al., 2002). Furthermore, eudaimonic theories of well-being such as Self-Determination Theory (Ryan & Deci, 2000) and Psychological Well Being (Ryff & Keyes, 1995) have emphasised the importance of relationships. Correlational studies suggest that money is somewhat important at lower income levels but that this declines as income increases (Howell, Kurai, & Tam, 2012). While volunteer work has been shown to be related to increased well-being (Morrow-Howell, Rozario, & Tang, 2003; Thoits & Hewitt, 2001) its rare mentions in descriptive studies may indicate that, for lay people, there are numerous areas of life that considered to be more relevant to life

satisfaction. The areas of Relationships, Money and Contribution-to-the-World were therefore chosen to be represented in the vignettes used in the present study as previous research suggested that they differed in terms of their relevance to life satisfaction.

A between-group design was used, with each group judging target vignettes in which information relating to the three life domains was systematically manipulated so that one domain was positive whilst the other two were negative. If the domains are given different weights in the life satisfaction judgement, based on assumed general importance, then it can be hypothesised that the Relationships-Only vignette (in which only the Relationships domain was positive, with the other two domains negative) should be judged as more satisfactory than the Money-Only vignette (in which only the Money domain had a positive value ) which would be more satisfying than the Contribution-to-the-world vignette (in which only the Contribution-to-the-world domain was positive). Alternatively if life satisfaction judgements are simply based on positive information, rather than weighting information according to the importance of the domain, then one high domain should be as satisfying as another. To further test the idea that the Relationships domain is the most important and given the most weight a vignette was included in which the Relationships domain was negative but the other two domains, Money and Contribution-to-the-world, were positive. The Relationships-Only vignette should be judged as more satisfying than the vignette with low Relationships but high Money and Contribution-to-the-world. On the other hand if the judgement is based on the sum positivity of the information, and the Relationships domain is not given

preferential weight, then the Money-and-Contribution-to-the-world vignette should be judged as more satisfying than the Relationships-Only vignette.

Even though participants were judging the lives of others their own mood or traits could inform the judgement. This would result in a lack of difference in the life satisfaction ratings of the vignettes as the information presented would not be used to make the judgement. To account for this the present study included measures of current mood and trait happiness. If the judgement was based on personal feelings or traits, rather than the domain information, then correlations between the feelings measures and judgement scores should be apparent.

In addition to rating satisfaction the participants in the present study were also asked to rate the happiness and meaning of the lives depicted in the vignettes. These rating were included as a comparison; if the weighting of domains occurs for life satisfaction then, assuming that similar cognitive processes are used, it should also occur for judgements of happiness and meaning but with different weightings given to the domains. Importantly the *presence* of meaning in life can be distinguished from the *search* for meaning in life (Linley & Joseph, 2011; Steger et al., 2011). Having a meaningful life can be defined as a life with purpose and value (Baumeister et al., 2013) but also as the comprehension or understanding of the significance of one's life (Steger & Kashdan, 2013). Activities that "contribute to the greater good, such as, parenting, developing friendships and community services" result in a meaningful life (Vella-Brodrick et al., 2009, p.180). In the life of meaning sub-scale of the Orientations to Happiness scale (Park, Peterson, & Ruch, 2009) half of the items relate to contributing to the "greater good": "In choosing what I do, I always take into account whether it will benefit other people"; "I have a

responsibility to make the world a better place”; “What I do matters to society”.

Social support and relationships have also been found to be a primary source of meaning in life (George & Park, 2013; Hicks & King, 2009; Hicks, Schlegel, & King, 2010; Lambert et al., 2010). As such both relationships and contribution-to-the-world should be considered important to a meaning judgement. While assessments of meaning and happiness have been found to be substantially correlated they have been found to have different sources (Baumeister et al., 2013). It was found that having enough money to buy the things one needs and wants was highly and significantly correlated with rating of happiness while being negatively correlated with meaning (Baumeister et al., 2013). A lack of money was also found to have a greater impact on happiness than meaning (Baumeister et al., 2013). These results suggest that money should be more important to a happiness judgement than a meaning judgement. Further the strong relationship between money and happiness suggests that money should be more important to a happiness judgement than a satisfaction judgement. Happiness and meaning also demonstrated similar relationships with measures of social connectedness, however (Baumeister et al., 2013). Thus relationships should be considered important to all three judgements. Discrepant score patterns between the satisfaction, happiness and meaning judgements should demonstrate that: a) weighting of the domains occurs in the judgements according to the importance of the domain; b) that the participants can discriminate between different types of well-being judgements. Overall these predictions reflect the view that well-being judgements rest upon a considered process.

The results of earlier studies have suggested an effect of individual differences on information use (Hofer & Busch, 2011; Oishi et al., 1999; Schimmack, Diener & Oishi, 2002; Schimmack & Oishi, 2005). A measure of future aspirations, with financial, affiliation and community-feeling sub scales, was therefore included in the present study to accommodate the possibility that the presented domains may differ in terms of their importance to individuals (Kasser & Ryan, 1996). The aspirations were chosen to directly relate to the domains of Money, Relationships and Contribution-to-the-world included in the vignettes. It is therefore likely that the aspirations will be related to the judgement of the lives portrayed in the vignettes, for example those who consider financial goals to be important should judge a life in which only the money domain is satisfying more positively than those who consider affiliation goals to be more important.

### **Aims and objectives**

The aim of the present study was to provide further empirical evidence to support the idea that life satisfaction judgements utilise a considered judgement that involves weighing up life areas against each other. While a clear prediction could not be made for the relationship between the judgement score and participant's current affect and trait happiness, the following results were predicted:

- 1) For the judgement of life satisfaction the Relationships-Only<sup>1</sup> vignette should elicit higher life satisfaction scores than Money-Only which in turn should have a greater score than Contribution-to-the-world-Only. Further the

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<sup>1</sup> In each case "Only" refers to the positive domain of each vignette, for example, the Relationships-Only vignette presented positive relationships information and negative money and contribution-to-the-world information, etc. The Money-and-Contribution-to-the-world vignette had positive information for those two domains and negative relationships information.

Relationships-Only vignette should also elicit a greater score than the Money-and-Contribution-to-the-world vignette.

- 2) The Relationships-Only and Money-Only vignettes should elicit higher happiness scores compared to Contribution-to-the-world-Only.
- 3) For the judgement of meaning the Relationships-Only and Contribution-to-the-world-Only vignettes are expected to have greater scores than Money-Only.
- 4) There may be a correlation between the Financial Aspiration score and life satisfaction in the Money-Only group, life satisfaction and Affiliation for the Relationships-Only group, and life satisfaction and Community Feeling in the Contribution-to-the-world-Only group.

## **Method**

### **Participants**

A sample of 216 participants (160 female, 56 male) were recruited via the websites, Facebook pages and/or Twitter feeds of the following organisations and societies: Social Psychology Network (maintained by Wesleyan University), The Psychology Postgraduate Affairs Group, The Web Experiment List (maintained by University of Duesto), and Science in the Pub.

The age of the sample ranged from 18 to 65 years ( $M = 34$ ,  $SD = 10.7$ ). The majority of the participants, 182 (84.3%), described themselves as White or White British, 9 (4.2%) as Mixed Ethnicity, 7 (3.2%) as Asian or Asian British, 4 (1.9%) as Black or Black British, 1 (.5%) as Chinese or Chinese British, 9 (4.2%) as “group not listed” (due to a best fitting description not being listed) and 4 (1.9%) chose not to answer the question. The level of educational attainment reported by the

participants was distributed as follows: 47 (21.8%) had qualifications below undergraduate degree level, 79 (36.6%) achieved an under graduate degree or similar, 62 (28.7%) had a Master's degree or equivalent, 25 (11.6%) had a PhD or equivalent and 3 (1.4%) chose not to respond. For a medium effect the sample of 216 provided a power of .88, alpha .05, for the main ANOVA analyses. Two hundred and forty four participants initially took part in the study. Significant skew in the impact scores was addressed by excluding participants with outlying scores greater or less than 3 standard deviations from the mean (Field, 2009; Tabachnik & Fidell, 2013), resulting in a sample size of 216.

## **Measures**

**Vignettes.** Each vignette was a short description of a person's life, ostensibly excerpts from interviews. As the participants were told that the vignettes were excerpts directly transcribed from previously conducted interviews they included non-verbal utterances such as "Er" and "Erm" to imitate natural speech. Each vignette consisted of a single paragraph containing information that could positively or negatively describe three areas of life: relationships, money and contribution to the world. The positive and negative valence of each domain was systematically varied to create two control vignettes (all positive information and all negative information) and four different target vignettes. This systematic variation is summarised in Table 6.1. As an example the Positive Control vignette is shown in full on p.201

**Table 6.1. The combinations of positive and negative domains that form the control and target vignettes**

Vignette	Domain		
	Relationships	Money	Contribution to the world
	Valence of Information		
Positive Control	Positive	Positive	Positive
Negative Control	Negative	Negative	Negative
Relationships Only	Positive	Negative	Negative
Money Only	Negative	Positive	Negative
Contribution-to-the-world Only	Negative	Negative	Positive
Money and Contribution-to-the-world	Negative	Positive	Positive

### All Positive Vignette

Er so I have loads of friends, er see them a lot. Good friends, you know, the kind that would help you out of trouble and stuff. Get on well with my family. They're great.

Supportive. Er money –wise, not a problem, not in debt, extremely comfortable in that respect. Don't have to worry about when the pay check comes for paying bills or whatever. Don't have to think about how much stuff costs or save up for stuff. Just buy what I want when I want. Erm, what else? I do fun runs, you know, for charity. Done quite a few of those. Er and I er organise events locally to raise awareness, like er political issues, campaigns and stuff.

Spend a lot of time volunteering for various causes. So, er, yeah.

The positive and negative version of each area of information is shown in Table 6.2. To verify the valence of the domain information two coders rated the four target vignettes. They were presented with the four target vignettes and asked to assign each domain (relationships, money and contribution-to-the-world) a positive or negative valence based on the information in the vignette. A 100% agreement between the coders was found. Two further coders were presented with the positive domain information only and asked whether each section referred to relationships, money or contribution-to-the-world. Again a 100% agreement between the coders was found reflecting that the information presented in each vignette adequately represented the domains.

For each participant the controls and target vignettes contained the three areas of information in the same order. Throughout the sample differently ordered versions of the vignettes ensured that each of the three domains had an equal chance of being first, second and third.

**Table 6.2. The positive and negative versions of the domain information included in the vignettes**

Domain	Positive	Negative
Relationships	Er so I have loads of friends, er see them a lot. Good friends, you know, the kind that would help you out of trouble and stuff. Get on well with my family. They're great. Supportive.	Er so I don't have many friends, er don't go out much. No really good friends, you know, the kind that would help you out of trouble and stuff. Don't get on well with my family. They're awful. Not very supportive.
Money	Er money –wise, not a problem, not in debt, extremely comfortable in that respect. Don't have to worry about when the pay check comes for paying bills or whatever. Don't have to think about how much stuff costs or save up for stuff. Just buy what I want when I want	Er money –wise, it's a problem, in debt, things extremely difficult in that respect. Worry about when the pay check comes to pay the bills and whatever. Always have to think carefully about how much stuff costs and save up for stuff. Can't just buy what I want when I want.

Domain	Positive	Negative
Contribution to the world	Erm, what else? I do fun runs, you know, for charity. Done quite a few of those. Er and I er organise events locally to raise awareness, like er political issues, campaigns and stuff. Spend a lot of time volunteering for various causes. So, er, yeah.	Erm, what else? ? I don't really do charity stuff, like sponsored stuff, not really me. Don't pay attention to political issues and stuff, don't want to get involved. Not got time to do anything else, I need my spare time for myself. So, er, yeah.

**Life satisfaction.** Life satisfaction was measured with the first four items from the SWLS (Diener et al., 1985) presented in a randomised order. The SWLS is described in Chapter 3, p 90. The fifth item, If I could live my life over, I would change almost nothing, was excluded as it required a cognitive search focused on the past rather than the present and the vignettes did not contain this kind of information. According to Pavot & Diener (2008) the fifth item has been shown to be distinct from the other four and can be excluded. The scores across the four SWLS items were averaged to provide an overall life satisfaction judgement. In the present study the measure was found to be highly reliable for all three types of vignette: target,  $\alpha = .86$ ; positive control,  $\alpha = .85$ ; and negative control,  $\alpha = .82$ . The participants in the present study were explicitly asked to respond by considering to what extent the person being interviewed would agree with the items via the following instructions:

To what extent would THE PERSON DESCRIBED in the interview agree with the statements below? Remember, this is not necessarily how you would answer the questions but is about how you think THE PERSON DESCRIBED would answer.

**Happiness.** The happiness judgment consisted of a single statement: “I have a happy life”. This statement was presented, randomised, amongst the four SWLS items. The participants were explicitly asked to respond by considering to what extent the person being interviewed would agree with the item, in other words to respond on behalf of the person who ostensibly provided the excerpt. The response scale ranged from 1, *strongly disagree* to 7, *strongly agree*. Single statements similar to this are used as standard survey questions in surveys such as the European Social Survey (ESS) and the UK Household Longitudinal Study (UKHLS).

**Meaning.** The meaning judgement consisted of a single item: “I feel that my life has meaning”. This statement was presented, randomised, amongst the SWLS and happiness items. The participants were explicitly asked to respond by considering to what extent the person being interviewed would agree with the item, in other words to respond on behalf of the person who ostensibly provided the excerpt. The response scale ranged from 1, *strongly disagree* to 7, *strongly agree*. Single statements similar to this are used as standard survey questions, for example in the ESS and the UK Household Longitudinal Study (UKHLS).

**Positive and Negative Affect Scale.** (PANAS; Watson & Clark, 1994). The PANAS is a 20 item measure, with 10 items of positive affect and 10 of negative. Each item describes feelings or emotions, for example: *nervous* for negative affect

and *excited* for positive affect. The instructions provided emphasised that participants should respond based on their own feelings, as follows:

Indicate to what extent YOU feel this way  
TODAY using the scale provided

A 5 point response scale was provided: 1, *very slightly or not at all*, 2, *a little*, 3, *moderately*, 4, *quite a bit*, 5, *extremely*. The PANAS with the temporal instructions for “today” has shown a high internal consistency (positive affect .89, negative .87; Watson & Clark, 1994). In the present study the scales were also found to be highly reliable: PA, Cronbach’s  $\alpha = .89$ ; NA, Cronbach’s  $\alpha = .88$ . The relevant item scores were summed, giving each scale a score range of 10 to 50.

**Subjective Happiness Scale.** (SHS; Lyubomirsky & Lepper, 1999). The SHS consists of 4 items which are responded to via different 7 point scales. The instructions were as follows:

For each of the following statements and/or questions  
please click the point on the scale that you feel is most  
appropriate for you. You should consider 4 to be the  
mid-point on the scale.

The items were as follows, with associated response scales in brackets: In general I consider myself to be (1, “*not a very happy person*” to 7, “*a very happy person*”); Compared to most of my peers I consider myself to be (1, *less happy* to 7, *more happy*); Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you? (1, *Not at all* to 7, *A great deal*); Some people are

generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you? (1, *Not at all* to 7, *A great deal*). The scale has demonstrated high internal consistency, Cronbach's  $\alpha$ 's .85-.95, and test-retest reliability, Pearson's  $r$  for 4 weeks = .90, for 3 months = .71 (Lyubomirsky, 2001). In the present study the scale was found to be highly reliable,  $\alpha = .89$ . The item scores were averaged.

**Aspirations Index.** (AI; Grouzet et al., 2005). Participants were asked to rate the importance of possible future goals on a response scale from 1 (*Not at all*) to 5 (*Very Important*). The instructions were presented as follows:

This is the final questionnaire. This set of 20 questions asks you about goals that you may or may not have for the future. Please choose how important each goal is to you. Try to use the entire scale when rating the items. That is, some of your answers will likely be at the lower end of the scale, some will be in the middle, and others will be at the higher end of the scale.

Three of the 11 AI subscales of the were used: financial success (four items; for example, I will have many expensive possessions), affiliation (five items; for example, People will show affection to me, and I will to them) and community feeling (three items; for example, The things I do will make other people's lives better) The subscales of health (four items) and safety (four items) were also included as filler items. When tested across 15 countries the sub-scales used in the present study were found to have acceptable to high reliability: financial success,  $\alpha = .84$ ; affiliation,  $\alpha = .81$ ; community feeling,  $\alpha = .75$ . Similarly the sub-scales were

found to have acceptable to high reliability in the present study: financial success,  $\alpha = .79$ ; affiliation,  $\alpha = .81$ ;  $\alpha =$  community feeling,  $\alpha = .82$ . The relative importance scores were calculated by subtracting the overall average (across all five aspirations) from the average of the three subscales of interest: affiliation, financial and community (Kasser & Ryan, 1996).

### **Procedure**

All materials were administered online using Select Survey ASP Advanced software, version 8.6.4. Having provided informed consent participants were presented with the following instructions:

You will be asked to read three passages: A, B and C.

These are excerpts from interviews in which people discussed their lives.

After the three passages, and associated questions, there will be three questionnaires asking about your thoughts and feelings.

Each vignette was presented on a separate screen with the six randomly ordered judgements items beneath: four SWL items and the two items assessing happiness and meaning. Participants judged three vignettes, two control vignettes and a target vignette. All participants judged the positive and negative control vignettes first, counterbalanced for order of presentation. Participants then judged one of the four, randomly assigned, target vignettes. The participants were explicitly asked to respond to the items by considering to what extent the person being

interviewed would agree with them, in other words to respond on behalf of the person who ostensibly provided the excerpt.

To reduce the possibility of the participants not giving the target vignette their full attention (due to its similarity to the two previously viewed vignettes) the target vignette was preceded by the following instructions intended to ensure the participants read the target vignette properly:

You may have noticed some similarities between the first two passages, this is because they were included as practise trials. The next excerpt is not a practise trial. It will look similar to the previous excerpts but there are important differences. This excerpt has been taken directly from an interview. Please read this excerpt very carefully before you make your judgements and respond to the questions.

After judging the three vignettes participants were presented with the following instructions on the next screen:

You will be asked to respond to three questionnaires over the next three pages.

To be clear, these questionnaires are about YOU and how YOU feel.

Please be open and honest in your responding, remember you cannot be identified at any time.

This screen was followed by the continuous variable measures, with each scale presented on a separate screen in the following order: PANAS, SHS and AI. On completion of the final measure participants were presented with a debrief screen which provided them with further information about the study.

## Results

### Impact Scores

The satisfaction, happiness and meaning scores attributed to the All-Positive and All-Negative controls reflect the assessment of a life in which all three domains are positive and negative respectively. These scores effectively provide two baselines for each participant and as such the relationship of the Target vignette scores to these baseline scores reflects the impact of the presence or absence of the critical information within the Target vignette. To show how much the additional positive information in the Target vignette increased scores from the All-Negative base line, a score was calculated for each participant by subtracting the All-Negative score from the Target score. This score was then expressed as a proportion of the difference, or gap, between the All-Positive and All-Negative baselines. The calculation is summarised in Figure 6.1.

#### Figure 6.1. Formula used to calculate the impact scores

$$\text{Impact Score} = \frac{\text{Target Score} - \text{Negative Control Score}}{\text{Positive Control Score} - \text{Negative Control Score}}$$

The impact score reflects the impact of the Target score on the gap between the Positive and Negative controls. A score of 0 indicates that the presence of the information in the Target had no impact on the gap between the two baseline scores;

the Target received the same score as the All-Negative control. A score of 1 indicates a complete closing of the gap; the Target received the same score as the All-Positive Control. The raw means and SD scores are included in Appendix D.

### **Preliminary Analyses**

The dependent variables were examined for normality across the groups. Significant skew in the impact scores was addressed by excluding outliers. Negative Affect (NA) was log transformed to remove negative skew.

**Demographic distributions.** Table 6.3 presents the demographic data for each group. A one way ANOVA confirmed that the four groups did not differ significantly in terms of age ( $F < 1$ ). The gender distribution also did not significantly differ between conditions,  $\chi^2(3) = 6.47, p = .09, V = .17$ . The majority of the sample identified as White or White British (85.4 %) so it was statistically necessary to combine the small number of people in each of the other ethnic groups: ethnic diversity did not significantly differ between the four experimental groups,  $\chi^2(3) = 4.42, p = .28, V = .14$ .

**Table 6.3. Sample size (N), mean age and standard deviation (SD), gender, ethnic group and level of education distribution for each target vignette group**

	Group			
	Relationships Only	Money Only	Contribution - to-the-world Only	Money and Contribution- to-the-world
Sample size	53	54	53	56
Mean Age (SD)	33.89 (12.00)	34.69 (10.04)	34.67 (9.36)	33.16 (11.38)
% Female	62.30	77.80	83.00	73.20
% White/ British	76.90	90.40	88.50	85.70

The mean scores of state and trait feelings, and the aspirations, are shown in Table 6.4. One way ANOVA's confirmed that the mean scores did not vary according to group: for SHS, PA, NA, Financial Success and Community feeling (all  $F$ 's  $< 1$ ), or for Affiliation ( $F(3,212) = 2.04, p = .11, \eta^2 = .03$ ).

**Table 6.4. Means and standard deviations (SD) of continuous variables**

Variable	Group							
	Relationships Only		Money Only		Contribution-to-the-world Only		Money and Contribution-to-the-world	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
SHS	4.70	(1.28)	4.46	(1.33)	4.71	(1.05)	4.65	(1.35)
PA	29.09	(7.07)	28.81	(8.54)	28.32	(6.20)	29.00	(8.55)
NA	1.17	(.14)	1.19	(.15)	1.16	(.14)	1.16	(.13)
Fin	-2.07	(1.34)	-2.04	(1.30)	-2.12	(1.38)	-1.94	(1.33)
Aff	.74	(.98)	1.14	(.78)	1.10	(.98)	.94	(.90)
Comm	-.18	(1.33)	-.19	(1.22)	-.03	(1.19)	-.33	(1.32)

Notes. Subjective Happiness Scale (SHS), Positive Affect (PA), Negative Affect (NA), financial success (Fin), affiliation (Aff), community feeling (Comm).

The correlations between all the measures across the entire sample are shown in Table 6.5. The impact scores were found to be significantly correlated with each other but not with any other variables. Positive and negative affect were respectively positively and negatively correlated with subjective happiness only. Affinity and Community Feeling were both negatively correlated with the aspiration of Financial Success.

**Table 6.5. Correlations between the judgement scores, measures of trait and state feelings and aspirations**

	1	2	3	4	5	6	7	8
Impact Scores								
1. SWL								
2. Happiness	.65*							
3. Meaning	.40*	.37*						
State and Trait feelings								
4. SHS	.01	.03	.08					
5. PA	-.05	-.09	.09	.47*				
6. NA	.02	.06	-.01	-.32*	-.11			
Aspirations								
7. Fin	-.02	-.11	-.09	-.09	.09	.06		
8. Aff	-.08	.02	.04	-.06	-.07	.00	-.39*	
9. Comm	-.06	.00	.03	.16	.10	.04	-.50*	-.13

Notes. No correlations were significant at  $p < .01$ ; \* Correlations significant  $p < .001$ ;

Subjective Happiness (SHS), positive affect (PA), negative affect (NA), financial success (Fin), affinity (Aff), community feeling (Comm)

## Main analyses

**Effect of target excerpt on the judgement of satisfaction, happiness and meaning.** The main question of interest was whether the four groups who received different vignettes differed in terms of their well-being judgements. As the effects of the group (Relationships-Only, Money-Only, Contribution-to-the-world-Only, Money-and-Contribution-to-the-world) on the separate dependent variables (SWL, happiness and meaning) was of greater interest than multivariate combinations of the dependent variables the impact scores were examined separately with one- way independent ANOVAs (Grice & Iwasaki, 2007). The groups differed on satisfaction ( $F(3,212) = 5.91, p < .001, \eta^2 = .08$ ), happiness ( $F(3,212) = 9.48, p < .001, \eta^2 = .12$ ) and meaning ( $F(3,212) = 8.09, p < .001, \eta^2 = .10$ ). Mean scores along with the results of post hoc tests are shown in Table 6.6. Where variances were unequal Games Howell post hoc tests were used.

**Table 6.6. Mean impact scores and standard deviations (SD) for satisfaction, happiness and meaning according to target vignette**

Dependent Variable	Target Vignette			
	Relationships Only ( <i>N</i> = 53)	Money Only ( <i>N</i> = 54)	Contribution-to-the-world Only ( <i>N</i> = 53)	Money-and-Contribution-to-the-world ( <i>N</i> = 56)
Satisfaction <sup>†</sup>	.49 <sup>a</sup> (.24)	.49 <sup>a</sup> (.38)	.29 <sup>b</sup> (.23)	.48 <sup>a</sup> (.29)
Happiness	.71 <sup>b</sup> (.35)	.43 <sup>a</sup> (.35)	.36 <sup>a</sup> (.34)	.47 <sup>a</sup> (.38)
Meaning	.63 <sup>a</sup> (.44)	.33 <sup>b</sup> (.42)	.72 <sup>a</sup> (.35)	.65 <sup>a</sup> (.54)

Notes: <sup>†</sup>Games Howell Post Hoc tests used. Horizontally, non-matching superscripts differ significantly at the  $p < .05$  level.

The results in Table 6.6 show that, for life satisfaction, the Contribution-to-the-world-Only vignette had a significantly lower score than the other three conditions: Relationships Only ( $p < .001$ ,  $d = .84$ ); Money Only ( $p = .01$ ,  $d = .63$ ) and Money-and-Contribution-the-world ( $p = .001$ ,  $d = .74$ ). The Relationships-Only, Money-Only and Money-and-Contribution-to-the-world vignettes accounted for almost half the difference (49%, 49% and 48% respectively) between the All-Negative and All-Positive scores, and did not differ significantly from each other, whereas the Contribution-to-the-world domain accounted for only 29%. For

happiness ratings the Relationships-Only vignette accounted for 71% of the increase in score from the Negative Control to the Positive Control and had a significantly greater mean impact score than each of the other three vignettes: Money Only ( $p = .001, d = .78$ ); Contribution-to-the-world-Only ( $p < .001, d = 1.01$ ) and Money-and-Contribution-to-the-world ( $p = .004, d = .65$ ), which did not differ significantly from each other. In terms of ratings of meaning the Money-Only vignette had a significantly lower score compared to the other three vignettes, which also did not differ significantly from each other: Relationships-Only ( $p = .003, d = .71$ ); Contribution-to-the-world-Only ( $p < .001, d = 1.00$ ); and Money-and-Contribution-to-the-world ( $p = .001, d = .67$ ). The Money-Only vignette accounted for only 33% of the difference between the All-Positive and All-Negative vignette, the other vignettes accounted for between 63% and 72% and did not significantly differ from each other.

It was predicted that if a satisfaction judgement used the relative importance of relationships as the basis of weighting then the Relationships-Only vignette would have a greater life satisfaction score than the Money-and-Contribution-to-the-world vignette. This was not the case, but it was found that the Money-and-Contribution-to-the-world vignette had the same impact on satisfaction as the Relationships-Only and Money-Only vignettes. The extent of the impact of the Money-and-Contribution-to-the-world vignette can therefore be explained by the positive money information it contained. This effect also explains the impact of the Money-and-Contribution-to-the-world vignette on meaning although in this case the impact can be attributed to the positive Contribution-to-the-world information.

**Relationship of the dependent variables with current affect and trait**

**happiness.** To establish whether the SHS, PA and NA were related to their judgements of the vignettes the correlations were examined for each group. The correlation co-efficients are included in Table 6.7. Using a significance level of  $p < .001$ , due to the large number of correlations, no significant relationships were found between positive affect, negative affect or subjective happiness and the impact scores. Using a significance level of  $p < .01$ , to offset Type II errors, there were also no significant relationships. The participants' state and trait feelings were un-related to the life satisfaction, happiness and meaning scores attributed to the vignettes.

**Table 6.7. Correlations between the impact scores of satisfaction, happiness and meaning with SHS, PA and NA**

Target Vignette Group	Impact Score	State and Trait Feeling Measures		
		SHS	PA	NA
Relationships-Only	SWLS	.16	-.05	.04
	Happiness	-.06	-.20	.16
	Meaning	.05	.02	-.00
Money-Only	SWLS	-.11	.16	.07
	Happiness	.01	.16	.06
	Meaning	.04	.21	.03
Contribution-to-the-world Only	SWLS	-.02	-.33	.02
	Happiness	.10	-.24	.08
	Meaning	-.04	-.03	.13
Money-and-Contribution to the World	SWLS	.09	-.20	-.14
	Happiness	.04	-.20	.02
	Meaning	.13	.11	-.01

Notes. No correlations were found to be significant at  $p < .001$  or  $p < .01$ ; subjective happiness scale (SHS), Positive Affect (PA), Negative Affect (NA)

**Relationship of the dependent variables with aspirations.** To establish whether the aspirations of the participants were related to their judgements of the vignettes the correlations were examined for each group. The correlation coefficients are included in Table 6.8. Using a significance level of  $p < .001$ , due to the large number of correlations, no significant correlations between the aspirations and the dependent variable impact scores were found. There were also no significant relationships using a reduced significance level ( $p < .01$ ) to offset Type II errors. Participants' aspirations towards affiliation, finances or community feeling were unrelated to their judgement of the vignettes.

**Table 6.8. Correlations between the impact scores of satisfaction, happiness and meaning with relative aspirations**

Target Vignette Group	Impact Score	Aspirations		
		FIN	AFF	COMM
Relationships-Only	SWLS	-.32	.06	.12
	Happiness	-.25	.00	.26
	Meaning	-.09	.09	-.04
Money-Only	SWLS	.11	-.15	.04
	Happiness	.00	-.06	.06
	Meaning	.04	-.27	.14
Contribution-to-the-world Only	SWLS	.05	-.15	-.08
	Happiness	-.11	.10	-.26
	Meaning	-.07	.21	-.06
Money-and-Contribution to the World	SWLS	-.04	-.01	-.24
	Happiness	-.11	.23	-.05
	Meaning	-.21	.16	.03

Note. No correlations were found to be significant.  $p < .001$  or  $p < .01$ ; financial Success (FIN), Affiliation (AFF) and Community Feeling (COMM)

## Discussion

The three single domains were shown to differ in terms of the weight attributed to them in life satisfaction, happiness and meaning judgements. The prediction that Relationships, Money and Contribution-to-the-world would show decreasing relative importance in a life satisfaction judgement was partially supported. Rather than the domains of Contribution-to-the-world, Money and Relationships having a progressively greater impact on life satisfaction it was found that the money domain had the same impact on life satisfaction as the relationships domain. The Relationships-Only vignette had a significantly greater impact on happiness than the other two single-area vignettes, suggesting that the relationships domain is given more weight than the money or contribution-to-the-world domains in a happiness judgement. Both the Contribution-to-the-world-Only and Relationships-Only vignettes had greater impact on meaning than the Money-Only vignette suggesting that both of these domains are given more weight than Money as one judges the meaningfulness of a life.

The vignette with two high domains, Money-and-Contribution-to-the-world, was included to investigate whether, as a result of relationships being given more weight in the judgement, the Relationships-Only vignette would be judged as more satisfying than the Money-and-Contribution-to-the-world vignette. On the other hand if a life satisfaction judgement was based on the amount of positive information, rather than the relative importance of domains, it was predicted that the Money-and-Contribution-to-the-world vignette should be rated as more satisfying than the Relationships-Only vignette. However neither of these predictions for life satisfaction were supported and the Money-and-Contribution-the-world vignette was

found to have the same impact on satisfaction as both the Relationships-Only and Money-Only vignettes. The extent of the impact of the Money-and-Contribution-the-world vignette can therefore be explained by the positive money information it contained, in association with positive money unexpectedly having an impact on life satisfaction that was similar to positive relationships. This pattern also explains the impact of the Money-and-Contribution-to-the-world vignette on meaning. In the case of meaning the impact of Money-and-Contribution-to-the-world can be attributed to the Contribution-to-the-world domain which, when on its own, was found to be given as much weight as the relationships domain in a meaning judgement.

Interestingly one of the original predictions concerning the Money-and-Contribution-to-the-world vignette for life satisfaction - that Relationships-Only would have a greater score than Money-and-Contribution-to-the-world - was actually found to be supported in the happiness judgement. This finding supports the idea that a single positive area (in this case, Relationships) can have a greater impact on a judgement than two domains, if it is a more important domain.

The measures of current and trait affect were not found to correlate with the judgements. This result suggests that the participants obeyed the instructions, based their judgements fully on the information provided and answered as if they were the individual depicted in the vignette. It was also found that the aspiration scales (financial success, affiliation and community feeling) were unrelated to the judgement scores in the anticipated groups (respectively Money-Only, Relationships-Only, and Contribution-to-the-world-Only). This result also suggests that participants' personal traits did not overtly inform their judgement of the vignette. This finding also supports the idea that the domains examined in the

present study have a universal value, over and above individual differences. Put another way, although the personal importance of relationships, money and contribution-to-the-world can differ, the relative importance of these domains to well-being judgements appears to be consistent across individuals in judging the well-being of hypothetical lives.

The discrepant pattern of domain weighting for the three different judgements not only provides support for the idea that life satisfaction judgements are properly considered and reflective but also that life satisfaction, happiness and meaning are identified as separable concepts by lay people. This is especially true as happiness and meaning in the present study were not defined or explained; participants were simply asked to what extent the vignette reflected a happy or meaningful life. As such participants were allowed to use their own definitions of the terms rather than specific definitions that exist in the relevant literature.

In the present study Money was unexpectedly found to be given a similar weight to Relationships in a judgement of life satisfaction and this can be considered an important finding. Based on previous research Money was predicted to be given less weight in the satisfaction judgement than Relationships. Not only was Money found to be infrequently mentioned in interview and open-ended question studies (for example, Study 1; Martikainen, 2008; Mellor et al., 1999; Schimmack, Diener and Oishi et al., 2002) but historically money has been classed as unimportant to well-being. Correlations between life satisfaction and income were found to be “not large” and to decline with rising income (Howell et al., 2012; Lucas et al., 2008). Also, using a vignette methodology similar to the present study, King and Napa (1998) showed that the wealth of a person was not given much weight when

participants judged whether or not the life depicted was “the good life”. The apparently poor relationship between money and well-being has been questioned, however. Lucas et al. (2008) suggested that care should be taken when interpreting small correlations, such as that between income and happiness. They pointed out that small, overall correlations can contradict actual differences, for example, if populations are split into rich versus poor groups a large mean difference in life satisfaction is revealed (Lucas et al., 2008). Importantly the unexpected finding, that Money was not relatively less important than Relationships for life satisfaction, supports a recent study by Diener et al., (2013) which improved upon previous correlational studies of income and well-being by using long term data across a large number of nations. It was found that increasing household income was associated with increases in life satisfaction, via the increase in material possessions, financial satisfaction and optimism for the future (Diener et al., 2013) ). In other words money was found to be more relevant to life satisfaction than previously thought. Thus the present study contributes to the most recent literature and to the “continuing debate” regarding the relevance of money to well-being (Lucas et al., 2008, p.2004). The apparent importance of Money found in the present study also emphasises that the overall frequency of information reportedly brought to mind via descriptive studies does not reflect the importance of that information in the judgement. The low frequency of the Money domain in interview and open-ended question studies may potentially be explained by social desirability.

A clear limitation of the present study is that judging descriptions of someone else’s life may not be an accurate proxy for judging one’s own life. Self-judgements tend to be more introspective than other judgements (Pronin, 2008). In other words

self-judgements rely more on one's feelings, whereas as other-judgements rely on observable information. This limitation is emphasised by the lack of correlation between the measures of participants' state and trait affect, and future aspirations, with the judgement scores. Measures of one's satisfaction and happiness usually correlate with one's traits and current affect (Diener et al., 2012). Whilst the participants in the present study clearly obeyed the instructions and answered as if they were the person whose life was described it can be argued that the results actually show how domains are weighted when judging the life of another person, not one's own life. An alternative method may have been to use vignettes that portrayed a hypothetical situation in which to imagine oneself (such as in Bouazzaoui and Mullet, 2005; or Wood et al, 2008). However it could be argued that judging an imagined life would still not be an accurate account of judging one's real life. This idea was raised as a limitation by Wood et al. (2008) who highlighted that such vignette studies assume that the participants can sufficiently imagine the hypothetical situation and accurately predict their reaction. A further limitation is that the vignettes contained only a short précis of three domains; in other words, they contain a limited amount of information. The less information a choice involves the more simple it becomes (Dijksterhuis, Bos, Nordgren, & van Baaren, 2006). As such it can be argued that the vignettes do not fully address the complexity of well-being judgements, which also limits the conclusions that can be drawn from the results. Finally, the importance of Money to life satisfaction was an unexpected result. While this finding, to some extent, both supports and is supported by recent correlational studies (Diener et al., 2013) the timing of the present study should be borne in mind. The present study occurred during a period of recession which may have made financial information more chronically salient.

As with all on-line studies the generalizability of the results needs to be carefully considered. Clearly the on-line nature of recruitment and administration restricts the sample to those with access to the web and a certain amount of computer literacy. That more than a third of the sample was educated to Masters level or above further suggests that the participants were not reflective of the general population. On-line data collection also exacerbates the problems of self-selection and drop-out (Reips, 2000). Finally, a number of the participant recruitment websites used were not based in the UK and the nationality of the participants was not recorded. As such the potential confound of nationality could not be accounted for.

A key strength of the present study was that it was a between-participants rather than a within-participants analysis. The benefit of this was that the possibility of social desirability was mitigated. Only seeing the two control vignettes and one target meant that the participants were not able to directly compare the Relationships-Only vignette with the Money-Only vignette. If participants had been presented with all the possible target vignettes it is likely that they would have responded with socially desirable or folk-theory led responses, that is, that a life in which money is the only positive aspect is less satisfying than one with only positive relationships.

In sum the present study found that the single positive domains had different impacts on the well-being judgements suggesting that the weight attributed to domains differs according to importance. Further, in a happiness judgement a single but more important domain had greater impact than two less important ones. This again supports the idea that domain satisfaction is weighted according to importance in well-being judgements. To overcome the limitations of the present study a follow-

up study, described in Chapter 5, recreated the vignettes using archival data from the European Social Survey (ESS). Participants in the ESS have provided judgements of their own life satisfaction, happiness and meaning along with hundreds of other items as part of the survey. Responses to relevant items were used to form groups which simulated the vignettes. As such participants in the follow-up study were therefore judging their own lives and, at the time of making the judgements, were not restricted in terms of the information available to them. The ESS data used also came from a wave which occurred in 2005/6, a period before the UK recession.

Participants in the ESS are selected by strict random probability methods to ensure that they are as representative as possible of all persons aged 15 and over, thus addressing the issue of the generalisability of the results. Thus the replication of the present findings in the ESS data would add weight to the conclusions of the study.

## Chapter Seven

### Study 3b: The weighing up of life domains using survey data

The present study recreated the vignettes used in Chapter 6 with archival survey data from the United Kingdom (UK) sample of the European Social Survey (ESS). Using such data addresses the main limitations of the vignette study already outlined, namely that judging a life other than one's own may cognitively differ from judging one's own life and that a vignette containing only three domains simplifies and restricts information use.

The ESS is a cross-national survey that has been conducted biennially since 2002 and includes over 30 nations, including: the UK, Switzerland, Poland and France. The aim of the ESS has been to systematically study changing values, attitudes, attributes and behaviours across Europe. Participants in the ESS are selected by strict random probability methods to ensure that they are as representative as possible of all persons aged 15 and over within each country. Taking part in the survey involves a face-to-face interview consisting of: a core questionnaire, which is the largely the same with each round; two rotating modules, which vary with each round; and a supplementary questionnaire. The core questionnaire of the ESS measures three broad domains: values and ideological orientations, for example, religiosity and socio-political values; cultural/national orientations, for example, national and cultural attachment and feelings towards out-groups; and the social structure of society, for example, class, education, degree of social exclusion. The core questionnaire therefore contained items that assess a wide range of areas including income and financial circumstances, media use, political

trust, fear of crime and national, ethnic and religious allegiances. The two rotating modules are designed by competitively-selected teams and tend to have a narrow focus on a particular area of interest. For example in Round 7 the rotating modules address attitudes towards immigration and social inequalities in health. The supplementary questionnaire has two sections: the first is a measure of human values; the second repeats items from the core module in order to assess reliability and validity.

In Round 3 of the ESS, which occurred in 2006/7, the core module contained items relating to satisfaction, happiness and financial circumstances. Also one of the rotating modules assessed Personal and Social Well Being (Huppert et al., 2006). The Personal and Social Well Being module contained multiple judgements of the participants' own well-being, including a number of items regarding life satisfaction and a measure of purpose in life, as well as measures of relationships, social support and pro-social behaviour. As such the ESS Round 3 participants provided information regarding specific life areas, such as relationships and income, as well as responses to well-being questions. The ESS participants in Round 3 could therefore be allocated to groups that followed the structure of the vignettes used in Study 1.

Groups which simulated the vignettes, using responses to items identified as representing the domains depicted in the vignettes, were formed and the scores to items measuring life satisfaction, happiness and meaning compared. For example, participants who rated aspects of their relationships with others highly but who gave low scores regarding the financial and contribution-to-the-world aspects of their life mirrored the Relationships-Only vignette used in Study 3a. Obviously the present study does not involve participants judging control vignettes, nevertheless the All

Positive and All Negative vignettes were recreated by forming groups of participants who were either high ( “All High”) or low ( “All Low”) scorers on all three domains.

The present study also provides a benefit. An unexpected result of the vignette study was that the money domain was shown to be as important to life satisfaction as relationships. This result could be attributed to the financial climate of recession and austerity that existed when the data collection occurred, in 2012. This explanation would still support the idea that satisfaction judgements are considered and based on the weighing up of domains but it would mean that the result reflects the temporary salience of money to the participants (Schimmack & Oishi, 2005), rather than the more provocative explanation that money is more important to life satisfaction than previous research suggests. If the present study also showed that money and relationships were equally important to satisfaction it would demonstrate that the results of the vignette study were not just a consequence of the temporary relevance of the money domain. This result would contribute further support for the idea that financial information is more important for well-being judgments than it has previously been given credit for.

### **Aims and objectives**

The aim of the present study was to address the limitations of Study 3a. The following results were predicted:

- 1) The All High group should have higher life satisfaction, happiness and meaning scores than the All Low group.

- 2) For the judgement of life satisfaction the Relationships-Only and Money-Only groups should have a higher score than Contribution-to-the-world-Only group.
- 3) For the happiness judgement Relationships-Only should have a higher score than Money-Only and Contribution-to-the-world-Only.
- 4) For the judgement of meaning the Relationships-Only and Contribution-to-the-world-Only groups should have a higher score than Money-Only.
- 5) The scores of the Money-and-Contribution-to-the-world group are likely to be higher than Contribution-to-the-world-Only for life satisfaction, and higher than Money-Only for meaning, but lower than Relationships-Only for happiness.

## **Method**

### **Participants**

Participants were obtained from the United Kingdom sample of the European Social Survey ESS (Round 3) which consisted of 2394 participants. Only participants who responded to all of the relevant items were included in the present study, resulting in a sample size of 1836 (age range, 15 – 97 years;  $M = 49$  years,  $SD = 18$ ; 52.6% female; 5.8% reported that they belonged to a minority ethnic group).

### **Measures and Procedure**

The procedure for replicating the “lives” portrayed in the vignettes used in the previous study required four stages:

- 1) Identify the items that would act as a proxy for the areas featured in the vignettes.

- 2) Identify high and low responders to each item by creating cut-off points.
- 3) Combine the items to form the “high” domains
- 4) Combine the domains to replicate the vignettes.

**1. Identifying the proxy items.** To replicate the vignettes used in Study 3a ESS items were identified that would serve as proxies for each of the three areas: relationships, money and contribution to the world. In the following sections the identification of relevant items is addressed for each domain in turn. The relevant items are summarised in Table 7.1.

**Table 7.1. Summary of the ESS variables used to recreate the life domains included in the Study 3a vignettes**

Domain	Vignette	ESS items
Relationship	Er so I have loads of friends, er see them a lot.	How often do you meet socially with friends, relatives or colleagues?
	Good friends, you know, the kind that would help you out of trouble and stuff. Get on well with my family. They're great. Supportive.	Do you have anyone to discuss intimate and personal matters with?  There are people in life who care about me.

Domain	Vignette	ESS items
Money	<p>Er money –wise, not a problem, not in debt, extremely comfortable in that respect. Don't have to worry about when the pay check comes for paying bills or whatever. Don't have to think about how much stuff costs or save up for stuff. Just buy what I want when I want.</p>	<p>Net income.</p> <p>How do you feel about your net income at the moment?</p>
Contribution to the world	<p>I do fun runs, you know, for charity. Done quite a few of those. Spend a lot of time volunteering for various causes. So, er, yeah.</p> <p>Er and I er organise events locally to raise awareness, like er political issues, campaigns and stuff.</p>	<p>How often have you been involved with voluntary or charity work in the last 12 months?</p> <p>How often have you helped or attended activities in your local area?</p>

*Relationships.* The ESS contained a number of items that could be said to generally relate to relationships with others:

- How often do you meet socially with friends, relatives or colleagues?
- Do you have anyone to discuss intimate and personal matters with?
- How often have you felt lonely in the past week?
- How much of the time spent with immediate family is enjoyable?
- How much of the time spent with immediate family is stressful?
- There are people in life who care about me.
- How much do you take part in social activities compared to others of same age?

Of the seven potential ESS items three were considered to match the vignette section and four were discounted. Specifically the Study 3a vignettes, as presented in Table 7.1, contained references to the number of friends, the frequency of social activity with friends, and the quality of relationships with both friends and family.

While it could be argued that the item “How often have you felt lonely in the past week?” reflected relationships and social activity, the weekly time frame meant that it measured transient feelings of loneliness. An individual could feel lonely one week but not others, for example if they usually keep in touch or socialise with many people but were unable to for a week. As such this item was not a clear proxy for one’s general relationship domain. Further to this feelings, such as loneliness, were not addressed in the vignette. Therefore this item was discounted.

The item “How much do you take part in social activities compared to others of same age?” required an individual to make a direct comparison to other people in order to answer. Thus the accuracy of responses depended on the accuracy of the respondents’ knowledge of other people of the same age. This item was also conceptually similar to the item “How often do you meet socially with friends, relatives or colleagues?” which required personal information rather than a direct comparison. As both items related directly to the frequency of social activity, an aspect covered by the vignette, the item requiring comparison to others was discounted.

Two ESS items focussed specifically on family relationships: “How much of the time spent with immediate family is stressful?” and “How much of the time spent with immediate family is enjoyable?” These items could be said to directly match the following portion of the vignette: “Get on well with my family. They’re great. Supportive”. However these items excluded participants without family, but who have good, supportive friends. In fact of the 2394 participants 54 did not reply to the enjoyable item and 57 did not reply to the stressful item, whereas non-responders for the other relationships items did not exceed 13. Essentially the specificity of these two items separated them from the more general items that measured the quality of relationships: “Do you have anyone to discuss intimate and personal matters with?” and “There are people in life who care about me”. In other words some ESS items reflected the idea of relationship quality addressed in the vignette in general terms, whereas others specifically addressed the family aspect of the vignette but excluded a number of respondents as a result. Even though the vignette mentioned family specifically the intention was to provide positive or negative information about the quality of relationships of an ostensible “other” person. By using the more general

items this goal was achieved for individuals in the current study, both friends and family could have been considered while responding to the items, but the exclusion of respondents without a family was avoided.

Therefore of the seven ESS items identified “How often do you meet socially with friends, relatives or colleagues?” broadly assessed how often the participants socialised, while the items “Do you have anyone to discuss intimate and personal matters with?” and “There are people in life who care about me” were identified as being representative of the quality of relationships. There was not an item that directly assessed one’s number of friends.

**Money.** The ESS contained a number of items that generally related to money, finances and income:

- I get paid appropriately considering my efforts and achievements.
- To what extent is it important to compare your income with other people’s income?
- Whose income are you most likely to compare with?
- Main source of household income.
- Household’s net income.
- Feeling about household’s income nowadays.

Of these items two were considered the best fit for the vignette information, included in Table 7.1, which implied that the individual was relatively well-off and extremely satisfied with their income. The ESS item asking about the main source of household income had response items that included: wages, self-employment and

pensions. Thus this item addressed the source of one's income explicitly, an aspect not covered by the vignette. Further as the vignette section did not contain any references to comparing one's financial situation to others, the ESS items alluding to comparison - "It is important to compare your income with other people's income" and "Whose income are you most likely to compare with?" - also did not reflect the vignette. Finally the item "I get paid appropriately considering my efforts and achievements" required an extra level of judgement as, rather than simply being satisfied with one's pay, this item required a further assessment of one's effort and achievements. Again this kind of information was not broached in the vignette.

The item "How do you feel about your net income at the moment?" most accurately addressed the nature of the vignette information, that is one's subjective opinion about one's income, compared to the other items. In particular with a response scale of: *living comfortably*; *coping*; *difficult* and *very difficult* it directly addressed the feelings of comfort referred to in the vignette section. However as it was a subjective assessment it would be possible to feel that one was *living comfortably* even if one had a relatively low income. While a specific income level was not referenced in the vignette a high net income was implied by the description. The Net Income measure therefore provided an objective assessment with which to qualify the subjective appraisal. Equally though an individual could have a relatively high income but not feel that they were living comfortably. Therefore the two items combined fully accounted for the description in the vignette: one who can be identified as having a relatively high income and who also feels highly satisfied with that income.

***Contribution-to-the-world.*** The ESS contained three items that related generally to the idea of Contribution-to-the-world as portrayed in the vignette:

- How often have you been involved with voluntary or charity work in the last 12 months?
- How often have you helped others not counting family/ work or voluntary organisations?
- How often have you helped or attended activities in your local area?

The vignette characterised Contribution-to-the-world in terms of volunteering one's time and raising money for charity, as presented in Table 7.1. Of the three ESS items one in particular addressed helping others in a general sense and specifically excluded voluntary work. This item was therefore excluded as it did not reflect the information in the vignette section. Of the remaining two items one related directly to the vignette information: "How often have you been involved with voluntary or charity work in the last 12 months?" The item "How often have you helped or attended activities in your local area?" did not necessarily reflect the "organise events locally" aspect of the vignette but there was a clear overlap in terms of contributing to local events. Furthermore its inclusion meant that Contribution-of-the-world was not represented by just a single item.

**2. Creating cut-off points for each item.** Two or three ESS items were identified as proxies for each domain featured in the vignette, based on conceptual similarity. The response scales for each item are described in Table 7.2.

**Table 7.2. The ESS items chosen as proxies for the Relationships, Money and Contribution-to-the-world domain and their response scales**

ESS Item	Response scale
How often do you meet socially with friends, relatives or colleagues?	7 point scale: Never; Less than once a month; Once a month; Several times a month; Once a week; Several times a week; Every day.
Do you have anyone to discuss intimate and personal matters with?	Yes or No
There are people in life who care about me.	5 point scale: Agree strongly; Agree; Neither agree nor disagree; Disagree; Strongly disagree
Net income.?	12 income bands: J < £1500 R £1500 - £3000 C £3000 - £5000 M £5000 - £10,000

ESS Item	Response scale
	F £10,000 - £15,000
	S £15,000 - £20,000
	K £20,000 - £24,000
	P £24,000 - £30,000
	D £30,000 - £50,000
	H £50,000 - £70,000
	U £70,000 - £100,000
	N > £100000
How do you feel about your net income at the moment?	4 answers: Living comfortably; Coping; Difficult; Very difficult.
How often have you been involved with voluntary or charity work in the last 12 months?	6 point scale: At least once a week; At least once a month; At least once every 3 months; At least once every 6 months; Less often; Never.
How often have you helped or attended activities in your local area?	As above

As well as the associated response scales the ESS also provided the following responses for each item: *not applicable*; *don't know* and *refuse to answer*.

Participants who chose any of these responses were excluded as they could not be identified as being high or low scorers. For the remaining sample cut-off points were chosen that best represented the extreme positive aspects of the areas of interest portrayed in the Study 3a vignettes, thus forming “high” groups for each variable. The reasoning behind the cut-off points is described for each domain in turn in the following sections.

### ***Relationships.***

*Do you have anyone to discuss intimate and personal matters with?* For this item the cut-off point was straightforward, due to the yes/ no response: those who answered *yes* were classed as “high”. The *yes* group accounted for 92% of the participants thus placing greater discriminatory pressure on the two other variables

*There are people in life who care about me.* The cut- off point for this item, was the *agree strongly* response, those participants who chose it were classed as “high”. Not only was *agree strongly* the most extreme and positive response but it was also the most common response, it accounted for 57% of the participants.

Importantly if the *agree* respondents were also included with *agree strongly* then the resulting “high” group would account for 96.6% of the sample. This would leave most of the discrimination to the remaining sociability item. The *agree strongly* response was therefore the most appropriate cut-off point.

*How often do you socially meet with friends, relatives or colleagues?* The cut off point for this item was the *several times a week* response. The “high” group therefore consisted of those participants who responded *several times a week* and the

next and final response from the scale: *every day*. Thus the “high” group consisted of the most extreme answer, *every day*, and the most common answer, *several times a week*. The *everyday* response accounted for just 16% of the sample whereas in combination with *several times a week* 49% of the participants were accounted for.

***Money.***

*Net Income.* The cut-off point for this item was the D band response. The “high” group therefore consisted of participants with an income of £30,000 - £50,000 and above. This item provided an objective measure allowing those with higher than average income to be identified. Band D (£30,000 - £50,000) was in fact the most common response and this also corresponded to the average weekly income for 2005/6 according to the Office for National Statistics’ Family Spending Survey (Office for National Statistics, 2011). The H, U and N bands therefore represented a higher than average income. However, together these three groups accounted for only 19% of the sample whereas using the average income and above (i.e., groups D, H, U and N) as the cut-off point accounted for 41% of the sample. It could be argued that classing the average income as “high” did not reflect the vignette. However the subjective feeling item, described next, allowed further exclusions.

*How do you feel about your net income at the moment?* For this item *living comfortably* was chosen as the “high” group cut off point: of all the responses to this item *living comfortably* was the most positive and therefore reflected the aim of the vignette. Importantly this item allowed those in the average wage group who did not feel that they were living comfortably to be excluded from the “high” group.

***Contribution-to-the-world.***

*How often have you been involved with voluntary or charity work in the last 12 months?* The cut-off point for this item was *at least once every 6 months*. As such the “high” group consisted of respondents who were involved in charity or voluntary work at least twice a year and more frequently, up to an including the most extreme response on the scale: *at least once a week*. Again by not using the most extreme response as the cut-off point it could be argued that the “high” group does not reflect the nature of the vignette. However the response that reflected the highest amount of voluntary work, *at least once a week*, accounted for only 8.5% of the sample. Furthermore the most common response was *never*. Thus using the most common response as a cut-off point in this case would result in the “high” group consisting of those who do some voluntary work, no matter how rarely, while those excluded from the “high” group would simply be those who do not do any charity or voluntary work. In other words, using the most common response as the cut-off would not reflect the “high” aspect of the vignette at all. Using *at least once every 6 months* as the cut-off point created a slightly more stringent exclusion: both *less often* and *never* responders were excluded from the “high” group. Also the “high” group accounted for 29% of the sample

*How often have you helped or attended activities in your local area?* Again the cut-off point for this item was *at least once every 6 months*. The response representing the most frequent amount of helping or attending local activities accounted for just 8.2% of the sample, while the most common response was, again, *never*. Using *at least once every 6 months* as the cut-off point meant that the “high” group accounted for 39% of the sample.

**3. Combining the items.** Having established the cut-off points for each item a participant was then classed as “high” in a domain if they were “high” in all of the individual items related to that domain. For example, a participant who has someone to discuss intimate and personal matters with, strongly agrees that they have someone in their life to care about them and meets socially with friends, relatives or colleagues several times a week or more, would be classed as being “high” in all three Relationships items and would therefore be placed in the “high” in the Relationships domain group. Those who were not “high” in all the items relevant to a domain were classed as “low”. Put another way participants were placed in the “low” group for each domain if they were low in any of the items relevant to the domain, for example they may have someone to discuss personal matters with and agree strongly that there are people in life who care about them but were socially active less than several times a week. A more accurate label would therefore be “not high for all relevant items” however for succinctness the label “low” was used. It is important to stress therefore that the “high” domain label reflects the stringent criteria used to replicate the Study 3a vignettes and that the “low” label does not represent a life bereft of positive areas. The “high” group accounted for a similar proportion of the sample for each domain: Relationships, 28%; Money, 23%; Contribution-to-the-world, 20%.

**4. Combining the domains.** Once the “high” and “low” groups for each domain were formed the groups were combined to replicate the combination of high and low domains in the Study 3a vignettes. The groups are presented in Table 7.3. In total the groups accounted for 1655 participants (age range 15- 97 years,  $M = 49.5$  years,  $SD = 17.9$ ; 52% female; 6% ethnic minority) of the starting sample of 1837

participants. For a medium effect size the sample of 1655 provided a power of over .99, alpha .05, for the main ANOVA analysis. The remaining 182 were participants who did not fit into the groups that replicated the Study 1 vignettes. The large number of participants in the All Low group reflected the fact that those participants are not necessarily low in all aspects of each domain but are simply not high in all the necessary aspects of a domain, for example some participants in the All Low group had “high” responses in just one of the items for each domain.

**Table 7.3. Groups formed from the ESS proxy items to match the Study 3a vignettes**

Vignette	Domains			Number of participants
	Relationships	Money	Contribution to the world	
All High	High	High	High	33
All Low	Low	Low	Low	833
Relationships-only	High	Low	Low	316
Money-only	Low	High	Low	228
Contribution-to-the-world-only	Low	Low	High	168
Money-and-Contribution-to-the-world	Low	High	High	77

In summary a participant who has someone to discuss intimate and personal matters with, strongly agrees that they have someone in their life to care about them, meets socially with friends, relatives or colleagues several times a week or more, earns the average wage or higher whilst feeling comfortable with their income and contributes to local and charitable activities every 6 months or more would be classed as high in all three domains.

**Life satisfaction.** The measure of life satisfaction consisted of three items that were distributed separately in the ESS. Two items were derived from the SWLS (Diener et al., 1985) by Huppert et al. (2006): I am satisfied with how life has turned out so far (response scale ranging from 0, *extremely dissatisfied* to 10, *extremely satisfied*) and On the whole life is close to how I would like it to be (response scale ranging from 1, *agree strongly* to 5, *disagree strongly*). The third item was: How satisfied are you with your life as a whole? (response scale ranging from 0, *extremely dissatisfied* to 10, *extremely satisfied*). For “Life is close to how I would like it” the scores were reversed and doubled as the response scale was in the opposite direction to the other two and only ranged from 0- 5. The scores for the three items were then averaged so the possible scores ranged from 1 - 10.

**Happiness.** One item in the ESS reflected general happiness, rather than happy feelings over the past week: *How happy are you?* (response scale ranging from 0, *extremely dissatisfied* to 10, *extremely satisfied*).

**Meaning.** The ESS did not include a general measure of the meaningfulness of a life. An item to measure purpose in life was written specifically for the Well Being module of the ESS (Huppert et al., 2006): I feel that what I do in life is valuable and worthwhile (response scale ranging from 1, *agree strongly*, to 5,

*disagree strongly*). While meaningfulness and purpose in life may in fact be somewhat distinct concepts (George & Park, 2013) in the absence of a meaning in life measure this item was considered to a close proxy. Scores were reversed, so that a high score reflected a positive agreement, and doubled, to match the other variables. The possible scores ranged from 1 – 10.

## Results

The dependent variables of satisfaction with life, happiness and meaning were squared to remove positive skew and outliers (Tabachnik and Fidell, 2013). The distribution of mean age, proportion of female participants and proportion of those who reported belonging to an ethnic minority for each group is shown in Table 7.4. A one way ANOVA confirmed that the groups differed significantly in age,  $F(5, 1648) = 5.20, p < .001, \eta^2 = .02$ . A 2 by 6 Chi Square showed that the gender distribution significantly differed between the groups,  $\chi^2 = 18.81, df = 5, p < .005, V = .11$ . A 2 by 6 Chi Square showed that the distribution of participants who reported that they belonged to an ethnic minority did not differ between groups,  $\chi^2 = 5.12, df = 5, p = .40, V = .06$ . Age and gender were therefore included in the main analyses.

**Table 7.4. Mean age and standard deviations (SD), proportion of female participants and proportion of participants reporting to belong to an ethnic minority, according to group**

Group	N	Age	Gender	Ethnic Minority
		Mean (SD)	% Female	%
All domains high	33	45.88 (12.46)	48.50	6.10
All domains low	833	50.90 (18.18)	52.20	6.70
Relationships Only	316	47.25 (20.54)	59.80	4.10
Money Only	228	46.40 (14.99)	41.20	6.20
Contribution-to-the-world Only	168	53.04 (16.56)	53.60	4.20
Money and Contribution-to-the-world	77	47.55 (12.95)	54.50	9.10

**Effect of group on judgements of satisfaction, happiness and meaning.**

Across the entire sample the dependent variables were shown to be significantly correlated with each other: SWL with happiness,  $r(1653) = .73, p < .001$ ; SWL with meaning,  $r(1653) = .38, p < .001$ ; happiness with meaning,  $r(1653) = .33, p < .001$ .

As in Study 3a the dependent variables were analysed separately (Grice & Iwasaki, 2007). To accommodate the variation of age and gender between the groups each dependent variable was examined with a 2 (Gender: male vs. female) x 6

(Group: All domains high, All domains low, Relationships Only, Money Only, Contribution-to-the-world Only, Money and Contribution-to-the-world) ANCOVA, with age as a covariate. There was no main effect of gender for any of the three dependent variables: Satisfaction ( $F < 1$ ), Happiness ( $F < 1$ ) or Meaning ( $F < 1$ ). There was also no significant gender x group interaction for any of the three dependent variables: Satisfaction ( $F(5, 1641) = 1.14, p = .34, \eta^2 = .003$ ), Happiness ( $F(5, 1641) = 1.07, p = .38, \eta^2 = .003$ ) or meaning ( $F < 1$ ). Therefore gender was not considered further. The effects that are reported for the analysis include age as a covariate.

A significant main effect of group was found for each of the three dependent variables: Satisfaction ( $F(5, 1641) = 25.08, p < .001, \eta^2 = .07$ ), Happiness ( $F(5, 1641) = 21.25, p < .001, \eta^2 = .06$ ) and Meaning ( $F(5, 1641) = 16.47, p < .001, \eta^2 = .05$ ). Importantly, given the difference in group sizes and significant heterogeneity of variances, the corresponding Welch statistics were also significant: Satisfaction (Welch's  $F(5, 230.09) = 29.74, p < .001$ ); Happiness (Welch's  $F(5, 234.59) = 24.78, p < .001$ ); Meaning (Welch's  $F(5, 223.28) = 17.79, p < .001$ ). The mean scores and the results of the Post Hoc tests (Games-Howell) are presented in Table 7.6. Reassuringly, the All High life was shown to have a significantly greater score than the All Low life for all three dependent variables: Satisfaction,  $p < .001, d = 1.28$ ; Happiness,  $p < .001, d = 1.13$ , Meaning,  $p < .001, d = 1.11$ . This showed that the three life domains being examined do relate to the judgement of satisfaction, happiness and meaning.

**Table 7.5. Mean scores and standard deviations (SD) for all Dependent Variables with results of Bonferroni pairwise post hoc Comparisons**

Dependent Variable	Group					
	All High Domains	All Low Domains	Rel'ships Only	Money Only	CtW*	Money and CtW*
Satisfaction	70.70 <sup>a</sup> (15.63)	47.41 <sup>b</sup> (21.63)	55.98 <sup>cd</sup> (21.91)	58.60 <sup>c</sup> (17.38)	51.92 <sup>bd</sup> (21.51)	61.19 <sup>ac</sup> (15.11)
Happiness	75.88 <sup>a</sup> (15.36)	53.45 <sup>b</sup> (25.57)	65.92 <sup>ac</sup> (25.00)	61.88 <sup>cd</sup> (21.40)	57.18 <sup>bd</sup> (25.09)	66.97 <sup>ac</sup> (16.50)
Meaning	79.55 <sup>a</sup> (19.59)	57.44 <sup>b</sup> (20.10)	65.22 <sup>cd</sup> (22.00)	62.04 <sup>bc</sup> (19.11)	62.68 <sup>cd</sup> (19.82)	70.91 <sup>ad</sup> (18.89)

Notes: Values represent the squared scores. Means with matching horizontal superscripts are similar. Differences are significant  $p < .05$ . \* CtW = Contribution-to-the-world.

In the case of life satisfaction judgements, the Relationship-Only, Money-Only and Money-and-Contribution-to-the-world groups did not differ significantly from each other (Relationship-Only and Money-Only,  $p = 1.00$ ,  $d = .16$ ; Relationship-Only and Money-and-Contribution-to-the-world,  $p = .56$ ,  $d = .30$ ; Money-Only and Money-and-Contribution-to-the-world,  $p = 1.00$ ,  $d = .14$ ). The only difference found was that Money-Only ( $p = .006$ ,  $d = .39$ ) and Money-and-Contribution-to-the-world ( $p = .008$ ,  $d = .54$ ) had significantly higher scores than the

Contribution-to-the-world-Only group. The high score on the Money-and-Contribution-to-the-world group would appear to be due to the presence of the positive money element; additionally having Contribution-to-the-world did not result in a higher life satisfaction score than money alone, despite the fact that it was an additional positive area of life. The differences in satisfaction between the groups can also be considered in terms of their relationship with the All High and All Low groups. With the exception of the Contribution-to-the-world-Only group ( $p = .20$ ,  $d = .20$ ), three of the four target groups had a significantly greater score than the All Low group (Relationships Only,  $p < .001$ ,  $d = .40$ ; Money-Only  $p < .001$ ,  $d = .61$ ; Money-and-Contribution-to-the-world  $p < .001$ ,  $d = .77$ ) indicating the value of money and relationships, but not contribution to the world, for life satisfaction. Compared to the All High group all three high single area lives displayed significantly lower life satisfaction scores (Relationships Only,  $p = .001$ ,  $d = .80$ ; Money-Only  $p = .03$ ,  $d = .72$ ; Contribution-to-the-world-Only,  $p < .001$ ,  $d = .1.05$ ), but the Money-and-Contribution-to-the-world group was not significantly lower ( $p = .38$ ,  $d = .63$ ). This result suggested that two positive areas were better for life satisfaction than one.

For happiness judgements the pattern was broadly similar. Again the Relationship-Only, Money-Only and Money-and-Contribution-to-the-world groups did not differ significantly from each other (Relationship-Only and Money-Only,  $p = 1.00$ ,  $d = .15$ ; Relationship-Only and Money-and-Contribution-to-the-world,  $p = 1.00$ ,  $d = .05$ ; Money-Only and Money-and-Contribution-to-the-world,  $p = 1.00$ ,  $d = .23$ ). This time however it was found that Relationship-Only ( $p = .001$ ,  $d = .38$ ) and Money-and-Contribution-to-the-world ( $p = .02$ ,  $d = .51$ ), but not the Money-Only

group ( $p = .20$ ,  $d = .27$ ), had significantly higher scores than Contribution-to-the-world-Only. This result suggests that the domain of Relationships had greater impact than did Contribution-to-the-world on happiness and that adding positive contribution-to-the-world to positive money increased its impact on happiness. Similarly to the life satisfaction judgements, having the presence of at least one positive aspect of life was associated with higher happiness scores compared to the All Low group (Relationships-Only,  $p < .001$ ,  $d = .52$ ; Money-Only,  $p < .001$ ,  $d = .41$ ; or Money-and-Contribution-to-the-world,  $p < .001$ ,  $d = .67$ ), the exception again being the Contribution-to-the-world-Only group ( $p = 1.00$ ,  $d = .14$ ). This time both Money-Only ( $p = .04$ ,  $d = .73$ ) and Contribution-to-the-world-Only ( $p < .001$ ,  $d = .97$ ) groups displayed lower happiness scores compared to the All High Group. As such Relationships-Only ( $p = .35$ ,  $d = .50$ ) and the combined Money-and-Contribution-to-the-world group ( $p = 1.00$ ,  $d = .57$ ) were not significantly lower than the All High group, indicating the value of relationships on their own, as well as a combination of money and contributing to the world, to subjective happiness.

For the meaning judgements the single positive area groups did not differ from each other (Relationship-Only and Money-Only,  $p = 1.00$ ,  $d = .14$ ; Relationship-Only and Contribution-to-the-world-Only,  $p = 1.00$ ,  $d = .10$ ; Money-Only and Contribution-to-the-world,  $p = 1.00$ ,  $d = .04$ ). Unlike the previous judgements however the Money-and-Contribution-to-the-world group had a significantly greater score than Money-Only group ( $p = .02$ ,  $d = .47$ ), indicating that the Contribution-to-the-world domain had a greater impact on meaning than it did in the other two judgements. The Relationships-Only ( $p < .001$ ,  $d = .35$ ), Contribution-to-the-world-Only ( $p = .04$ ,  $d = .26$ ) and Money-and-Contribution-to-the-world ( $p < .001$ ,  $d = .68$ ) groups all had a significantly greater score than the All Low group

but the Money-Only group did not ( $p = .06$ ,  $d = .23$ ), indicating the lower value of money to meaning judgements. In comparison to the All High life, all three single area groups displayed a significant drop in meaning (Relationships-Only,  $p = .002$ ,  $d = .69$ ; Money-Only,  $p < .001$ ,  $d = .90$ ; Contribution-to-the-world-Only,  $p < .001$ ,  $d = .84$ ) whereas the Money-and-Contribution-to-the-world life did not ( $p = .67$ ,  $d = .44$ ).

## Discussion

The discussion is split into two sections. The first focusses on the present study (3b) while the second considers Study 3b and Study 3a in combination.

### Discussion (Study 3b)

In line with the prediction the All High group had a greater score than the All Low group for all three dependent variables. A lack of difference between these two groups would have suggested that the domains had no bearing on the judgements. The consistent difference shown between the All High and All Low groups in the present study emphasised the fact that the three domains examined were still relevant to the judgements when participants had the freedom to use whatever information they wished.

In terms of the differences between the single positive area groups, for life satisfaction Money-Only had a significantly higher score than the Contribution-to-the-world-Only group, which suggested that money had a greater impact on life satisfaction than contribution-to-the-world. For happiness the Relationship-Only group had significantly higher scores than Contribution-to-the-world-Only, which suggested that the domain of relationships has greater impact on happiness than

contribution-to-the-world. For the meaning judgements the single positive area groups did not differ from each other.

The test of whether the Relationships-Only group had a greater life satisfaction score than the Money-and-Contribution-to-the-world group, a result which would indicate that the Relationships domain was given greater weight in the judgement, found that the Relationships-Only and Money-and-Contribution-to-the-world groups actually had similar scores. This was also the case for Happiness and Meaning, a finding that can be explained by the relative importance of just one of the two high domains. In addition, the Money-and-Contribution-to-the-world group was found to have a greater score than Contribution-to-the-world-Only, for happiness and life satisfaction, and Money-Only, for meaning, whilst having a similar score to Money-Only or Contribution-to-the-world-Only, respectively. Put another way, for each judgement the Money-and-Contribution-to-the-world group was found to have a similar score to the group with just one of the pair and a greater score than the group with the other domain. This result suggested that if one of the pair was important to the judgement the second domain did not result in a score increase. It can be reasonably expected that had the group with two high areas consisted of two domains that were equally low in terms of importance for a particular type of judgement then it would not have a greater score than any of the single aspect groups and may also have had a lower score than Relationships-Only.

The discrepant relationship between the single or double positive area groups with the All High and All Low groups was also considered. For both satisfaction and happiness only the Contribution-to-the-world-Only group did not have a greater score than the All Low group. A different pattern was found for meaning; only the

Money-Only group did not have a greater score than the All Low group. These results suggested that money and relationships were more important than contribution-to-the-world for both satisfaction and happiness but contribution-to-the-world and relationships were more important than money for meaning. It was consistently found, for life satisfaction, happiness and meaning, that the All High group mainly had greater scores than the single area groups but similar scores to the Money-and-Contribution-to-the-world group. This pattern could suggest that having two high domains yields a high judgement score regardless of domain importance. Put another way, it may suggest a cumulative effect of domain satisfaction that does not allow for differences in weighting between domains. However a judgement based purely on the amount of positive information would predict that the life with two high areas, Money-and-Contribution-to-the-world, would have a greater score than all the single area lives and this was not found. Further to this, for happiness, the Relationship-Only group was also not significantly lower than the All High group, providing some support for the idea that relationships were given as much weight as a combination of money and contribution-to-the-world.

The present study therefore provides some support for the idea that the weighting of domains occurs in a complex judgement and that the weight attributed to the domains differs, at least partly, according to the type of life judgement being made. For satisfaction judgements, positive relationships, and positive financial information especially, were associated with higher life satisfaction but a life in which the best domain was contribution-to-the-world had little impact on life satisfaction. Similarly, for happiness judgements, money, and relationships particularly, were shown to matter and again contribution-to-the-world appeared not

to. In the case of meaning judgements, the overall pattern indicated was somewhat different with contribution-to-the-world making a difference alongside relationships with money appearing to be less important. The main aim of the present study was to address the limitations of Study 3a, primarily by using participants' judgments of their own lives. The results at least partially replicate the results of Study 3a but the present study found that the patterns of importance between life satisfaction, happiness and meaning were broadly similar to each other: there was less evidence that the domains included had different relationships with life satisfaction, happiness and meaning.

A limitation of the present study was the use of an item relating to purpose in life (I feel that what I do in life is valuable and worthwhile) as a substitute for meaning. Recently George and Park (2013) have argued that meaning and purpose are related but distinct constructs. George and Park (2013) conceptualised meaning as the experience of life fitting into a large context, with subsequent feelings of significance, and defined purpose in life as an individual having a system of goals that provide a sense of direction. Using measures that reflected these conceptualisations George and Park (2013) found that, for cancer survivors, meaning and purpose had different predictors and correlates: for example, measures of religiosity and spirituality were related to meaning but not purpose whereas interpersonal support and optimism were related to purpose but not meaning. If meaning and purpose are distinct then it can be argued that the results from the present study regarding purpose in life are not comparable with those from Study 3a concerning meaning. As Study 3a used a less specific measure, asking participants to what extent the life presented was meaningful, it is not possible to know how

meaning was being defined by the participants. Given that George and Park (2013) also found that meaning and purpose were highly correlated with each other ( $r = .61$ ,  $p < .01$ ) it is likely that lay definitions of purpose and meaning have considerable overlap. Further well-being definitions such as PERMA (Seligman, 2011) and PWB (Ryff, 1989) tend to treat meaning and purpose as facets of a single broad concept. As such the use of purpose in life in the present study should be considered a fair approximation of the assessment of meaning in Study 3a.

The nature of the present study (3b) meant that participants were able to use whatever information they wanted in each judgment. This was intended to address the restrictive nature of Study 3a, the ESS items used in the present study allowed the judgements to be made freely. Therefore participants could draw on any information when responding to the judgement items, for example those in the Money-Only group have, technically, low Relationships and Contribution-to-the-world domains but some may also be highly satisfied in their job or some other domains. Thus, when responding to the Meaning item for example, those in the Money-Only group may also have used other domain information that related to meaning. In other words in the present study the scores for each group cannot be attributed to the single high domain, and this may explain the similarity between the groups.

The manner in which the Study 3a vignettes were recreated may also explain why the groups were found to have fairly similar judgement scores. Participants who were “low” in just one of the items relevant to a domain were classed as low in that domain. This was in order to maintain the replication of the vignettes, which described extremely positive aspects of each domain, as much as possible. As such it

is feasible that participants who were sorted into the “high” domain groups may have been relatively high in the other domains, just not in all the items. For example, those in the Money-Only group may also have had “high” responses to just two of the three relationships items and one “high” response to one of the two contribution-to-the-world items. This would mean that in the Money-Only group participants may also have some positive information relating to the other two domains to call upon when responding to the well-being items, just not quite as much as those in the high groups. A further issue is that more weight may be then be placed on the on the small amount of information. Thus, in terms of the positive information provided by each domain, the groups were not necessarily highly differentiated. This possibility may also account for the apparent similarity between the two high areas and the All High groups. Participants in the Money-and-Contribution-to-the-world group may have had some positive relationships domain information, in other words they could be high in just one or two relationships items.

It could be argued that the criteria for the formation of the groups were set too strictly, for example, the All High group only had 33 participants. However for the relationships items the cut-off points always included the most common answer and as such the “high” responses were by no means unattainable. The money domain was also based on participants on the average income, although it was then restricted to those who also felt comfortable with it. The main aim of the criteria set was to replicate the Study 3a vignettes which represented the extreme end of the domain satisfaction spectrum. Rather than the criteria being set too high, the forming of the groups in the present study, and the numbers of participants therein highlights that

the majority of people are not living life at its most satisfactory. This is in line with current research regarding flourishing (Huppert & So, 2013).

The strength of the present study lies in its real-life replication of Study 3a. Participants were judging their own lives and could use whatever information they wished. A further strength is that participants in the ESS are selected by strict random probability methods. The sample can therefore be considered to be as representative as possible of all persons in the UK aged 15 and over.

### **Joint Discussion Studies 3a and 3b**

The initial prediction that relationships, money and contribution to the world would show decreasing relative importance in a satisfaction judgement was partially supported. Both studies clearly showed that money and relationships made a difference in life satisfaction judgements; although, against prediction, their effects were similar. As predicted contribution-to-the-world made the least difference, and in fact, its presence appeared to have little to no benefit for life satisfaction judgements. The results of both studies indicated that that the money domain was given more weight in a life satisfaction judgement than might be expected. For the happiness judgement the exact pattern of significant differences differed slightly between the two studies but both pointed to the particular importance of relationships, followed by money, with contribution-to-the-world again trailing behind. When it came to judgements about meaning the pattern was different. This time contribution-to-the-world appeared to be important, along with relationships. The two studies produced mixed results relating to the importance of money in meaning judgements, with Study 1 indicating little importance but Study 2 giving it more of a place.

If the judgements were based purely on the amount of positive information the life with two high areas (Money-and-Contribution-to-the-world) would be expected to have a greater score than all the single area lives and this difference was not found in either study. The consistent lack of difference in Study 3b between the All High group and the Money-and-Contribution-to-the-world group suggested a cumulative effect, that having two high domains yields a high judgement score regardless of domain importance. However this finding can also be interpreted as demonstrating the extent of relative importance on the weighting of the single domain. The results of both studies showed that for the judgements of satisfaction and meaning the combined Money-and-Contribution-to-the-world group only had a greater score than the single domain that had been shown to be given the least weight in the judgement: for satisfaction it was greater than Contribution-to-the-world-Only, for the meaning judgement it had a greater score than Money-Only. This can be explained by Money-and-Contribution-to-the-world containing a single domain that turned out to be relatively important to satisfaction (money) and meaning (contribution-to-the-world). It can reasonably be expected that had the group with two high areas consisted of two domains that were equally low in terms of importance for that particular type of judgement then that group would not have a greater score than single aspect groups containing information of importance. This prediction is supported by the results for the happiness judgement in Study 3a in which the Relationship-Only group had a higher satisfaction score than the combined Money-and-Contribution-to-the-world-Only group.

The combined results of Studies 3a and 3b therefore support Study 1, which found that Relationships, Money and Contribution to the World are related to life

satisfaction judgements. By demonstrating a discrepant pattern of relative importance for the three judgements the present studies also support the idea that broad concepts, such as the extent to which one's life provides satisfaction, happiness and meaning, involve considered judgements that are constructed separately with different information. The present studies therefore support previous literature that suggests that meaning and satisfaction (King & Napa, 1998), or meaning and happiness (Baumeister et al., 2013), are separately considered concepts. The present studies also provide support for the idea that in a judgement of satisfaction, or a similarly complex concept such as happiness or meaning, life domains differ in their relative importance and are weighed up accordingly (Diener et al., 1985; Pavot & Diener, 2008; Schimmack & Oishi, 2005). Further the results also support the idea, highlighted as a limitation of both Study 1 and previous studies such as Mellor et al., (1999) and Schimmack, Diener, and Oishi (2002), that the frequency of information use does not accurately represent the importance of that information in a life satisfaction judgement. For example, the results of both studies suggest that money was more relevant to life satisfaction than anticipated, as the predictions were based on Money being brought to mind less often than Relationships-with-others in Study 1. These results therefore also provide support for the importance of money to life satisfaction. This was an unexpected result of Study 3a that might have been explained by the financial climate of recession and austerity that existed when the data collection occurred, in 2012. This explanation would still support the idea that satisfaction judgements are considered and based on the weighing up of domains but it would mean that the result reflected the temporary salience of money to the participants (Schimmack & Oishi, 2005), rather than the more provocative explanation that money is more important to life satisfaction than

previous research suggests (e.g., Howell & Howell, 2008; King & Napa, 1998). As the ESS data collection used in Study 3b occurred in 2006/7 the importance of money to life satisfaction cannot be explained as being a result of temporary salience. The two studies therefore provide support for a recent study by Diener et al. (2013) that examined the relationship between income and well-being and addressed the limitations of previous correlational studies. Diener et al. (2013) found that increasing household income was related to increased life satisfaction, via the increase in material possessions, financial satisfaction and optimism for the future. Thus Studies 3a and 3b contribute to both the most recent literature and to the “continuing debate” regarding the relevance of money to well-being (Lucas et al., 2008, p.2004).

The partial replication of Study 3a’s results by Study 3b also contributes to the validation of the vignette method, a technique that has rarely been used in well-being research (Bouazzaoui & Mullet, 2005; King & Napa, 1998). Techniques that are able to influence or modify participants’ judgements of their life domains allow the subsequent effects on life satisfaction or other judgements to be observed, and vignettes may provide benefits over other methods. For example, if a priming methodology was used to induce a “low” or “high” domain it may prove difficult to check whether the prime had the desired effect as a manipulation check could bring the priming mechanism to the attention of the participants (Oishi et al., 2003). Even using explicit instructions, for example asking participants to imagine a better or worse domain, it would be difficult to verify whether the participant had imagined a sufficiently satisfactory or unsatisfactory domain. The results of Study 3a also found that the judgement scores were not related to the participants’ current mood, trait

feelings or aspiration measures. This suggests participants did not project their traits and moods on to the lives portrayed in the vignettes, despite research that has shown that people have a tendency to project their own traits and attitudes onto others, resulting in egocentric biases when people are asked to take another's perspective (Epley, Keysar, Van Boven, & Gilovich, 2004; Robbins & Krueger, 2005). Thus asking participants to respond to items as if they were the person depicted in a vignette may be an alternative way to encourage participants to imagine lives different to their own without using either priming, or explicit instructions. The lack of influence of one's traits and mood implies that vignettes may be a useful method in situations that require current mood and general traits to be excluded.

The results of the two studies differed in that Study 3a found much clearer differentiation between the single domain groups and therefore indicated greater definition between the importance of the domains to life satisfaction, happiness and meaning judgements. A clear methodological difference may explain these results. In Study 3a the satisfaction, happiness and meaning questions were presented at the same time, albeit randomly ordered, whereas in Study 3b the judgement items were spread out amongst the hundreds of ESS items in the survey. This may have made it more difficult for the participants in the ESS to separate out the concepts of life satisfaction, happiness and meaning. In other words, Study 3a may have facilitated a more defined conceptualisation of life satisfaction, happiness and meaning via processes such as conversational norms (Schwarz & Strack, 1999; Schwarz, 1999): seeing the meaning, happiness and life satisfaction items together may have implied that different information should be used for each item. It is also likely that the simplicity of the presented information in Study 3a, via the short vignettes, further

facilitated the use of different information for each concept. This explanation suggests that in a real-life setting, in which a person can use any information they choose, the information used in judgements of life satisfaction, happiness and meaning over-laps. Furthermore this over-lap may be increased if the different judgements are not clearly signposted as requiring separate information, by being mixed in amongst many other items, as in the ESS used for Study 3b. As such the greater similarity between the groups in Study 3b, compared to Study 3a, may be due to a genuine over-lap in the extent to which each domain contributed to the judgement or be due to the way the questions were asked.

A potential limitation arises when considering the results of the two studies together. The method used to recreate Study 3a's vignettes meant that participants in the "low" groups are actually "not high for all relevant items", rather than "low". For reasons of succinctness the term "low" was used for anyone not in the high group. The vignettes used in Study 3a however used clearly positively and negatively valenced information. Thus it could be argued that the two studies are not comparable. However it can be maintained that the groups in both studies do portray the same basic structure, for example, the vignette in 3a which clearly contains Positive (or High) Relationships, Negative (or Low) Money and Negative (or Low) Contribution-to-the-world is represented in 3b by individuals who have more satisfying sources, both in amount and extent, for their Relationship domain than the other two domains. Put another way while the separation between the domains may not be as defined in Study 3b as in Study 3a the domains follow the same pattern in terms of the relative balance of positivity. Further to this the criticism that the studies are not comparable does not account for the fact that Study 3a was an over-

simplified, stylised re-creation of a potential judgement situation whereas 3b was more ecologically valid version.

More general limitations of the two studies include the focus on positive information and the generalizability of the results. The vignettes and groups used in the study relied on the systematic variation of the “high” end of each domain. The focus was therefore on the contribution of the high versus the not-high aspects of each domain, and this fails to take into account the potentially greater contribution of negative information. For example although relationships and money both have a similar impact on life judgements when high, *particularly* unsatisfactory relationships may have a greater impact on judgements than a *particularly* unsatisfactory financial life.

With regards to generalisability, both the present studies had samples in which the majority of participants were White or White British (Study 1, 85%; Study 2, 94%). The different weights attributed to the domains of relationships, money and contribution-to-the-world may therefore only be representative of those samples. For example it is possible that the unexpected result of money and relationships being similarly important to life satisfaction is specific to those identifying as White or White-British. Equally, participants from other cultures and countries may give more weight to contribution-to-the-world in a satisfaction or happiness judgement. For example, using the ESS Round 3 Huppert et al. (2008) found a marked difference across European Nations in terms of volunteering. Norway was shown to have the highest rate with 67% of participants volunteering in the past year and Bulgaria the lowest with only 7%, the UK was ranked tenth out of 23 countries (Huppert et al.,

2008). It is therefore likely that other samples would differ in terms of the extent to which contribution-to-the-world impacts on different well-being judgements.

The present studies aimed to demonstrate that one important domain, relationships, would be given more weight than the two less important domains. However as each of the domains in the combination of money-and-contribution-to-the-world was found to be important to one or more of the judgements the study lacked a true test of a single important domain versus two less important domains. As such further work should explore a true comparison between a single, important domain (such as relationships) and two less important domains. Other comparisons could also be made to examine whether two domains perceived as similarly important are given equal weight, for example, in Study 1 the code categories *Job* and *Feelings* were found to be similarly frequent but they may differ in terms of the weight attributed to them in the judgement. Clearly both vignette methodology and existing cross-sectional panel studies could be utilised to examine these areas.

In combination, the vignette and survey studies provided converging evidence that the domains of relationships, money and contribution-to-the-world differed in terms of their importance to life satisfaction, happiness and meaning. There may be an overlap between the lay-conceptions of happiness and life-satisfaction, with a suggestion that money is given more weight in a life satisfaction judgement than a happiness judgement. Further work is required to examine whether satisfaction in one important domain is given more weight than satisfaction in multiple domains that are less important. Studies 3a and 3b provide some support for the idea, originally suggested by Diener et al. (1985), that when people assess their life satisfaction they use thoughtful and considered judgements, weighing up the

relevant domains of their life. The results suggest that happiness and meaning judgements are also made the same way.

## Chapter 8

### **Study 4: Using the ease of recall paradigm to examine the use of metacognitive feelings and recalled information in life satisfaction judgements**

The results of Studies 1, 2, 3a and 3b support the idea that life satisfaction judgements are considered and constructed judgements based on bottom-up, domain information. However given some of their limitations it is important to investigate alternative theories of life satisfaction judgements. For example while Study 2 examined the difference in information use between rapid and thoughtful judgements it was not clear whether the participants in Study 1, who thought aloud, used different cognitive process to a usual SWLS response, such as those in Study 2. While the weighting of domains demonstrated in Study 3a and Study 3b suggested a considered judgement the effect was less clear in the more ecologically valid study (3a) suggesting that other information sources may have been used in the judgement as well as those assessed.

It has been argued that one's whole life satisfaction is too broad a concept to be fully and accurately considered (Diener et al., 2003). This view implies that individuals rely on heuristics, or mental shortcuts, when assessing their life satisfaction. The theory of "feelings as information", in which one's feelings at the time inform a judgement directly, delineates current mood, or affect balance, as a potential heuristic (Greifeneder et al., 2011; Schwarz, 2012). During a particular judgement there can be other feeling states experienced as well as affect. Metacognitive feelings are feelings associated with the cognitive processes of a judgement, for example, a feeling of knowing, or feelings associated with the ease or

difficulty of retrieving information relevant to a judgement (Greifeneder et al., 2011). Given that life satisfaction judgements are cognitive processes metacognitive feelings are of particular importance. Further it is an area that has not been pursued in the life satisfaction judgement literature, with only one study (O'Brien, 2013) examining the use of feelings of ease-of-retrieval, or fluency, to date.

The use of the ease or difficulty of retrieval of relevant information in a judgment is examined via the ease-of-retrieval paradigm. This paradigm was designed by Schwarz, Bless, et al. (1991) to address limitations in research concerning the availability heuristic, a mental shortcut that relies upon the ease with which information comes to mind. Whilst studies appeared to demonstrate that the ease or difficulty of recall affected a judgement, the results could also be explained by the use of a considered judgement based on recalled content. For example, after hearing two lists of names, one with 19 famous men and 20 less famous women, the other with 19 famous women and 20 less famous men, participants reported, incorrectly, that there were more men than women in the former list and more women than men in the latter (Tversky & Kahneman, 1973). However it was not clear that these judgements were due to the famous names feeling easier to recall than the non-famous names. The result could also be explained by more famous than non-famous names actually being recalled, resulting in an over-representation of famous name within the recalled content. Thus both explanations predicted the same outcome. In order to separate the judgement outcome from the task Schwarz, Bless, et al. (1991) designed a paradigm which relied on a different final judgement resulting from the use of ease of recall or content.

Schwarz, Bless, et al. (1991) asked different groups of participants to recall 12 or 6 examples of assertive or unassertive behaviour. As the act of recalling information increases its cognitive accessibility (Greifeneder et al., 2011), if the judgement was based on the amount of information available those asked to recall assertive behaviour should be expected to report greater assertiveness than those asked to recall unassertive behaviour. Further to this the greater number of examples recalled should also increase the impact of content on the judgement. As such participants thinking of 12 examples of assertiveness should have a greater score than those who thought of 6 examples, and participants thinking of 12 examples of unassertiveness should have a lower score than those who thought of 6 examples. The important aspect of the paradigm was that, based on pilot testing, participants recalling 12 examples were expected to find the task more difficult than those recalling 6 examples (Schwarz, Bless, et al., 1991). If participants attended to the feelings associated with recall, rather than the recalled content, then finding it difficult to think of examples would imply that the behaviour is not frequent and the opposite results would be predicted. Across three studies Schwarz, Bless, et al. (1991) demonstrated that participants judged themselves as more assertive after recalling fewer examples of assertiveness and less assertive after recalling fewer examples of unassertiveness, supporting the feeling of ease-of-retrieval hypothesis. Content analysis verified that this effect was not due to the longer lists containing less relevant examples (Schwarz, Bless, et al., 1991).

Using the aforementioned paradigm the ease-of-retrieval effect has since been shown to occur for other judgements. Recalling more childhood events resulted in participants feeling that their memory for childhood events was poorer compared

to participants recalling fewer (Winkielman, Schwarz, & Belli, 1998). Participants tended to have a more positive attitude towards public transport when required to think of fewer positive points rather than more (Wanke, Bless, & Biller, 1996). Further evidence for the use of metacognitive feelings was provided by including misattribution manipulations which affected the relevance of the feelings to the judgement. When participants believed that their metacognitive feeling could be attributed to something else, such as music (Schwarz, Bless, et al., 1991), or were deliberately informed that the difficulty was expected (Winkielman et al., 1998), participants discounted the feelings of ease-of-retrieval and used the retrieved content.

Having been demonstrated in a large number of studies, that have been subject to a number of reviews (for example Greifeneder et al., 2011; Schwarz, 1998; Schwarz, 2004), the use of ease-of-retrieval in judgements is well established. Despite the prevalence of the effect it has not been associated with life satisfaction judgements, although it has been associated with a different well-being measure; one study has shown that ease-of-retrieval was used in happiness judgements. O'Brien (2013) found that participants judged themselves as happier in the past when asked to generate lists of 3 compared to 12 past positive experiences and 12 rather than 3 past negative experiences. For future assessments of happiness the results were partially replicated: while participants who thought of 3 positive future experiences reported that they would be happier in the future than those who thought of 12 there was no difference in expected happiness level between those who thought of 3 or 12 future negative experiences (O'Brien, 2013). While these results suggest the use of metacognitive feelings the judgement used was a single item measure of happiness.

As single item measures of happiness and life satisfaction have been shown to be more susceptible to both item order effects and mood during the judgement (Schimmack & Oishi, 2005) the use of feelings over content use is not surprising.

O'Brien (2013) addressed this limitation by using a version of the 5 item Satisfaction with Life Scale (SWLS; Diener et al., 1985), modified to be specific to holidays, in a further experiment in which participants imagined 3 or 12 things that could go right or wrong during an upcoming holiday. Future holiday satisfaction judgements were shown to rely on metacognitive feelings when participants imagined positively valenced experiences. When imagining things that could go wrong however there was no difference in satisfaction between those who wrote short or long lists. Thus it was again found that ease-of-retrieval feelings were used for positively valenced information rather than negative. However as O'Brien (2013) modified the SWLS to be focussed on future holidays, a specific target, the results cannot be generalised to a more broad satisfaction with life judgement. Interestingly neither of O'Brien's (2013) studies demonstrated the use of content (which would be reflected by the shorter negative lists resulting in greater happiness or satisfaction scores) in the negative condition, where evidence of ease-of-retrieval was not found.

As the ease-of-retrieval paradigm allows the comparison of cognitive processes, including the use of a considered judgement based on retrieved information, it is a particularly appropriate method with which to examine life satisfaction judgements. The present study randomly assigned participants to four groups in which they were asked to list 3 or 15 reasons why they were satisfied or dissatisfied with their lives. Before completing the list-making task participants were asked to complete a measure of trait mood (Subjective Happiness Scale, SHS;

Lyubomirsky & Lepper, 1999) in order to accommodate the potential influence of mood. Participants with depressive or low mood traits have been shown to not use metacognitive feelings (Greifeneder & Bless, 2008). Furthermore participants primed to be in a positive mood have been shown to be more likely to rely on feelings of ease-of-retrieval than those primed to be in a bad mood (Ruder & Bless, 2003). Thus the SHS was expected to show a participants' tendency to feel happy or sad, which may also reveal a tendency to use or not use feelings as information.

If life satisfaction judgements are based on recalled content, and the 15 item recall task makes content more salient, then participants who recall 15 satisfactory reasons should judge their life to be more satisfactory than those who think of 3, while those who list 15 unsatisfactory reasons are predicted to judge their life as more unsatisfactory than those who list 3. On the other hand, if the life satisfaction judgement is based on feelings of ease or difficulty of retrieval the opposite results are expected. Bearing in mind that O'Brien (2013) showed that ease-of-retrieval was not used in judgements concerning negatively valenced information (albeit for judgements concerning the future) more advanced predictions can be made for such an interaction: 3 satisfactory reasons would result in a greater life satisfaction score than 15 satisfactory reasons but the unsatisfactory groups would have similar satisfaction scores regardless of list length (as shown by O'Brien, 2013).

Alternatively, rather than fully considered and weighed up judgements or the results of metacognitive feelings, life satisfaction judgements could be based on the first information brought to mind (Trent & King, 2010). The first information brought to mind in this case would be influenced by the list making task. In other words it would be based on the most salient sources, reflecting the influence of

temporarily accessible information. This theory would predict a main effect of valence, the valence of the list would make similarly positive or negative information more salient. However an effect of list length would not be expected, as all the information brought to mind as a result of making a list of 15 would be not be utilised in the judgement: a list of 3 satisfactory reasons would yield the same life satisfaction as a list of 15. Put another way this prediction suggests that neither the amount of content nor feelings of ease or difficulty of retrieval should have an effect. The activation of valence, which would facilitate the retrieval of valence-congruent information, should have a general effect irrespective of the amount of positive or negative information retrieved.

As the lists are generated in response to being asked to list reasons why one's life is (un)satisfactory it is reasonable to assume that the lists represent the information that would be brought to mind if participants were asked a more general life satisfaction question. The present study therefore also provides an opportunity to assess whether particular areas of information are brought to mind first and whether this information differs according to valence. The coding scheme created in Chapter 3 was used to analyse the lists produced in the present study.

### **Aims and objectives**

The aim of the present study was to use the ease-of-retrieval paradigm to demonstrate whether general life satisfaction judgements utilise relevant, retrieved content or whether metacognitive feelings are used as a heuristic to simplify the judgement. Furthermore the paradigm should show whether using satisfactory or unsatisfactory information results in a different cognitive process. The lists of information generated by the participants will also provide an insight into the

information that is brought to mind when one thinks about a satisfactory or unsatisfactory life, however no specific predictions were made relating to the types of information brought to mind. The following results were predicted for the life satisfaction scores:

- 1) If the information made salient by the list content is used in the judgement then an interaction is expected in which those in the 15 Satisfactory items group report greater life satisfaction than those in the 3 Satisfactory items group, while those in the 3 Unsatisfactory items group report greater life satisfaction than those in the 15 Unsatisfactory items group.
- 2) If the feelings of ease or difficulty resulting from the list task are used in the judgement then an interaction is expected in the opposite direction: those in the 3 Satisfactory items group should report greater life satisfaction than those in the 15 Satisfactory items group, while those in the 15 Unsatisfactory items group should report greater life satisfaction than those in the 3 Unsatisfactory items group.
- 3) If the list-making task activates valence-congruent information a main effect of valence would be expected.

## **Method**

### **Pilot testing**

To establish the length of list that participants would find easy or difficult small pilot tests were run. In the first pilot test participants ( $N = 7$ ) were invited to list as many reasons as they could think of why they were unsatisfied or satisfied with their lives. They were then asked to rate how difficult they found the task on the following scale: *very easy, easy, neutral, difficult, very difficult*. The amount of

examples generated ranged from 5 to 17. Only those who thought of 6 or fewer reasons reported finding the task easy (or very easy). The second pilot test used this information to assess the best two list lengths to generate feelings of ease and difficulty. Participants (N = 18) were asked to list 3, 5, 10 or 15 reasons why they were unsatisfied or satisfied with their lives and asked to rate how difficult they found the task on the aforementioned scale. The results in Table 8.1 show that the 3 reasons task received the most *very easy* and *easy* ratings and the 15 reason task received the most *difficult* and *very difficult* ratings. As a result a list of 3 was chosen as the easy task and a list of 15 was chosen as the difficult task.

**Table 8.1. Frequency of difficulty ratings for each number of reasons**

Difficulty rating	Number of reasons			
	3	5	10	15
Very easy and easy	4	1	2	1
Neutral	0	0	1	0
Difficult and very difficult	2	2	0	5

### Participants

A sample of 75 (26 male, 49 female) with an age range 18 - 64 (M = 22 years, SD = 7.54) took part in this study. The sample was recruited via two routes. The Psychology Department Research Participation Scheme was used to recruit First-Year Psychology Undergraduates who received course credit for their participation. Further participants, consisting of undergraduates, postgraduates and

staff (from departments other than Psychology) were recruited from the RHUL campus via posters, email bulletins and an intranet Message of the Day. Participants recruited via the latter route were entered into a prize draw for two cash prizes (one of £50, one of £25). Sixty-four were undergraduates, with the remaining eleven being post-graduates or staff. The majority of the sample, 58 (77.3%), identified as White or White British, 8 (10.7%) identified as Asian or Asian British, 2 (2.7%) as Chinese or Chinese British, 2 (2.7%) as mixed ethnicity, 1 (1.3%) as Black or Black British, and 4 (5.3%) chose not to respond. Three participants, from an original sample of 78, were excluded due to their failure to complete the task according to the instructions. The sample of 75 provided a power of .57 for a medium effect and .93 for a large effect, alpha .05, for each effect of the main ANOVA analysis.

## **Materials**

**Subjective Happiness Scale.** (SHS; Lyubomirsky & Lepper, 1999). The SHS is described in Chapter 6, p.205. In the present study the scale was found to be highly reliable ( $\alpha = .89$ ).

**List Making Task.** Participants were either asked to write a list of 3 or 15 reasons why they were satisfied or unsatisfied with their lives. The instructions were presented exactly as follows:

We would like you to list [3/15] reasons why you are  
[SATISFIED/ UNSATISFIED] with your life.

In each box please provide a brief description of each  
reason you come up with.

Even if you feel you are struggling to come up with enough examples please keep going until you have filled all the boxes.

Please describe below [3/15] reasons why you are [SATISFIED/ UNSATISFIED] with your life.

The appropriate number of boxes in which to type the responses was provided on the screen below the instructions. There were no limits in terms of answer length or time restrictions. The following instruction was provided for all participants although it was mainly included to ensure that participants assigned to the 15 item conditions persevered with the task: “Even if you feel you are struggling to come up with enough examples please keep going until you have filled all the boxes”. Participants could not press next to access the next screen unless they had typed something into all the boxes presented.

**Content of the lists.** To examine whether the information that was first brought to mind differed according to the four conditions the content of the lists generated by the participants was compared. So that the groups could be compared directly the short lists consisting of 3 items were coded in their entirety but only the first three items of the difficult lists of 15 were coded, resulting in 225 items in total (75 participants x 3 items). For each item the presence of each of the 13 code categories developed in Chapter 3 was recorded. Each item could be assigned more than one code as complex information would be missed if each item was restricted to just one code per item.

**Inter-rater coding.** The full sample of relevant items was coded by the researcher (N = 225) and 50 % of the sample was coded by a second rater (N = 114) to calculate the inter-rater reliability. The items coded by the second rater were not chosen at random but were chosen to ensure that all the categories were present, as some were less frequent than others. The resulting Cohen's Kappa values are shown in Table 8.2. Most of the code categories were found to have a reliability score greater than .7). Three categories were below .7 but greater than .6 (Personal Theory, Feelings, Doing Things). A Kappa value between .6 and .75 can be considered “good” (Robson, 2002). Due to its low value (<.6) the Daily Life category was removed from the analysis.

**Table 8.2. Inter-rater reliability correlations between the first and second coder for all code categories**

Code Category	Cohen's Kappa
Money	.95
Material Possessions	.92
Use of time	.89
Contribution to world	.88
Accommodation	.81
Relationships	.87
Job	.78
Health	.76
Self-qualities	.76
Personal Theory	.67
Feelings	.64
Doing things	.62
Daily Life	.55 <sup>a</sup>

Notes: <sup>a</sup> code not used in main analysis due to low reliability

**Difficulty rating.** Participants were asked to rate how difficult they found the task of generating their list on a 5 point scale: *very easy, easy, neutral, difficult, very difficult*.

**Satisfaction with Life Scale.** (SWLS; Diener et al., 1985) The SWLS is described in Chapter 3, p.90. Cronbach's  $\alpha$  in the present study was .77 and was therefore acceptable.

### **Procedure**

The following procedure took place in a quiet room with no distractions for the full duration of the procedure. Following the informed consent procedure all materials were administered electronically using Select Survey ASP Advanced, version 8.6.4 software. Participation occurred individually or in groups of up to 4 at a time. The experimenter was present at all times. In order to prevent potential distractions, on occasions when participants were being tested in groups, both the initial instruction screen and the final completion screen included the instruction to wait quietly until the experimenter had established that all participants had finished.

Participants were randomly assigned to one of four separate electronic surveys. These differed only in the list making task that was included. Participants sat comfortably on a chair at a computer terminal. The procedure lasted between 10 to 30 minutes depending on the responses of the participant. Following the demographic questions on the first screen participants read the following general instruction screen:

As mentioned in the information sheet you are going to be asked to complete some questionnaires and perform a list making task.

The whole process should take about 15 minutes but it varies from person to person.

We ask that when you have completed all the tasks and read the debrief screen that you stay seated and quietly wait until the experimenter has established that all participants have finished.

Please proceed through the survey without stopping and do not click the back arrow on the browser as this may invalidate your results.

The general instruction screen was followed by the SHS. Participants then completed a filler questionnaire on the next screen to reduce any influence of completing the SHS on the subsequent task. The filler questionnaire consisted of 6 items, responded to on a 7-point scale from 7- *Strongly Agree* to 1 - *Strongly Disagree*, with items such as: "I liked school" and "Some of my most vivid memories are called up by scents and smells". These items were intended to be irrelevant to each other and the other concepts being measured. The filler questionnaire was followed by the list making task on the next screen. The screen

that followed the list making task contained the difficulty rating. This was followed by the SWLS.

Finally four questions, ostensibly concerning “participant feedback”, were provided. These included questions concerning such areas as whether they enjoyed taking part and if they would be willing to participate in further studies. Within this set of questions was an item which sought to establish whether participants had identified that the aim of the list making was to manipulate their feelings. The question stated: “You were asked to think of [**3/15**] reasons as to why you are [**satisfied/ unsatisfied**] with your life. Do you think this affected your life satisfaction rating (your answers to the final questionnaire)?”. The emboldened number and valence information were varied according to the experimental condition. Participants could answer yes or no to this item and those who answered yes were asked to explain how by typing their reason into the box provided. Participants then read a debrief screen which explained the ease-of-retrieval concept and its expected effect. Also as the study involved a manipulation all participants then underwent a verbal debrief by the experimenter.

## Results

### Demographic distributions

Table 8.3 shows the distribution of mean age, gender, ethnic group and number of undergraduate students according to group. A 2 (valence: satisfied vs. unsatisfied) by 2 (list length: 3 vs 15) independent ANOVA showed that there was no difference in age between those in the satisfied and unsatisfied groups ( $F < 1$ ) or those in the 3 and 15 item groups ( $F(1, 70) = 2.05, p = .16, \eta^2 = .02$ ). The interaction was also not significant ( $F < 1$ ). The distribution of gender did not significantly

differ between the 4 groups ( $\chi^2 (3) = 3.54, p = .32, V = .22$ ). Due to the large proportion of participants describing themselves as White or White British, with the other ethnic groups only accounting for 22.7% of the sample, it was statistically necessary to combine the small number of people in each of the other ethnic groups to establish the distribution between the conditions. For the distribution of ethnicity 50% of the Chi Square cells had an expected frequency of less than five, as such two Fisher's Exact Tests were used. The distribution of ethnic group was found to be similar between the satisfied and unsatisfied groups ( $p = .79$ ) and the 3 and 15 groups ( $p = 1.00$ ). For education level it was necessary to combine post graduate students and academic staff; most of the participants were undergraduates, accounting for 85.3% of the sample. Fisher's exact tests were again used to examine education level across the groups, no difference was found between the satisfied and unsatisfied groups ( $p = .75$ ) and the 3 and 15 groups ( $p = .52$ ).

**Table 8.3. The mean age and standard deviations (SD), gender, ethnic group and educational distribution for each group**

	Group			
	Unsatisfied		Satisfied	
	List of 3	List of 15	List of 3	List of 15
Sample size	19	18	19	19
Mean Age (SD)	23.11 (8.16)	21.28 (5.87)	23.06 (11.27)	19.84 (1.95)
% Female	63.2	50.0	68.4	78.9
% White/ British	73.7	77.8	78.9	78.9
% Undergraduate degree	84.2	83.3	78.9	94.7

Before the main analysis it was verified whether the groups differed in terms of trait happiness and whether or not the manipulation of difficulty had been successful.

**Relationship between trait happiness and life satisfaction.** Trait happiness, measured with the SHS, was included as a pre-manipulation measure of happiness. The means are shown in Table 8.4. A 2 (valence: satisfied vs. unsatisfied) by 2 (list length: 3 vs 15) independent ANOVA found that there was no pre-manipulation difference between the groups: SHS did not differ according to the

valence of the information ( $F < 1$ ), or list length ( $F < 1$ ), and there was also no effect of interaction ( $F < 1$ ). Participants in all four groups therefore began the experimental procedure with similar trait happiness levels.

**Table 8.4 Mean and standard deviation (SD) of SHS scores according to group**

Valence	List Length	
	3 (easy)	15 (difficult)
Satisfied	4.82 (.94)	4.94 (1.10)
Unsatisfied	4.87 (1.31)	5.10 (.86)

**Manipulation check.** A 2 (valence: satisfied vs. unsatisfied) by 2 (list length: 3 vs 15) independent ANOVA was used to examine the mean scores of the difficulty experienced by participants in each condition, shown in Table 8.5. As expected a main effect of list length was found, writing a list of 15 was considered more difficult than a list of 3 ( $F(1, 71) = 18.64, p < .001, \eta^2 = .15$ ). Reported difficulty was therefore manipulated in the expected direction. There was also a main effect of valence, participants writing a list of unsatisfactory items found the task more difficult than those writing a list of satisfactory items ( $F(1, 71) = 30.77, p < .001, \eta^2 = .25$ ). The interaction was not significant ( $F(1, 71) = 1.20, p = .28, \eta^2 = .01$ ).

**Table 8.5. Mean and standard deviation (SD) of difficulty ratings according to group**

	Length			
Valence	3 (easy)		15 (difficult)	
Satisfied	2.00	(.94)	3.16	(.96)
Unsatisfied	3.42	(.77)	4.11	(1.02)

**Use of ease-of-retrieval or content: the effect of manipulation on life satisfaction scores.**

The life satisfaction scores, shown in Table 8.6, were examined using a 2 (valence: satisfied vs. unsatisfied) by 2 (list length: 3 vs 15) independent ANOVA. The life satisfaction scores were not found to vary according to the valence of the information ( $F < 1$ ) or list length ( $F(1, 71) = 1.02, p = .32, \eta^2 = .01$ ) and the interaction was also not significant ( $F < 1$ ).

**Table 8.6. Mean and standard deviation (SD) of SWLS scores according to group**

	Length			
Valence	3 (easy)		15 (difficult)	
Satisfied	23.68	(6.58)	25.84	(4.11)
Unsatisfied	24.95	(6.36)	25.28	(3.54)

The correlations between task difficulty and reported life satisfactions were also examined. If ease-of-retrieval was used then the task difficulty was expected to correlate negatively with life satisfaction for those thinking of satisfactory items and positively for those thinking of unsatisfactory items (Schwarz, Bless, et al., 1991). It was found that experienced difficulty and SWL score were unrelated for both the satisfied ( $r(36) = -.05, p = .78$ ) and unsatisfied groups ( $r(35) = .12, p = .49$ ). Participants' life satisfaction was not found to be affected by the length or valence of the list that they made before making the judgement and therefore there was no evidence that ease-of-retrieval or content was used in the judgement.

#### **Did the type of information first brought to mind differ between the conditions?**

For each participant the presence of each code category was summed across the three items, resulting in a range of possible occurrences between 0 (i.e., not used at all) and 3 (i.e., used for each item) that reflected the extent of the use of the code category. As the coding data were not normally distributed, and consisted of the number of occurrences rather than scores, Mann Whitney tests were used to compare the total frequency of each of the 12 codes in the first three responses of all participants. Separate analyses were used to assess the difference between the satisfactory and unsatisfactory groups and the 3 and 15 groups.

**Satisfactory groups versus unsatisfactory groups.** The results of the Mann Whitney tests, along with the mean occurrence scores for each core category, are shown in Table 8.7. Of the 12 codes examined only Relationships-with-Others was found to differ significantly in frequency between the conditions. Information relating to Relationships was more frequently brought to mind by participants writing the satisfied list than the unsatisfied list.

**Table 8.7. The mean occurrence of each core category in the items (or first three items) of the satisfied and unsatisfied lists and the results of the Mann-Whitney tests comparing the groups**

Core category	Satisfied		Unsatisfied		U	Z	<i>p</i>	<i>r</i>
	groups		groups					
	M	(SD)	M	(SD)				
Relationships	1.61	(.89)	.59	(.69)	283.00	-4.67	<.001	-.54
Health	.16	(.37)	.27	(.61)	659.00	-.69	.49	-.08
Money	.29	(.52)	.35	(.48)	647.50	-.73	.46	-.08
Accommodation	.05	(.23)	.19	(.46)	625.00	-1.54	.12	-.18
Contribution-to-the-world	.03	(.16)	.08	(.28)	664.50	-1.05	.30	-.12
Doing Things	.29	(.46)	.49	(.77)	637.50	-.85	.40	-.10
Feelings	.21	(.41)	.38	(.59)	615.00	-1.21	.23	-.14
Job	.42	(.50)	.51	(.61)	660.00	-.53	.60	-.06
Material Possessions	.03	(.16)	.05	(.23)	683.50	-.61	.54	-.07
Self-Qualities	.18	(.46)	.41	(.18)	598.50	-1.52	.13	-.18
Personal Theory	.18	(.46)	.05	(.23)	629.00	1.47	.14	.17
Use of Time	.13	(.34)	.22	(.42)	643.50	-.96	.34	-.11

**3 versus 15 groups.** There is little theoretical basis for expecting the first information brought to mind to differ between the 3 and 15 conditions and this is reflected in the results presented in Table 8.8. It was found that information relating to all the code categories was just as frequently brought to mind at the start of a long list or a short list. In other words knowing that one was making a list of 3 or 15 did not affect the type of information brought to mind.

**Table 8.8. The mean occurrence of each core category in the items (or first three items) of the 3 and 15 lists and the results of Mann-Whitney tests comparing the groups**

Core category	List of 3		List of 15		U	Z	<i>p</i>	<i>r</i>
	M	SD	M	SD				
Relationships	1.05	(.84)	1.16	(1.04)	670.00	-.37	.71	-.04
Health	.13	(.34)	.30	(.62)	622.00	-1.27	.20	-.15
Money	.34	(.48)	.30	(.52)	659.00	-.58	.56	-.07
Accommodation	.13	(.41)	.11	(.31)	703.00	0.00	1.00	.00
Contribution-to-the-world	.05	(.23)	.05	(.23)	702.00	-.03	.98	.00
Doing Things	.45	(.72)	.32	(.53)	661.00	-.55	.59	-.06
Feelings	.26	(.45)	.32	(.58)	688.00	-.21	.84	-.02
Job	.42	(.50)	.51	(.61)	660.00	-.55	.55	-.06
Material Possessions	.03	(.16)	.05	(.23)	683.50	-.61	.54	-.07
Self-Qualities	.29	(.57)	.30	(.62)	694.00	-.13	.90	-.02
Personal Theory	.16	(.37)	.08	(.36)	633.00	-1.39	.16	-.16
Use of Time	.16	(.37)	.19	(.40)	681.00	-.36	.72	-.04

## Post Hoc Analysis

According to Schwarz (2004) participants need to be aware of their feelings in order to use them. Kuhnen (2009) found that, under low processing intensity, ease-of-retrieval effects were only found when the manipulation check was assessed before the dependent variable, i.e., when the placement of the manipulation check increased the salience of the feelings. It could therefore be argued that the lack of significant results from the present study was due to the participants not being sufficiently aware of their feelings following the task. The “participant feedback” questions that followed the completion of the tasks provided a way to investigate this issue. This set of questions contained an item which was intended to assess whether participants were aware of the manipulation: *You were asked to think of [3 or 15] examples as to why you are [satisfied or dissatisfied] with your life. Do you think this affected your life satisfaction rating?* A feeling that the task influenced their judgement may reflect a participants’ awareness of the feelings of ease or difficulty induced by the task. Based on Kuhnen's (2009) findings those participants who responded “yes” to the idea that the task affected their judgement should be more likely to use ease-of-retrieval over content. The analysis was therefore repeated to account for the extra grouping variable, perceived influence of task. If participants who felt the task influenced their judgement used ease-of-retrieval then this should be demonstrated with a significant three-way interaction between the levels of valence, list length and task influence. As before both a manipulation check and trait happiness check were performed. With 75 participants this analysis provided a power of .54 for finding a medium effect and .92 for a large effect, alpha .05.

**Trait happiness.** A 2 (valence: satisfied vs. unsatisfied) by 2 (list length: 3 vs 15) by 2 (task influence: yes vs. no) three-way independent ANOVA found that there was no pre-manipulation difference between the groups. SHS did not differ with the valence of information ( $F < 1$ ), list length ( $F < 1$ ) or perceived task influence ( $F < 1$ ). Also neither of the two way interactions, or the three way interaction, were significant (all  $F < 1$ ).

**Manipulation check.** A 2 (valence: satisfied vs. unsatisfied) by 2 (list length: 3 vs 15) by 2 (task influence: yes vs. no) three-way ANOVA found a main effect of valence ( $F(1, 67) = 26.18, p < .001, \eta^2 = .22$ ) and a main effect of list length ( $F(1, 67) = 18.55, p < .001, \eta^2 = .16$ ). In line with expectations the task was judged as more difficult by participants making a long list of 15, again it was also judged as more difficult by those in the unsatisfied group. There was no main effect of perceived task influence ( $F < 1$ ). None of the interactions were significant: valence and list length,  $F < 1$ ; valence and task influence,  $F(1, 67) = 1.17, p = .28, \eta^2 = .01$ ; list length and task influence,  $F < 1$ ; valence and list length and task influence,  $F(1, 67) = 2.24, p = .14, \eta^2 = .02$ .

#### **Effect of manipulation on life satisfaction scores, accounting for perceived task influence.**

The SWL scores, shown in Table 8.9, were examined with a 2 (valence: satisfied vs. unsatisfied) by 2 (list length: 3 vs. 15) by 2 (task influence: yes vs. no) three-way ANOVA. The main effects of valence of information ( $F < 1$ ) and list length ( $F(1, 67) = 3.30, p = .07, \eta^2 = .04$ ) were non-significant. A significant main effect of task influence was found ( $F(1, 67) = 4.65, p < .05, \eta^2 = .06$ ). For the two way interactions, the interaction between list length and valence was non-significant

( $F < 1$ ), as was the interaction between valence and task effect ( $F < 1$ ). A significant interaction between list length and task influence was found ( $F(1, 67) = 9.12, p < .005, \eta^2 = .11$ ). The expected three way interaction between valence, list length and task influence was not found ( $F < 1$ ). These results suggest that the judgement was not based on either ease-of-retrieval or list content. The results also indicated that the main effect of perceived task influence on SWL score was moderated by list length. Simple effects analysis used to explore the significant interaction found that participants who did not feel that the task influenced their judgement had similar SWL scores in both the 3 and 15 list length groups ( $F < 1$ ). However, for those who felt that the task influenced their judgement, writing the list of 15 was associated with greater SWL than the list of 3, ( $F(1, 67) = 10.25, p = .002, \eta^2 = .13$ ).

**Table 8.9. Mean and standard deviation (SD) of SWLS scores according to group**

<i>“Did the task effect your SWL judgement?”</i>	Valence	List Length					
		3 (easy)		N	15 (difficult)		N
Yes	Satisfied	21.22	(7.93)	9	26.45	(4.27)	11
	Unsatisfied	19.20	(3.90)	5	25.63	(2.77)	8
No	Satisfied	25.90	(4.38)	10	25.00	(4.00)	8
	Unsatisfied	27.00	(5.83)	14	25.00	(4.19)	10

## Discussion

The present study used a task that varied list length and valence, asking participants to write a list of three or fifteen reasons why their life was satisfying or dissatisfying. As expected making a long list of fifteen reasons why one is satisfied or dissatisfied with one's life was experienced as more difficult than making a short list of three. However the results did not provide support for the idea that the feelings of ease-of-retrieval were used in life satisfaction judgements: firstly, the expected interaction between the life satisfaction scores of the four different list groups was not found; secondly, the life satisfaction scores did not correlate with difficulty in the expected directions for the satisfied and unsatisfied groups. The results were also not indicative of the use of content, again the interaction (in the opposite direction) was not found between the life satisfaction scores of the different groups. Finally an alternative hypothesis was that life satisfaction judgements may be based on the first information brought to mind in response to the judgement (Trent & King, 2010). This hypothesis predicted a main effect of valence but not a main effect of list length, due to the task increasing the salience of satisfactory or unsatisfactory information, which also was not found. Thus the SWL scores were not affected by temporarily accessible information resulting from the list-making task. In sum the results did not provide evidence for the use of the feelings of ease-of-retrieval, or the use of content made more salient by the task, in judgments of life satisfaction.

The content of the lists was examined using the coding scheme from Chapter 2. In the main, the information initially retrieved by each group did not differ, apart from the increased use of Relationships-with-others in the satisfactory groups. This result suggests that similar information was retrieved, initially, by all groups. The

result also supports the idea that relationships are a particularly common source of satisfaction. The main difference between the groups was the feeling of difficulty reported but this feeling was found to be unrelated to the life satisfaction judgements.

The present study therefore did not provide evidence to support the use of either list content, metacognitive feelings, or valence-congruent information made more salient by the task. Potentially this study supports Schimmack and Oishi's (2005) demonstration that life satisfaction judgements are not susceptible to the temporary manipulation of salient information. This interpretation also implies that information made temporarily accessible undergoes a relevance check (Schimmack & Oishi, 2005): participants therefore discounted the irrelevant information that was brought to mind by the task.

Importantly the ease-of-retrieval paradigm has demonstrated the use of metacognitive feelings over retrieved information for many types of judgements and a number of factors have been shown to increase the use of the ease-of-retrieval process. One of these factors is one's awareness of the feelings of ease and difficulty; participants are more likely to use the feelings of ease-of-retrieval if they are aware of them (Greifeneder et al., 2011; Kuhnen, 2009; Schwarz, 2004). Thus the apparent lack of use of ease-of-retrieval in the present study, despite the clear differences in experienced difficulty, could therefore be explained by participants not being sufficiently aware of their feelings.

The debrief questionnaire provided an opportunity to explore this idea as it included the question "Do you think this [the listing task] affected your life satisfaction rating?" The original aim of this item was to identify any participants who were aware of the manipulation; in priming studies an awareness of the

manipulation decreases its effectiveness. In other words, had most of the participants reported an awareness of being manipulated it may have provided an explanation for a lack of effect. However, just under half of the sample felt that the task influenced their response. As awareness may increase the use of ease-of-retrieval (Greifeneder et al., 2011; Kuhn, 2009; Schwarz, 2004) it was predicted, post-hoc, that those who felt that the task affected their judgement (i.e., answered “yes” to the question) would be more aware of their feelings of difficulty, or ease, of retrieval and therefore this factor was expected to moderate the interaction between length and valence. In other words a three-way interaction was expected.

The predicted three-way interaction was not found, suggesting that the subgroup who felt the task affected their SWL response did not use ease-of-retrieval in their life satisfaction judgement. However an interesting interaction was found. For those participants who felt that the task influenced their life satisfaction judgement writing a long list was related to higher life satisfaction, regardless of the valence of the list. While the longer lists were associated with greater feelings of difficulty, as list length has an effect irrespective of whether or not the list contained satisfactory or unsatisfactory information, the use of these feelings does not explain the higher satisfaction scores. A speculative explanation, which accounts for the list of 15 resulting in higher SWL regardless of valence, is that the effect found indicates that content was used by those writing the satisfactory lists and feelings of ease or difficulty were used for the unsatisfactory lists. The speculative nature of this idea, based as it is on a post-hoc analysis, must be highlighted. However, this explanation is methodologically interesting as it suggests the use of both strategies.

The use of either the content or ease-of-retrieval route can also explain the lack of significant results from the main sample. The general lack of difference in life satisfaction scores between the groups can be explained by participants using the cognitive route that provided the highest SWL score. It can be speculated that an element of psychological flexibility was displayed, in that participants were able to use one route (the feeling of ease or difficulty) or another (list content) depending on which would produce greater satisfaction. Clearly such a speculative hypothesis would need to be tested further. The idea that the cognitive route that provides the greater life satisfaction score could be used suggests that a motivational process underlies what information is used in life satisfaction judgements. This is a suggestion that has also previously been made for meaning in life judgements, which are conceptually similar (Hicks & King, 2009).

In terms of life satisfaction research the idea that the “best” information is used is an idea that was hinted at by early research but not widely pursued. Schwarz and Clore (1983) found that participants based their life satisfaction on their positive mood even when they were told that their mood was due to the room they were in. In other words participants did not discount positive information despite being encouraged to misattribute it to an irrelevant source. While the aim of Schwarz and Clore's (1983) study was to demonstrate the use of mood in well-being judgements this result also demonstrated that participants used positive information regardless of its source, suggesting a motivation to use the most satisfying sources. The motivational aspect may also be of particular importance for ease-of-retrieval research. In his review of the metacognitive experience literature Schwarz (2004, p.344) noted that “self-serving tendencies in the selection of inputs” or “motivated

switching” have not been observed. Thus the present study may add to the literature regarding the complex and nuanced nature of the use of ease-of-retrieval.

However it is important to highlight, again, that the use of the best cognitive route is highly speculative and acknowledge that the lack of significant results from the full sample may be due to methodological limitations. Raghurir and Menon (2005) suggested that if a task is expected or perceived to be extremely difficult then feelings of difficulty will be discounted by participants because they are not considered informative. Participants may have therefore identified the list of 15 as a difficult task and discounted subsequent feelings of difficulty. Further to this an overall lack of feelings of difficulty may be a more likely issue. The results of the manipulation check showed that both list length and valence had an effect on difficulty. This meant that the list of 15 satisfactory reasons was rated as being easier than 15 unsatisfactory reasons, rather than the two long lists being perceived as equally difficult. On closer inspection the Satisfied 15 and Unsatisfied 3 groups, in all analyses, tended to have mean difficulty scores that reflect a neutral assessment on the 1 -5 scale provided, rather than the expected difficulty or ease. In other words while the groups were found to differ in terms of difficulty they may not have differed enough; if the majority of participants did not experience difficulty then this feeling cannot be used as information (Schwarz, 2004). However, both the discounting of feelings of difficulty or the lack of experienced difficulty would predict the use of content instead, which was also not found.

A further explanation for the lack of effects in the full sample is that participants may have experienced difficulty but not been sufficiently aware of it to use it (Greifeneder et al., 2011; Kuhnen, 2009; Schwarz, 2004). This possibility was

not fully addressed by identifying the subset of participants who felt the task influenced their judgement. The question regarding whether the task affected one's life satisfaction judgement was not originally intended to reflect an awareness of the metacognitive feelings and participants who answered "yes" to this question could in fact be describing a number of experiences. Not only could this answer reflect an awareness of feelings of ease or difficulty (i.e., "That felt difficult so that must mean..."), but it could also indicate an awareness of using the content of the list to make the judgement (i.e., "I have retrieved a lot of information so that must mean..."). A third possibility is that, in line with the original aim of the question, replying "yes" could reflect a participants' awareness of the task being a manipulation. In other words a "yes" response could reflect an increased awareness, and therefore the use of feelings of ease or difficulty, or list content, or result in the discounting of both. It is therefore not surprising that the interaction indicating the use of ease-of-retrieval was not found in the post-hoc analysis.

Another possible methodological issue, which also relates to order effects, was the placement of the trait happiness measure as the first measure undertaken by the participants. It is currently unclear what information is used as participants complete the SHS (Lyubomirsky & Lepper, 1999) but it may rely on episodic emotion knowledge or belief's about one's emotions. In the present study the SHS may have increased the salience of episodic or self-belief information relating to emotions which may then be used in both the task and the SWL judgement, in the same way that a manipulation check increases the salience of the feelings it enquires about (Greifeneder et al., 2011; Kuhnen, 2009) The activation of such information would explain why the results showed that neither the feelings of ease or difficulty,

nor the list content, were used for the life satisfaction. While a distracter task was included after the SHS to minimise any order effects the results did show a significant correlation between SHS and SWLS for three out of the four groups: 15 Satisfied, ( $r(19) = .54, p = .02$ ); 3 Satisfied ( $r(19) = .53, p = .02$ ); 3 Unsatisfied ( $r(19) = .70, p < .001$ ); 15 Unsatisfied ( $r(18) = .14, p = .59$ ). However SHS and SWLS are usually found to correlate to this extent. Lyubomirsky (2001) found that the correlations between SHS and SWLS ranged from .61 to .69 across four studies, while Lyke (2009) found a correlation of .5. It is therefore difficult to know whether the SHS made certain information more salient.

There is some evidence to suggest that well-being judgements, such as happiness and life satisfaction, are based on beliefs or semantic information rather than being considered judgements (Robinson & Kirkeby, 2005). If life satisfaction judgements are based on such generalised beliefs about the self it would render both the metacognitive feelings and list content irrelevant to the judgement, explaining the lack of effects. This would also mean that the SHS and SWLS relied on the same beliefs about the self, thus explaining their significant correlations. Importantly though this idea does not explain the significant effect found in the sub-set of participants.

A final issue is that the present study only had sufficient power to identify a large effect. Importantly, only one medium effect was found to be non-significant and this was the main effect of list length in the post-hoc analysis. This was qualified by the significant interaction between list length and perceived influence of task, which was approaching a large effect size.

The main strength of the present study lies in the use of the ease-of-retrieval paradigm. Not only has it only been used once before in life satisfaction judgment research (O'Brien, 2013) but it also tested a number of processes at once, with clear predictions for each. The exclusive use of a particular process was not supported. Interestingly, though, an explanation for the lack of difference between the groups suggests that the information source that yielded the best life satisfaction score may have been used. Thus the results of the present study tentatively suggest that multiple cognitive routes are available for life satisfaction judgements and that there may be a motivational element to the route used.

## Chapter 9

### **Study 5 – Does high life satisfaction result from using better information sources in a life satisfaction judgement?**

So far Study 1, Study 3a and Study 3b have provided support for the theory that individuals make a considered judgement when assessing their life satisfaction, identifying the information they personally feel is relevant and weighting it how they wish. A particularly interesting finding, resulting from Study 4's post-hoc analysis, was that life satisfaction judgements may be based on the sources of information that yield the best score: the feelings of difficulty when thinking of many reasons why one was dissatisfied or the list content when thinking of many reasons one was satisfied with one's life. This idea therefore goes beyond the different weighting of information used in the judgement, addressed in Study 3a and Study 3b, suggesting that before the weighting stage of the judgement different cognitive routes can be used. Further this idea suggests that there is a cognitive-motivational aspect to the use of different routes.

The possibility that information is used in this way supports the idea that life satisfaction judgements are malleable. The malleability of life satisfaction judgements has been suggested by previous studies (Oishi et al, 2003; Schimmack, Diener & Oishi, 2002; Schwarz & Strack, 1999). For example Oishi et al. (2003) found that, for college students, experienced excitement was a greater predictor of life satisfaction on Saturdays than other days. Saturdays were also rated as more exciting days, compared to the rest of the week (Oishi et al., 2003). Feeling excited

was therefore a better indicator of life satisfaction on days that excitement was relevant.

Supporting evidence for the malleability of information use in well-being judgments also comes from meaning in life judgement research. While meaning in life is conceptually a different judgement, the cognitive processes have been assumed to be similar to satisfaction with life (Hicks & King, 2009). When participants were primed with loneliness (i.e., low satisfaction in their relationship domain) the contribution of relationship satisfaction to their meaning in life score was reduced whilst the contribution of positive mood increased (Hicks et al., 2010). This change in use of information was also reflected in a daily diary study. Again the relationship between positive affect and meaning in life was moderated by relatedness need satisfaction: participants with low relatedness needs scores were more likely to rely on their positive feelings in their daily meaning judgements (Hicks et al., 2010). Hicks et al. (2010) suggested that their results could be due to a motivational need to maintain one's meaning in life whereby people switch their information sources to yield the best score.

The potential motivational aspect of life satisfaction judgements has not been given much empirical attention even though it may provide an explanation for the long term stability of life satisfaction judgements (Diener et al., 2012). The tendency for life satisfaction scores to be stable over time has been assumed to be a result of consistent information use; however it could also be explained by the use of different information in order to maintain satisfaction. The idea of using the best information in a life satisfaction judgement may be evident via the temporary use of Spring Break (Schimmack, Diener & Oishi, 2002). It was found that the correlation of life

satisfaction and Spring Break satisfaction was significantly greater for those who reported using satisfaction with their Spring Break, compared to those who did not (Schimmack, Diener & Oishi, 2002). This result suggests that Spring Break was satisfactory for users but less so for non-users. Thus individuals who had a satisfying holiday used it to inform their life satisfaction judgement at Time 3, whereas those who did not have a satisfying break used other information sources.

A difference in information use between happy and unhappy participants has been found. Diener et al., (2002) assessed participant's trait happiness level with a single item measure and also measured life satisfaction and satisfaction in eight domains (health, finances, family, friends, recreation, religion, self, education). Participants identified their best and worst domains, and the corresponding domain satisfaction scores were used to predict the life satisfaction score after the average of the remaining domain satisfactions had been controlled for (Diener et al., 2002). As well as predicting life satisfaction over and above the other domains, a positive interaction was found for the best domain score and trait happiness, while a negative interaction was found for trait happiness and the worst domain. This result implied that in a life satisfaction judgement happy people, compared to unhappy people, placed more weight on the domains with which they were most highly satisfied. Conversely unhappy people weighted their worst domains more strongly (Diener et al., 2002).

Diener et al's. (2002) results cannot be explained by happy and unhappy participants simply choosing as their, respective, best and worst domains the domains that happen to be the most strongly related to life satisfaction. For example relationships may be an important predictor of life satisfaction and if happy people

are more likely than unhappy people to report relationships as their best domain it would explain the results. To this end Diener et al. (2002) also examined which domains, of the eight measured, tended to be chosen as best and worst. Only one difference was found: happy people tended to choose “self” as their best domain while unhappy people tended to choose “self” as their worst domain. There was no other difference in the choice of the domains as best or worst between those with high or low happiness scores. Thus the results found cannot be accounted for by certain domains being disproportionately reported as best or worst by happy and unhappy people (Diener et al., 2002). Importantly Diener et al. (2002) replicated their findings in a second study, which used the SWLS, rather than a single item measure of life satisfaction, and affect balance, rather than a single happiness item. Thus the issue that the single items of satisfaction and happiness would have been measuring highly similar constructs was addressed. The same pattern of results was found, supporting the idea that happier people focussed on their best domain, whilst unhappy people focussed on their least satisfying domains. Again only the self-domain was found to differ in terms of being chosen as best or worst domain.

The two studies performed by Diener et al. (2002) used large sample sizes, 13,113 and 7,166 participants and found small effects. The authors argued that this was due to controlling for the happiness level and satisfaction in the other domains. In other words much of the variability in life satisfaction was already accounted for. As such the effect of the domains chosen as best or worst reflected the weight attributed to them in the judgement, over and above the other domains. However this idea, and therefore the methodology, has its limitations. It was assumed that all the other domains, those not chosen as best or worst, were given equal weight and

averaged. It was not examined whether other domains that were not reported as the best or worst, but were equally high or low in terms of satisfaction scores, also had the same effect. In other words rather than individual domains being given more weight happier participants may give more weight to all their satisfying domains over their less satisfying ones. As with many previous correlational studies Diener et al's (2002) methodology also assumed that all of the domains assessed were used in the judgement, in contrast to Schimmack, Diener, and Oishi's (2002) finding that the use of domains varied between individuals. Put another way, satisfaction in a particular domain may predict life satisfaction but information relating to that domain may not necessarily have been brought to mind by a participant and used in the judgement.

Along similar lines Sul, Kim and Choi (2012) found an interesting difference between participants with high and low SWB. Sul et al. (2012) gave student participants pairs of theoretical events and asked them to decide which they would like to experience first or second and how many days they would like between the experiences. The events varied in terms of domain (social or financial), valence (positive or negative) and size (large or small). For example losing \$10 represented a small, negative, financial event whereas winning a \$100 lottery was a large, positive, financial event. Similarly a nice chat with a friend represented a small, positive, social event and an unpleasant weekend with friends was classed as a large, negative, social event. Having established that high or low subjective well-being did not affect the desirability of the events presented in the study Sul et al. (2012) found similarities and differences in terms of the order and temporal distances afforded to the pairs by the participants. Both groups preferred a negative event to be followed

by a positive. Also, when faced with two gains or two losses, both groups preferred more time between larger events, compared to smaller events. An important difference, however, was that those with high SWB placed a financial loss and a social gain closer together than those with low SWB, regardless of the sizes or the order of events. Put another way, participants with high SWB purposefully placed events that would provide positive relationship domain information closer to negative money events than individuals with low SWB. This result implies the specific utilisation of positive relationship information to counteract or buffer negative financial information, by people with high SWB (Sul et al., 2012). The larger picture is that this difference in strategy use can be explained by wiser decision making, greater motivation or habitual ways of life (Sul et al., 2013). As such it is possible that the participants with high SWB were more motivated to maintain their well-being or were more effective at it. Further the desire by high SWB individuals to have the events closer together implies an understanding that the positive information or associated feelings could outweigh the negative money event. This interpretation suggests that the weighting of such information may be conscious and deliberate.

In sum individuals who report high life satisfaction may do so because they more easily bring to mind, or give most weight to, information that corresponds to their most satisfying areas. Rather than low satisfaction being the result of individuals having generally lower mood or less satisfying domains compared to those with high satisfaction an alternative explanation is that low satisfaction is a result of a focus on the least satisfying aspects of one's life in lieu of the more satisfying. This focus may be due to a motivational factor, or have a cognitive

explanation, or may result from a combination of the two. According to this hypothesis those with high satisfaction would also pay less attention to negative or less satisfying information.

The present study therefore aimed to demonstrate that individuals with high life satisfaction scores consider their life satisfaction judgement information differently to those with low satisfaction scores. Further the present study addressed the limitations of Diener et al's (2002) study, that showed that happy participants place more weight on their best domain, by including self-reported information use rather than simply relying on the correlation between domain satisfaction and general life satisfaction. The method used in the present study relied on the previously demonstrated ability for individuals to describe the information they used in their judgement (e.g., Schimmack, Diener & Oishi, 2002). To establish what information was used in the life satisfaction judgements the present study asked participants to write down the information they felt they used after each of the items of the Satisfaction with life Scale (SWLS, Diener et al., 1985). Previous studies have demonstrated that this information is accessible and reportable (e.g., Schimmack, Diener & Oishi, 2002). To minimise issues of retrospection participants were asked directly after each SWLS item what information they used. The participants' descriptions were then analysed using the coding scheme created in Chapter 3 with the presence or absence of coding categories indicating the type of information used or brought to mind by participants. Each participant also rated their satisfaction in the domains and areas that were represented by the code categories, to establish the extent to which the areas of information brought to mind were considered satisfying. This step was necessary as the coding scheme itself does not measure the valence of

the information. An assessment of the valence of information directly from the participants' descriptions was expected to be difficult due to the likelihood of participants using words rather than full sentences. For example, responses such as "my husband" or "being near to family" are ambiguous and cannot be accurately rated as positive or negative. Thus, with a combination of coded responses and domain satisfaction ratings, the average satisfaction in used and not-used domains could be calculated for each participant. Individuals identified as having high life satisfaction were expected to bring to mind the areas of information that are currently the most satisfying whilst ignoring less satisfying information. On the other hand participants with low life satisfaction should bring to mind their least satisfying sources of information, at the expense of better information.

The method utilised for the present study also presented the opportunity to examine the information reported as being used in the judgement without the associated satisfaction scores. Without accounting for the valence of the information it is difficult to predict whether any difference in information use would be expected. For example previous research suggested that "self" was the best domain for happy people but the worst domain for unhappy people (Diener et al., 2002). In line with these findings both groups in the present study would therefore be expected to mention self-relevant information, but for different reasons. However there is the potential for interesting differences, for example in studies involving methods such as interviews and tick lists of potential sources (Mehlsen et al., 2005; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002) relationships tend to be associated with life satisfaction. Therefore it is possible that people with low satisfaction may

mention relationships less frequently than those with high satisfaction as, in general, relationships with others tend to be a satisfying source of information.

### **Aims and objectives**

In summary the aim of the present study was to show that high and low satisfaction scores can be explained by the use of different information or cognitive styles. Compared to participants with low life satisfaction those with high satisfaction are expected to rely more on their most satisfactory domains. Specific predictions regarding the difference in the types of information brought to mind by participants with high or low satisfaction cannot be made. The following results are predicted:

- 1) For participants with high SWL the mean score for domains reported as used should be greater than that of the not-used domains and for participants with low SWL the mean score for used domains should be lower than the not-used domains.

## **Method**

### **Participants**

A sample of 201 participants (147 female, 54 male), age range 18 – 66 years ( $M = 32$  years,  $SD = 12.47$ ), were recruited online. The participants were all unpaid volunteers who responded to requests for participants posted on experiment recruitment websites and their associated mailing lists, Facebook groups and Twitter feeds. The following websites were used: Psychological Research on the Net (sponsored by Hanover College Psychology Department); the Social Psychology Network (maintained by Wesleyan University); The Web Experiment List (hosted by

Universidad Deusto); the Psychology Postgraduate Affairs Group and Science in the Pub. The distribution of ethnic groups was as follows: 159 respondents (79.1%) identified as White or White British; 17 (8.5%) as Black or Black British; 10 (5.0%) as Mixed Ethnicity or Multiple Groups; 2 (1%) as Asian or Asian British and 10 (5.0%) as “Other Ethnicity – not specified”. Three participants chose not to answer the ethnicity question. For level of education 101 participants (50%) reported achieving an Undergraduate degree or higher, 92 (45.8%) reported achieving GCSE’s or A Levels (or equivalent) and 8 (4%) described their educational level as “other”.

Four participants with outlying scores (Field, 2009) were removed from an original sample of 205. The sample of 201 provided a power of .94, alpha .05, for detecting a medium effect from the between subjects effect of the mixed ANOVA and .99, alpha .05, from the within subjects effect. A power of greater than .99, alpha .05, for a medium effect size, was also provided for examining the difference in the frequency of the type of information used.

## **Materials**

**Satisfaction with Life Scale.** (SWLS; Diener et al., 1985) The SWLS was described in Chapter 3, p.90 The presentation of the SWLS was modified in the current study to capture the information used by participants. Each SWLS item was presented with the standard 7 point response scale as well as the following instructions:

Below is a statement that you may agree or  
disagree with. Take your time to think about the extent

to which you agree or disagree. Try to be aware of the information you are using.

The responses to each item were summed so the possible scores ranged from 7 to 35. In the current study the scale was found to be highly reliable ( $\alpha = .84$ ). For each item, after choosing from the response scale, participants were provided with a space to type their thoughts in response to the following instructions:

Now just give a brief description of what went through your mind as you considered the statement. You do not have to write in proper sentences; simply do your best to describe your thoughts.

**Domain satisfaction.** Items were developed for the current study to measure participants' satisfaction in 12 of the 13 areas of the coding scheme, created in Chapter 3, which was used to assess the written responses to each SWLS item. The 12 areas from the coding scheme were assessed via single items. Participants were asked "How satisfied are you with..." and rated each item using a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), in the style of the SWLS. This method for assessing domain satisfaction has been used in numerous studies (for example, Schimmack, Diener & Oishi, 2002; Schimmack & Oishi, 2005). Table 9.1 includes the domain satisfaction items and the code category they respond to. The items were validated by asking 4 blind coders to match each item to the corresponding broad concept or life domain from the list of 12, yielding 100% accuracy. The measure also included three filler items relating to one's satisfaction with the weather, the current government and physical fitness. The code category of Personal Theory was excluded as it was not suited to a single item measure.

**Table 9.1. Code categories and their associated domain satisfaction items**

Code category	Domain satisfaction item
	<i>How satisfied are you with...</i>
relationships with others	your relationship with others
health	your health
use of time	how you spend your time
accommodation	where you are living
money	your money and finances
self-qualities	yourself, as a person
job	your job
daily life	the freedom and control you have in your daily life
material possessions	your material possessions
contribution to the world	your contribution to your local community or the wider world
feelings	your balance of positive and negative feelings
doing things	your achievement of your aspirations

**Domain use.** In order to identify the information used by each participant in their SWLS judgements the written responses to the five SWLS items were coded for the presence of information relating to the 12 code categories. The individual item results were amalgamated so that for each participant a domain was counted as mentioned or not across all 5 items. Combining the responses in this way allowed for the following issues: participants may have deliberately avoided repeating themselves, despite the instructions stating that they could use the same information; participants may have grown tired of typing the same information; participants may have interpreted each item as requiring a different answer; and the earlier responses may have primed the use of information in the later responses. The full sample (N = 201) was coded by the researcher and 20% of the sample was coded by a second rater to calculate inter-rater reliability. The items coded by the second rater were not chosen at random but were chosen to ensure that all the categories were present, as some were less frequent than others. The resulting Cohen's Kappa values are shown in Table 9.2. All code categories were found to display good to excellent reliability (greater than .6; Robson, 2002). For each participant the domain satisfaction scores that matched the code categories identified as used in the open-ended responses were averaged to create an Average Used Domains score. The remaining domain satisfaction scores were averaged to create the Average Not-Used Domains score.

**Table 9.2. Inter-rater reliability correlations between the first and second coder for all code categories**

Code Category	Cohen's Kappa
	Study 5
Relationships	.92
Health	.91
Job	.90
Use of time	.88
Accommodation	.86
Money	.85
Contribution to world	.83
Self-qualities	.81
Doing things	.75
Feelings	.75
Daily Life	.67
Material Possessions	.62

### **Procedure**

All materials were administered online using Select Survey ASP Advanced software version 8.6.4. Participants were prevented from proceeding to the questionnaire screens unless they had agreed to the informed consent questions and confirmed that they were over 18. After completing some demographics questions participants were presented with the general instructions on the next screen:

The next 5 pages concern your overall life satisfaction.

You will be asked to type a very brief description of what goes through your mind as you consider certain

statements. You may find that you use different information for each statement or you may feel that some of the same information comes to mind. If this occurs do not worry about repeating yourself - we want to know what information you use for each statement.

There are no right or wrong answers.

Following the general instruction page each item from the SWLS was presented individually, on separate screens. Each screen consisted of an SWLS item, the standard 7-point response scale (1 - *Strongly Disagree* to 7 - *Strongly Agree*) and the space for the participant to describe their thoughts. After completing all five SWLS item screens participants completed a filler questionnaire presented on a single page. This was followed, on the next page, by the domain satisfaction measures. On completion of the domain satisfaction measure participants were presented with a debrief screen.

## **Results**

### **Identification of outliers**

The sample of 201 resulted from the exclusion of four participants with outlying scores to address the significant skew of the average Used and Not-Used domain scores (Field, 2009).

### **Demographic distributions**

As the analyses relied on identifying those with high ( $N = 97$ ) and low ( $N = 104$ ) life satisfaction scores via a median split (median SWL score = 23), the demographic distributions between the two groups were compared and these are

summarised in Table 9.3. Participants in the high SWL group were younger than those in the low SWL group ( $t(199) = 2.51, p = .013, d = .36$ ). Age was therefore included as a co-variate in the main analysis. The distribution of gender did not significantly differ between the high and low satisfaction groups ( $\chi^2(1) = 2.60, p = .11, w = .11$ ). As the majority of participants (79.1 % of the whole sample) identified as White or White British it was statistically necessary to combine the small number of people in each of the other ethnic groups. Ethnic diversity did not significantly differ between the high and low satisfaction groups ( $\chi^2(1) = .36, p = .55, w = .04$ ). Excluding the 8 participants who responded “other”, the high and low satisfaction groups also did not differ in terms of the participants’ education level ( $\chi^2(1) = .01, p = .94, w = .01$ ). Therefore the low and high satisfaction groups were only found to differ in terms of age.

**Table 9.3. The demographic distributions for the high and low SWL groups**

	High SWL (N = 97)	Low SWL (N = 104)
Mean Age (SD)	29.69 (11.54)	34.04 (12.98)
Gender, % female	78.40	68.30
Ethnic Group, % minority group	22.70	19.20
Level of education, % Undergraduate degree or higher	52.60	52.00

### **Difference in the average used and not used scores between high and low satisfaction groups**

The mean scores of both the used and not-used domains were found to significantly correlate with SWL, to a similar extent for both groups. For the used domains: high satisfaction,  $r(94) = .41, p < .01$ ; low satisfaction,  $r(99) = .55, p < .01$ ; Fisher's  $z = -1.28, p = .20, q = .18$  and for the not-used domains: high satisfaction,  $r(97) = .55, p < .01$ ; low satisfaction,  $r(104) = .66, p < .01$ ; Fisher's  $z = -1.22, p = .22, q = .18$ .

To investigate whether those in the high satisfaction group tended to use their best or higher scoring domains, whilst those with low satisfaction used their lower scoring domains, the averages of the used and not-used domain satisfaction scores were subjected to a satisfaction level (high vs low) x domain type (used domains vs not used) mixed model ANCOVA with age as a co-variate. The mean scores are shown in Table 9.4. The sample sizes for the Used domains groups were reduced as 8 participants did not have an average used domains score.

There was no significant effect of domain type ( $F(1,190) = 2.76, p = .10, \eta^2 = .01$ ): overall the average satisfaction score did not differ between the used and not-used domains. Unsurprisingly a significant main effect of satisfaction level was found ( $F(1,190) = 113.99, p < .001, \eta^2 = .37$ ), indicating that those with high life satisfaction had greater mean domain satisfaction scores overall. Importantly there was a significant interaction between satisfaction level and domain type ( $F(1,190) = 23.31, p < .001, \eta^2 = .11$ ), indicating that the difference in average domain scores between the high and low satisfaction groups varied according to whether the domains were used or not.

**Table 9.4. The mean domain satisfaction scores and standard deviations (SD) and ratio scores of used and not used domains for high and low satisfaction groups**

SWL group	N	Used domains		Not-used domains		
		M	(SD)	N	M	(SD)
Low	99	3.70	(1.16)	104	4.01	(.77)
High	94	5.15	(.77)	97	4.92	(.79)

To break down the interaction separate dependent and independent t-tests were performed. Independent t-tests confirmed that participants with high life satisfaction had greater mean scores than those with low satisfaction for both the used domains ( $t(171) = -10.21, p < .001, d = 1.49$ ) and non-used domains ( $t(199) = -8.13, p < .001, d = -1.19$ ). Dependent t-tests compared the average used and not-used domain scores for the high and low SWL groups. For the high satisfaction group the mean satisfaction of the used domains was significantly greater than the not-used domains ( $t(93) = 3.25, p = .002, d = .29$ ) whereas the opposite was found for the low satisfaction group: the not-used domains had a greater mean score than the used ( $t(98) = 3.37, p = .001, d = .32$ ).

The observed interaction is illustrated by the ratio score of the used domain mean score over the not used mean score. For the Low Satisfaction group the ratio score was .92, whereas for the High Satisfaction group the ratio score was 1.06. By having a ratio score greater than 1 those in the high satisfaction group are using domains that have a greater mean score than those not used, whereas with a score

less than 1 the low satisfaction group are using domains with a lower mean score than the not-used domains.

### **The difference in domain use between the high and low SWL groups**

On average the number of different categories identified in the responses of each participant was 5, and this did not differ between the High and Low groups ( $t(199) = .71, p = .48, d = .10$ ). Table 9.5 presents the number of participants who mentioned each domain at least once in response to any or all of the five SWLS items both overall and according to high and low satisfaction scores. The domains clearly vary in terms of their relative frequency. Overall the Relationships-with-others domain was shown to be the most frequently mentioned area and Contribution-to-the-world the least common. The use of domains was only found to differ for the Accommodation category, with participants with high satisfaction bringing Accommodation information to mind more than those with low satisfaction ( $\chi^2(1) = 6.01, p = .01, w = .17$ ). The rest of the domains were equally as frequent for both high and low life satisfaction scorers: Relationships,  $\chi^2(1) = .22, p = .64, w = .03$ ; Job,  $\chi^2(1) = 2.34, p = .13, w = .11$ ; Feelings,  $\chi^2(1) = 3.16, p = .08, w = .13$ ; Money,  $\chi^2(1) = .71, p = .40, w = .06$ ; Health,  $\chi^2(1) = .54, p = .47, w = .05$ ; Self-qualities,  $\chi^2(1) = 2.19, p = .14, w = .10$ ; Material Possessions,  $\chi^2(1) = 1.06, p = .30, w = .07$ ; Doing Things,  $\chi^2(1) = .22, p = .64, w = .03$ ; Daily Life,  $\chi^2(1) = .01, p = .92, w = .01$ ; Use of Time,  $\chi^2(1) = .151, p = .23, w = .09$ . The low frequency of Contribution-to-the-world meant that 50% of the cells had an expected frequency of less than 5. As such Fisher's Exact Probability was used which also showed that there was not a significant association between the frequency of the Contribution-to-

the-world domain and life satisfaction level ( $p = .45$ , two-tailed, Cramer's  $s = .06$ ). The results show that, in general, those with high or low life satisfaction tended to bring the same information to mind when thinking about their life satisfaction. However this analysis does not account for the valence or associated satisfaction level of the information used in the judgement.

**Table 9.5. The frequency of domain use in response to SWLS across the whole sample and high and low satisfaction groups**

Domain	Whole Sample N = 201	High Satisfaction N = 97	Low Satisfaction N = 104
Relationships	144	71	73
Doing things	105	49	56
Feelings	103	56	47
Accommodation	96	55	41
Job	92	39	53
Money	83	43	40
Self-Qualities	79	33	46
Health	63	28	35
Daily life	45	22	23
Use of time	27	16	11
Material Possessions	26	15	11
Contribution-to-the-world	7	2	5

## Discussion

The high and low life satisfaction groups were found to differ in terms of the mean scores of their used and not-used domains. The domains used by the high satisfaction group had a significantly greater mean satisfaction score than the not used, showing that the information brought to mind related to the domains with the greater satisfaction scores. In contrast however, for the low satisfaction group the not-used domains had a significantly greater mean satisfaction score than the used. The information brought to mind by those in the low satisfaction group therefore related to domains with lower satisfaction scores while the areas not mentioned were apparently more satisfying. In general participants with high and low satisfaction brought to mind the same areas of information. The only difference was that more participants with high satisfaction brought to mind information relating to the code category of Accommodation, in other words they acknowledged or appreciated where they lived. The lack of difference in the areas brought to mind is perhaps not surprising as the code categories do not account for the valence of information.

The difference in information use found by the present study is similar to results found by a previous study which showed that happy people, compared to unhappy people, placed more weight on the domains with which they were most highly satisfied (Diener et al., 2002). In combination the results of the present study and those of Diener et al. (2002) support the idea that low or high life satisfaction is influenced by different cognitive processes rather than simply being the result of a difference in mood or less satisfying life domains.

Alternatively the results could also be explained, to a certain extent, by the most important areas of life being persistently used by all participants regardless of

satisfaction level. The high and low life satisfaction groups did not differ in terms of the popularity of the used domains. Essentially this explanation assumes that most individuals bring the same information to mind, but those with high satisfaction have overall greater domain satisfaction compared to those with low. A significant main effect supporting this idea was found: that those with high life satisfaction had greater mean domain satisfaction scores overall. However this explanation would not predict the interaction that was found and therefore does not fully explain why the domains used by those with high satisfaction had a greater mean score than those not-used whilst for the low satisfaction group the not-used had a greater score than those used.

A potential limitation of the present study is the accuracy of the participants' reports of used and not-used information. The present study found that the average satisfaction scores of both the used and not-used domains correlated with general life satisfaction to a similar extent. This result was unexpected as previously Schimmack, Diener, and Oishi (2002) showed that the correlation with life satisfaction tended to be significantly higher for satisfaction with domains reported as used than not-used. Further the difference in correlations was interpreted by Schimmack, Diener and Oishi (2002) as supporting the idea that participants were accurately reporting the information used. If this interpretation is correct then it implies that the participants in the present study were not as accurate in their reports as those in Schimmack, Diener and Oishi's (2002) study, thus potentially calling into question the difference found between the high and low groups.

To assess which domains were used in life satisfaction judgements Schimmack, Diener and Oishi (2002) provided participants with tick lists of

potential domains, based on pilot studies. In comparison the present study used an open-ended response in which participants described the information they felt they used. Schimmack, Diener and Oishi (2002) actually used a similar open-ended technique in a pilot study and asserted that the obtained information supported the idea that “people have access to some of their thoughts during life-satisfaction judgements” (p.355). Schimmack, Diener and Oishi (2002) also felt that the free response method minimised demand effects, however they were concerned that information may be missing from the reports due to a lack of motivation and forgetfulness on the part of the participants, hence their decision to use a tick-list method. The present study addressed these issues of effortful retrospection by asking participants’ for their thoughts after each SWL item, rather than after completing the whole scale. Thus the method used in the present study can be considered an improved version of one already asserted as accurate (Schimmack, Diener and Oishi, 2002) in the sense that it facilitated, rather than hindered, retrospection. In further support of the validity of the method the overall frequency of the used domains in the present study was broadly consistent with Study 1 which also found that Relationships-with-Others was the most common category, Feelings was highly frequent and Contribution-to-the-world and Material Possessions were the least common.

The use of the mean scores of used and not-used domains can also be considered a limitation of the present study. Averaging the domains assumes they are all considered equally and does not take into account the weighting given to each domain in the judgement. Further the use of mean scores may also explain the relationship between the not-used domains and SWL. Schimmack, Diener and Oishi,

(2002) examined the relationship between SWL and each domain, used or not-used, separately and found that individually some non-used domains (current mood, health, and goal progress) correlated significantly with SWL. Considering the wider range of information examined in the current study, it is therefore likely that some domains reported as not-used were significantly related to life satisfaction. The relationship between the average of the non-used domains and life satisfaction can therefore be explained by the fact that some of the non-used domains still predicted life satisfaction.

An obvious limitation of the present study is that a median split was used to identify the high and low life satisfaction scorers. The median split meant that the scores for those in the low group ranged from 5 to 23. According to Diener (2006) 20-24 is the average range for life satisfaction in economically developed nations. Therefore some of the 104 “low” scorers actually had an average life satisfaction score. It could therefore be argued that the low group was not a true reflection of people with low satisfaction. However the alternative methods, for example, a tertiary split, or identifying participants with scores above and below Diener’s definition of an average score (20-24), would result in a loss of power. Further using these alternative methods would also mean that the two groups would not be a true representative sample. That the difference in information use was found whilst average scorers were still included suggests that such a cognitive bias does not just account for extreme scores.

The nature of on-line participant recruitment can also be considered a limitation of the present study. A number of the participant recruitment websites were not based in the UK. As such the participants may have come from a variety of

different countries introducing a potential confounding factor. However the nationality of the participants was not recorded. By testing the participants on-line the sample was restricted to computer literate individuals with web-access. Issues of self-selection and drop-out are also exacerbated by on-line data collection (Reips, 2000). These limitations need to be borne in mind when considering the generalizability of the results. However these limitations also need to be weighed against some of the benefits of on-line administration, namely, a sample that does not consist solely of university students, and a larger sample size.

The strength of the present study is its use of participant's direct reports regarding information use. A previous study by Diener et al. (2002) relied on the idea that domains are given different weights in the judgement and used multiple domain satisfaction scores without a measure of whether or not they were actually used in the judgement. The present study can be considered a more accurate test of the idea that there is a difference in cognitive processes between satisfied and unsatisfied individuals as, rather than focussing on the assumed weighting of information, it establishes a difference at the level of use or non-use of information.

The present study supports the idea that life satisfaction is a cognitive judgement, relying on numerous information sources. The results also support the idea that there is a motivational, or cognitive-motivational, aspect to life satisfaction judgements. Individuals with high satisfaction used their most highly satisfying domains whereas those with low life satisfaction used domains that on average were less satisfying than the domains they did not bring to mind. The cognitive processes used to generate low and high life satisfaction therefore appear to differ and this result provides a potential cognitive mechanism for positive interventions. Further

the difference in information use suggests a route by which top-down traits interact with bottom-up information, in line with complex theories of life satisfaction judgements that integrate current mood, general traits and bottom up domain satisfaction (Busseri & Sadava, 2013; Diener et al., 2012; Heller et al., 2004; Schimmack, Diener & Oishi, 2002; Sheldon & Hoon, 2007).

## **Chapter 10**

### **General Discussion**

The main aim of this thesis was to investigate aspects of life satisfaction judgements that had been insufficiently addressed in the literature to date. Chapters 2 – 9 described six studies that examined the information brought to mind when considering one's life and a number of cognitive processes that may be involved. Essentially all the studies sought to investigate to what extent individual's make life satisfaction judgements in a considered and meaningful way using bottom-up life domain information. Study 1 used a unique methodology to identify and categorise the information brought to mind by participants when they considered the items of the SWLS with regards to their present life, a better life and a worse life. Study 1 also examined whether the traits of Agency, Communion and RISC were related to information use. Study 2 assessed whether information sources such as one's mood or trait feelings were more likely to be used if the judgement was made rapidly. Studies 3a and 3b used two complementary methods to demonstrate that certain information is given more weight than others in the judgement. Study 4 examined whether life satisfaction was based on retrieved information or the metacognitive feelings (ease or difficulty) associated with its retrieval. Finally information use between participants with high and low life satisfaction was compared to establish whether there was a cognitive bias towards using one's best or worst domains, respectively. Together these studies point to the sources of information relevant to a life satisfaction judgement and the processes that may be involved.

### **The use of life domains as sources of information in life satisfaction judgements**

A major aspect of the theory that responding to a life satisfaction measure involves a meaningful and considered judgment is the use of bottom-up, life domain information. The results of Studies 1, 4 and 5 provided direct support for the use of retrieved information about one's life and these results are summarised in the following section.

Study 1 identified that a broad array of information was brought to mind by the participants. Thirteen code categories were generated: Health; Money; Contribution-to-the-world; Doing Things; Daily Life; Personal Theory; Use-of - Time; Accommodation; Job; Material Possessions; Self-Qualities; Feelings; Relationships-with-others. The definitions of the categories, or summaries of areas of information covered by each of the categories, are provided again in Table 10.1. The 13 code categories were found to have similar patterns of frequency in Study 1 and Study 5. In Study 1 the top three code categories, with a clear point of inflection distinguishing them from the other categories, were found to be Relationships-with-others, Job and Feelings. In Study 5 Relationships-with-others and Feelings were again in the top 3, in terms of overall frequency, with Job being the fifth most common category. Doing Things, found to be the second most common category in Study 5, was also relatively common in Study 1 where it was found to be the fourth most common, albeit after the point of inflection. Contribution-to-the-world and Material Possessions were found to be the least frequent categories in both Study 1 and Study 5.

**Table 10.1. Summary of the Code Category definitions.**

Code Category	Definition
<b>Relationships-with-others</b>	The dimension of relationships possession (lacking, gaining, having), the attributes of relationships (quality) and the purpose of relationships (caring for others and socialising).
<b>Job</b>	The importance of employment, the suitability of one's job, the absorption of a job or career into one's identity and the associated sense of progress.
<b>Health</b>	Information pertaining to one's healthiness, along a dimension from being fit to illness, with the intermediate or default idea of being well or not sick.
<b>Money</b>	The relevance of adequate financial means and the concerns people have regarding a lack of money.
<b>Accommodation</b>	The acknowledgement and appreciation of where one lives in a narrow and broad sense.
<b>Material Possessions</b>	The acknowledgment, and varying relevance, of material possessions.
<b>Feelings</b>	The use of emotional states and feelings as indicators of satisfaction.
<b>Use of time</b>	The relative time spent on certain areas of one's life and specific references to how one's time is used.
<b>Contribution-to-the-world</b>	An individual having an impact on something other than their personal life, such as the local community or wider issues.

Code Category	Definition
<b>Self-Qualities</b>	The positive and negative perception of one's characteristics or personality
<b>Daily life</b>	The impact of everyday life and its associated difficulties. The ability to manage one's life: control, constraints and restrictions.
<b>Doing things.</b>	Activity in order to achieve certain goals or to maintain a general sense of progress.
<b>Personal theory.</b>	The various schemas people use when contemplating life as a whole, these included assumptions regarding other people and folk concepts as well as the influence of one's general attitude.

The similarity in the use of categories between studies 1 and 5 suggests that the code categories are reflecting the genuine use of information in response to the SWL items. Unlike Study 1, which used a face-to-face interview, Study 5 used participants' typed responses, given on-line, providing a brief description of what went through their mind after responding to each SWL item. While Study 1's Thinking Aloud was intended to reflect the thoughts as they occurred, rather than the retrospective method used in Study 5, the two studies can still be considered similar in terms of the freedom given to the participants and that participants responded to each SWLS item separately. As Study 5 required a response after each item, rather than after the completion of the whole SWLS scale (as used in other studies), it can be asserted that issues of accuracy relating to retrospection may have been minimised.

Previous studies, of a similar descriptive nature, have also demonstrated a similar pattern of information use to Study 1 and Study 5. Martikainen (2008) found that work and family were the most common areas mentioned in response to open-ended questions concerning the source of satisfaction. Mellor et al. (1999) also found that relationships were the most common area reported. For Mellor et al. (1999) the second most common area was fulfilment which reflected aspects of life such as a purposeful and satisfying job or having a career. As this information would be part of Study 1's Job category it emphasises the persistent and consistent use of job and employment related information in life satisfaction judgements.

Study 1 found that as participants considered their current, better or worse lives some categories were used to the same extent: Daily Life; Accommodation; Job; Material Possessions; Self-Qualities; Feelings and Relationships-with-others. The use of the remaining code categories was found to vary according to question type. Personal Theory was the only code category found that was more frequently used by participants when thinking about their present life than when thinking about a better or worse life. This result suggested that current life satisfaction judgements utilise the abstract generalisations and attitudes that Personal Theory represented, albeit amongst other information. Use of Time was brought to mind significantly more when thinking of a more satisfying life compared thinking about one's present and a worse life indicating that participants' conceptualisations of a better life particularly included thoughts of work-life balance, hobbies and other ways in which their time is spent. Further differences in information use across current and imagined life satisfaction were also found, although the family-wise error rate correction gave reason to be cautious of the findings. Health was the only code

category found to be more frequently mentioned when thinking about a worse life, compared to a better life. Both Contribution-to-the-world and Doing Things were found to be more common in response to the better life questions compared to the worse life questions. Money was brought to mind significantly more when thinking of a more satisfying life compared to thinking about one's present life. In sum, Health (presumably poor health) is associated with a worse life and Money, Use of time, Doing Things and Contribution-to-the-world were brought to mind especially when thinking about a life that would be more satisfying.

The categories that were found to not vary with question type in Study 1 therefore seemed to be as relevant to a better or worse life as they were to the general SWL items. This group also contained the three most common code categories: Relationships-with-others, Job and Feelings. Their lack of variation between the question types, along with their high frequency of use across Study 1 and Study 5, further suggests that these three areas of information are highly relevant to general life satisfaction (including the past and present) and imagined, future life satisfaction. This finding is in line with idea that life satisfaction judgements utilise chronically salient information and that people will tend to use similar information (Schimmack, Diener & Oishi, 2002; Schimmack & Oishi, 2005; Schwarz & Strack, 1999).

The results of Study 4 also provided some support for the use of retrieved life domain information in a life satisfaction judgment. Initially the results suggested that neither metacognitive feelings nor the retrieved content were used in the life satisfaction judgements. Importantly though a main effect of list length was found for a sub-set of participants, identified because they felt that the list-making task had

affected their life satisfaction judgement. For this group writing a list of 15 items resulted in a higher life satisfaction score than writing a list of 3 items, irrespective of whether the list contained satisfactory or unsatisfactory reasons. This unexpected main effect of list length can be explained by participants who wrote a satisfactory list basing their judgement on the content, while those who wrote an unsatisfactory list relied on the feelings of difficulty. This finding fostered a reinterpretation of the original null results. While the lack of interactions demonstrated that the SWL judgements were not based on one particular information source (either the list content or metacognitive feelings) the sub-sample results suggested that both sources could be used, albeit by different groups. It was speculatively proposed that the similarity between the groups in Study 4 was a result of the use of either metacognitive feelings or recalled content in life satisfaction judgements, whichever would lead to the better score.

The combined results of Study 3a and Study 3b, while not explicitly testing that domain information was used, also provided support for the idea that life domains informed life satisfaction judgements, as well as happiness and meaning judgements. Study 3a and Study 3b examined the use of three categories of information that Study 1 had found to differ in frequency and therefore could be assumed to differ in importance: Relationships-with-others, Money, Contribution-to-the-world. The judgements in Study 3a were focussed on the life of an ostensible other person but the results suggested a universal value, or relative importance, of information relating to Relationships, Money and Contribution-to-the-world to the well-being judgements. While the Study 3a judgements concerned the hypothetical lives of others the results were partially replicated in Study 3b, in which participants

judged their own lives. Furthermore Study 3b found that participants high in all three life domains were more satisfied, happy and had greater meaning than those low in all three, a result consistent with the idea that the domains were relevant to the judgements.

### **Complex life satisfaction judgements based on multiple sources**

Schwarz and Strack's (1999) judgement model suggested that one's mood was the first port of call in life satisfaction judgements, acting as a heuristic or mental short cut. If the reliability of this source was called in to question it would be discounted and accessible information would then be used (Schwarz & Strack, 1999). This suggests an "either / or" process: either current mood or accessible information. However more recent evidence suggests that current mood may be one of a number of sources involved in life satisfaction judgements (Diener et al., 2012) and this is supported by some of the results of the present studies.

In Study 1 and Study 5 the Feelings category, which accounted for references to one's current mood as well as other emotions and references to broad feelings, was found to be one of the most frequently used categories. This result compliments Schimmack, Diener and Oishi's (2002) results, which also found that use of current feelings was reported by participants. Participants in Studies 1 and 5 also mentioned their general broad beliefs about life satisfaction (via Personal Theory) or themselves (via Self Qualities) amongst a variety of other areas that reflected the use of bottom up life domain information (e.g., Relationships-with-others; Health; Money; Job). The reported use of such information supports the idea that life satisfaction judgements integrate current mood, general traits and bottom up domain satisfaction (Diener et al., 2012; Heller et al., 2004; Schimmack, Diener & Oishi, 2002). The

results of Study 2 also support this idea, using a correlational method rather than self-reported use.

Study 2, which assessed whether the use of information varied with the speed of the life satisfaction judgement, found that beliefs about the self (in the form of trait feelings), current affect or mood, and bottom-up life domain information (measured via needs satisfaction) all contributed similarly to life satisfaction scores. Further the speed of the judgement was not found to moderate these relationships: all sources remained related to life satisfaction to the same extent. Thus current affect, trait feelings and the satisfaction of three needs - autonomy, competence and relatedness - were equally good predictors of life satisfaction. Importantly Study 3a found that when judging the life of another person, presented via a vignette, the participants current affect balance was not related to the judgements of well-being, including life satisfaction, happiness and meaning. In combination with the results of Study 2 this suggests that one's mood can be relevant to one's own well-being but does not unduly influence judgements of other's lives to which it is irrelevant.

Across Study 1 and Study 3 there was little support for the interaction between personality traits and bottom-up information use. Study 1 did not find that the traits of Agency, Communion or RISC were related to the use of any of the code categories. Study 3 found that an individual's aspirations towards financial success, affiliation or community feelings did not relate to their placing any more weight on Money, Relationships or Contribution-to-the-world information. The lack of relationship between a participants aspiration scores and their well-being judgments in Study 3a can easily be explained by the fact that the judgement was of another person's life. The relevance of one's own values, especially when asked to judge the

vignettes as if you were the individual, becomes less relevant to the judgement. It is perhaps particularly interesting that the measures of RISC and Communion were not found to be related to the use of Relationships-with-others information in Study 1. This lack of effect may be due, however, to the fact relationships appear to be universally relevant to life satisfaction.

The results of the present studies therefore support the idea that life satisfaction judgements are complex, in terms of information use. Along with bottom up information other information sources may also be used in the judgement, including one's current affect balance and general beliefs about the self. While the present studies did not find significant relationships between the personality traits or aspirations measured with life satisfaction the lack of results can be explained by the measures used and aspects of the methodology.

### **Cognitive processes underlying life satisfaction judgements**

One theory regarding life satisfaction judgements is that they may be based on the first information brought mind or information that is highly accessible at the time of judgement (Schwarz & Strack, 1999; Trent & King, 2010). Study 4 provided evidence that this is not the case. The ease-of-retrieval paradigm used a list-making task that manipulated the valence of the information retrieved before the SWLS judgement. As such if temporarily accessible information is used in the life satisfaction judgement a main effect of valence would be predicted as the task would increase the accessibility of positive or negative information but the amount of information recalled (due to the short or long list) would have no further influence. This main effect of valence was not found.

With regards to life satisfaction utilising a considered judgement based on retrieved information, Study 5 found that, on average, approximately five different areas were brought to mind. Study 5 compared the mean scores of the domains or life areas reported as used (and those not used) between participants split according to high or low life satisfaction scores. Those in the high group tended to use their best domains whereas those in the low group used domains with a low mean score while their not-used domains were more satisfying. This finding suggests a cognitive bias that was not related to the categories of information themselves: participants with high and low satisfaction brought the same categories of information to mind.

The results of Study 3a and Study 3b demonstrated that different values were attributed to the domains of Relationships, Money and Contribution-to-the-World for the judgments of life satisfaction, happiness and meaning and this contributes to the idea that such judgements are considered and involve weighing up the information sources. Using vignettes that described the lives of other people Study 3a found that, when considered in isolation, these three areas of information differed in terms of the impact they had on judgements. These results were partially replicated in Study 3b which used self-judgements rather than judgement of the lives of others. For life satisfaction, Money and Relationships were found to be given similar weight while Contribution-to-the-world had little impact. The results for happiness were similar, but the impact of Contribution-to-the-world increased when judging the meaningfulness of a life. Relationships information was therefore found to be important for life satisfaction, happiness and meaning judgements. Contribution-to-the-world, as indicated by its low frequency in Studies 1 and 5, was less important for life satisfaction, compared to Relationships and Money, but became important for

meaning judgements. The findings also indicated that in lay-definitions of life satisfaction, happiness and meaning in life there is some overlap between life-satisfaction and happiness but meaning in life is more distinct. Study 3a and Study 3b also found that the single domain of Relationships has as much of an impact on well-being as two domains (Money and Contribution-to-the-world). The impact of the two domains could be attributed to either Money or Contribution-to-the-world, depending on the judgement. This finding emphasised that an extra satisfying domain does not necessarily increase well-being. In other words this finding supported the idea that one domain was given more weight than another: when two positive domains were provided the judgement was mainly based on one of them, the one that was the most relevant to the judgement.

In summary the different frequency of use, found in both Study 1 and Study 5, together with the varying impacts of the isolated domains found by Study 3a and 3b, suggested that information retrieved for the life satisfaction judgement is given different weights. The results also support the idea that this weighting is generalised: most people give less weight to contribution-to-the-world information and more weight to relationships, in a life satisfaction judgement. In other words the weighting of information is not only a result of values and personality traits, some domains are just given more weight than others. There also appears to be a cognitive bias in terms of information use. Rather than high and low life satisfaction being the result of generally better or worse life domains, the most satisfying domains are brought to mind by individuals who have high life satisfaction while less satisfying domains are used by those with low satisfaction.

### **Contribution to the literature**

An important aspect of Study 1 was that participants were able to articulate their responses to the SWLS items and information regarding areas of one's life was clearly retrieved. A number of the categories identified were found to overlap with previous studies of a similar descriptive nature and this consistency provides an element of validity to the findings. Study 1 also generated a broad selection of areas, some of which did not directly map on to information found in previous studies: Contribution-to-the-world; Feelings; Daily Life; Personal Theory; Accommodation (Martikainen, 2009; Mellor et al., 1999). This finding suggests that allowing participants the freedom to respond how they wished, without leading questions, and basing the analysis in the data, rather than limiting in to pre-existing theories, allows much broader information to be identified.

The 13 code categories also overlap with both a tick list based on well-being literature (Schimmack, Diener & Oishi, 2002) and elements of eudaimonic list theories (e.g., PWB, Ryff, 1989; SDT, Ryan & Deci, 2000; PERMA, Seligman, 2011) suggesting that people's ideas as to what informs one's life satisfaction does correspond broadly to theoretical approaches. Further, the results indicate that life satisfaction should not be defined as a simple hedonic measure. While both current and past feelings were brought to mind by most individuals there was not a narrow focus on feelings. Individuals were found to use a wide variety of information including that which may be considered eudaimonic. The presence of, or search for, meaning in life (Linley & Joseph, 2011; Steger et al., 2011) was not explicitly represented by the 13 code categories. However aspects of the Relationships-with-others, Feelings and Personal Theory categories can be reasonably considered to

reflect information related to meaning in life judgements (Baumeister et al., 2013). The results of Study 3a and Study 3b provided evidence that lay-definitions of satisfaction and meaning are distinct and this finding may explain the lack of direct references to meaning in the Think Aloud interviews.

In the context of Study 1, the responses to the SWLS items appear to be considered and based on bottom-up information. The results of Study 4 and Study 5 also contribute evidence for this idea. Thus, these studies provide support for what was an assumption first made by Diener et al. (1985) and later reiterated, to a certain extent, by Schwarz and Strack (1999) in their judgment model of well-being: people bring to mind the information that they feel is relevant to make a life satisfaction judgement. The consistent and persistent use of information such as Relationships-with-others, Job and Feelings, found not just in Studies 1 and 5 but also in previous studies (Martikainen, 2008; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002) also supports the idea that certain information is chronically salient (Schimmack, Diener & Oishi, 2002; Schwarz & Strack, 1999). There is also the suggestion that within the samples of the present studies, mainly White British, non-student participants, that there is a universal chronic salience or, put another way, a tendency to bring the same information to mind.

The idea that the various sources of bottom-up information relating to different life circumstances are given different weights by different people was first suggested by Diener et al. (1985) when creating the SWLS. The idea received some support through studies that examined individual differences in values and importance (Oishi et al., 1999; Schimmack, Diener & Oishi, 2002). However more often than not, when a number of domains are examined, all domains are assumed to

be averaged or summated (e.g., Diener et al., 2002; McAdams et al., 2012). Further, while descriptive studies (e.g., the present Study 1 and Study 5, Martikainen, 2008; Mellor et al., 1999; Schimmack et al., 2002) have found that areas of information tend to differ in terms of their general frequency it cannot be assumed that the frequency of information use accurately represents the importance of that information in a life satisfaction judgement, or how it is weighted against other areas. In fact the descriptive studies represent use and non-use of information rather than the weighting of information being used.

The results of Study 3a and Study 3b suggested that certain domains are given more weight than others in life satisfaction judgements. By basing the expected importance of Relationships, Money and Contribution-to-the-world on the frequency of use found in Study 1, Studies 3a and 3b demonstrated that money is actually given as much weight as relationships. The importance of money to life satisfaction is contentious issue in well-being research. Early studies suggested that, past a relatively low level, income was not related to well-being: correlations were small and declined with increasing income (Howell et al., 2012; Lucas et al., 2008) and wealth was given little weight when participants judged whether an ostensible other person had a “the good life” (King & Napa, 1998). More recently it has been found that greater household income is related to greater life satisfaction, via the increase in material possessions, financial satisfaction and optimism for the future (Diener et al., 2013). Studies 3a and 3b therefore contribute to this burgeoning research that may have new and important implications for public policy.

Study 4’s significant finding, suggesting that participants could use either metacognitive feelings or recalled content in life satisfaction judgements, may be of

particular importance to the life satisfaction literature for two reasons. Firstly, the use of the metacognitive feeling of ease-of-retrieval as a heuristic in life satisfaction judgements has only been found in one other study, which focussed on judgements of the past or future rather than the present (O'Brien, 2013). While mood or current affect has usually been seen as the main mental short cut, due to the judgment model (Schwarz & Strack, 1999), studies have since found that current affect does not contribute a great deal of variance to a life satisfaction score and that mood may be one of a number of sources (Eid & Diener, 2004; Gärling & Gamble, 2012; Lucas & Lawless, 2013; Schimmack, Diener & Oishi, 2002; Schimmack, Radhakrishnan, et al., 2002). An alternative heuristic was therefore worth investigating. Importantly the results of early studies that suggested the use of mood as temporarily accessible information may also be explained by the recency of the event making positive information feel easy to retrieve (for example, the impact of the success of a sports team or finding money; Fox & Kahneman, 1992; Schwarz & Strack, 1999; Strack et al., 1988).

The judgement model of well-being (Schwarz & Strack, 1999) suggested a certain amount of malleability in terms of the use of one's current mood, whereby mood was the first port of call in a judgement, unless it was assessed as being unreliable or other information was more salient, in which case chronically or temporarily salient information was used. The results of Study 4 suggested a motivational aspect to the malleability of information use. Such malleability has been found with meaning in life (MIL) judgements: the relationship between current mood (measured with positive affect, PA) and MIL was greater than social functioning and MIL for participants who were primed with loneliness, suggesting

mood was used if relationships information would not result in a high score (Hicks et al., 2010). A similar effect was also found in a longitudinal diary study: PA was more strongly related to MIL when relatedness needs satisfaction was low (Hicks et al., 2010). The possibility of a motivational aspect to life satisfaction judgements has not been demonstrated previously, making the finding particularly important. Also the idea that metacognitive processes might be subject to a motivational switch, or self-serving use, has been theorised but not demonstrated (Schwarz, 2004). Thus the findings of Study 4, although only with a sub-sample, provide an important jumping off point for both life satisfaction and metacognitive feeling research.

The results of Study 5 also suggested a cognitive-motivational mechanism underlying life satisfaction judgement that has not been sufficiently addressed by research in the field. A single previous study found that happy people, compared to unhappy people, placed more weight on the domains with which they were most highly satisfied (Diener et al., 2002). Study 5 expanded upon these results by finding that participants with low satisfaction did not bring to mind the domains in which they are most satisfied, using instead domains with a lower average score, whereas those with high satisfaction used highly satisfying domains.

The idea that low or high life satisfaction can be explained as a result of different cognitive processes rather than simply being the result of a worse mood or less satisfying life domains in general (which would suggest either a genuine difference in life circumstances or in overall outlook) has some conceptual overlap with the work of Lyubomirsky (2001). Lyubomirsky (2001) argued that the effect of life events and circumstances on the way one perceives one's life is moderated by cognitive and motivational processes. For example, participants who were nominated

as unusually happy or unhappy by their peers reported one positive and one negative life event that had occurred in the last month and were then asked to re-assess these life events a few weeks later, in terms of how happy or unhappy it made them feel at the time and how happy or unhappy they felt as they looked back on the event (Lyubomirsky & Tucker, 1998). The “happy” participants assessed both the positive and negative events more favourably, and construed the negative events in a more positive light, compared to the “unhappy” participants (Lyubomirsky & Tucker, 1998). Further to this, when the events were assessed by independent judges all positive events were judged as making a person feel similarly happy and all negative event were judged as making people feel similarly unhappy (Lyubomirsky & Tucker, 1998). In other words happy and unhappy individuals judged their life events in more or less positive terms while objective others judged the same life events as being similarly positive. In a separate study it was found that found that students with high or low, self-reported, general happiness (measured with the Subjective Happiness Scale, SHS) experienced a similar amount of stressful life events but differed in their self-reported use of cognitive strategies (Lyubomirsky & Tucker, 1998). Compared to participants with low SHS, those with high SHS reported both “looking back at a negative event with a sense of humour” and “thinking how much better things are things are now when reminded of the negative event” more often, and thinking less frequently about negative aspects of positive events.

Thus it was found that people differed in terms of how positive and negative events were recalled and judged, according to trait happiness (Lyubomirsky, 2001). However the idea of an overall positive outlook implies that Study 5 should simply have demonstrated that participants with high life satisfaction would rate all their life

domains positively while those with low life satisfaction would do the opposite. While this result was found the further difference in domain use that was identified was consistent with the idea that as well as this more general influence, at the level of perception, there was a clear difference in the way the judgement was made, at the level of information use.

### **Limitations**

Each of the studies 1-5 had specific limitations and shortcomings which are addressed in detail in the relevant chapters and summarised in the present section. Some more broad limitations, occurring across more than one study, will also be addressed.

A limitation of both Study 1 and Study 5 is that the information brought to mind by participants Thinking Aloud (Study 1) or describing their thoughts (Study 5) may not represent a genuine account of the judgement. The Think Aloud procedure used in Study 1 was intended to improve upon previous research by mitigating the influence of memory error, explanation, elaboration and leading probe questions. Study 5 used a methodology that combined elements of more retrospective studies, by asking participants to list the information they used after making the judgement, but attempted to reduce memory errors by asking for the information after each SWLS item (as in Study 1) rather than after the whole scale had been completed. However it is difficult to verify whether either method produced more accurate accounts of the life satisfaction judgement compared to earlier studies. Further it is not clear whether the resulting data are a true proxy for the mental processes underpinning the judgement. Instead, the information may represent the cultural or personal beliefs of the individual regarding what they

perceive to be related to life satisfaction. While it can be argued that one's beliefs about the information related to life satisfaction and one's assessment of one's life satisfaction are likely to overlap, the point is more about whether the life satisfaction judgement is genuinely reportable. If the judgement is made intuitively, without consideration, then the information reported by the participants may reflect beliefs and inferences rather than the underpinnings of a considered judgement. A further issue, but along similar lines, is that Study 1 sought to address the potential inaccuracies resulting from retrospective reporting while Study 5 used a retrospective method. The conclusions drawn from Studies 1 and 5 therefore rely on the assumption that a considered judgment occurs and can be accurately reported both at the time of judgement and very shortly after.

In relation to the idea that, in both Study 1 and Study 5, the nature of reporting one's information use may result in a different cognitive process, Study 2 aimed to examine the effect of a rapid or thoughtful life satisfaction judgement on information use. However while a moderating effect of time was not found, suggesting that information use does not vary according to the time taken to make the judgement, the nature of the rapid and thoughtful judgements was a limitation of Study 2. While the rapid and thoughtful groups differed from each other in the expected direction they did not significantly differ from the control group and as such the rapid or thoughtful time taken was no faster or longer than the usual time taken to make the judgement. Compared to a study that used a similar methodology for MIL judgements (Trent & King, 2010) all three conditions in Study 2 could actually be considered thoughtful, as the RT's were substantially longer. However common sense also suggests that compared to more descriptive processes, such as

the Think Aloud protocol in Study 1, the Thoughtful condition was comparatively fast. In sum the main limitation was that by asking participants simply to respond rapidly and thoughtfully the study did not genuinely compare the completion of the usual SWLS with a methodological situation in which participants are encouraged to take their time.

The coding scheme developed in Study 1 was also used in Studies 4 and 5. During the development of the code, in Study 1, the categories found to have less than “good” reliability (Cohen’s Kappa less than .6, Robson, 2002) were dropped. This method was then utilised in the subsequent studies. The reliability scores across all three studies are presented together for comparison in Appendix E. Whilst all but one (Daily Life) of the categories were found to have “good” reliability across the three studies, five (Money, Accommodation, Job, Health, Relationships) were found to have fairly consistent, “excellent” reliability (Cohen’s Kappa greater than .75, Robson, 2002). Thus while the code categories from Study 1 appeared to provide a much broader range of information than had previously been identified via similar studies, this finding is qualified by the issue that not all the categories were consistently reliable. As the categories were based in the data this issue may be a result of there being a more precise way to combine the themes and categories that were identified. Alternatively, it may be that once the main broad domains are identified the complexity and variety of the responses that are left makes it very difficult to code with the same degree of precision.

A further limitation of the code categories was that they did not account for the valence of the information brought to mind. It is likely that most information was positively valenced nevertheless a lack of this information limited the conclusions

that could be drawn in some of the present studies. A record of the valence of the information would make more sense in terms of the correlational analyses conducted in Study 1. Also when comparing the information brought to mind by those with high or low life satisfaction the valence of the information may have revealed further differences.

The 13 code categories may also be limited in terms of their generalisability. The sample used in Study 1 lacked ethnic diversity, which was a persistent issue across the present studies, although the sample did consist of mainly of mature, employed individuals. Compared to previous studies (e.g., Martikainen, 2008; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002) the 13 code categories accounted for a much broader array of information than had been previously obtained. However it can be argued that all the different categories of information identified may not be brought to mind by samples of different ages or cultures. As such the 13 code categories cannot be said to reflect a universal representation of the information used in life satisfaction judgements.

One of the aims of Study 3a was to provide support for the weighting of information in a life satisfaction judgement by demonstrating the importance of relationships to life satisfaction over and above other domains. The Relationships domain was expected to have more impact on a life satisfaction judgement than either of the other two domains (Money or Contribution-to-the-world) separately or combined. However due to the unexpected importance of Money to life satisfaction, found in both Study 3a and 3b, this comparison was no longer possible as two of the three domains examined were found to be similarly important. While it was still possible to demonstrate that adding a less important domain (Contribution-to-the-

world, in the case of life satisfaction) to an important one (Money) had little impact on the judgement the results were clearly limited in terms of establishing whether the importance of a satisfactory domain can outweigh quantity. It was found in Study 3a that in a happiness judgement the single Relationships domain had greater impact than the combined Money-and-Contribution-to-the-world but this was not replicated by Study 3b.

The main limitations of Study 3a were addressed by Study 3b, namely the judging of someone else's life rather than one's own, the simplicity of the judgement resulting from the limited information provided, the narrow sample recruited and tested on-line, and the timing of the study potentially elevating the salience of money. However the manner in which the Study 3a vignettes were recreated meant that the Study 3b groups were not as clearly differentiated as would have been ideal. Participants had to be classed as "high" in all the items relevant to a domain, as such those who were not "high" in just one of the items were classed as "low" in that domain, despite having some positive information sources in that domain.

Study 4 may have been limited by item order effects. The first measure undertaken by the participants in Study 4 was the SHS. Despite a distracter task this measure may have increased the salience of episodic or self-belief information which could then be used in both the list-making task and the SWL judgement.

Three of the studies were conducted on-line and this may have had a restrictive influence on participant recruitment. While the age range across Studies 1-5 was broader than many previous studies, and the samples did not exclusively consist of students, the on-line aspects meant that three samples were limited to individuals who had access to the web and were computer literate. As such the

conclusions drawn are likely to be limited to individuals with certain skills and opportunities. A further limitation results from the data collection and privacy policy of conducting studies online. As with all studies participants are allowed to withdraw from the study at any time and it is likely that this is more common with on-line studies (Reips, 2000). However those who drop out during the procedures are effectively withdrawing their data and as such it is not clear whether there is a trend for participants of certain ages or particular backgrounds to not complete the process. There could therefore be a further limiting factor on the samples, beyond internet access and computer ability, relating to those individuals interested enough in the tasks to complete the on-line studies. Along similar lines the samples of Studies 1-5 all lacked ethnic diversity. The generalisability of the results is therefore further limited to the mainly White or White British samples. Finally, participants were asked to volunteer information regarding their ethnic group but not their nationality. As such the participants in the online studies could have come from various countries and this was not accounted for as a potential difference between the respective groups.

### **Strengths**

The main strength of the studies in this thesis lies with the use of novel, or rarely used, methods and measures. As previously mentioned the ease-of-retrieval paradigm used in Study 4 has, to date, only been used in one other study (O'Brien, 2013) regarding life satisfaction. Further to this Study 1 combined an interview process that had not been used in life satisfaction research with a style of qualitative analysis that had been rarely used. Study 1 and Study 3a also introduced measures not often used in studies investigating life satisfaction.

The Think-Aloud technique and the inductive, qualitative approach used to analyse the transcribed interviews used in Study 1 improves and extends the previous literature in many ways, in that it was a completely open response method, there were no probing or leading questions, the process mitigated retrospection, and the inductive data analysis grounded the identified categories in the data itself. While Thinking Aloud may not be a true proxy for the cognitive processes underlying a life satisfaction judgment it provides a far more “on-line” method compared to previous studies. Rather than a reflection of the precise thought processes of a judgement the results of the Think Aloud method can be framed as a window to the types of information involved in the judgement.

Previous studies examining the relationship between personality traits and life satisfaction judgements focussed on the Big 5 personality traits, with particular attention paid to extraversion and neuroticism. Both Study 1 and Study 3a used trait measures that had not been used in previous research: Agency, Communion and RISC in Study 1; and the aspirations of financial success, affiliation and community feeling in Study 3a. While these measures were not found to be related to the use of information in a life satisfaction judgement, these findings can be explained. In Study 1, the code categories did not account for the valence of information and as such the correlations do not allow for those high in Communion bringing to mind negatively valenced relationship information and therefore having low life satisfaction. Further, given that extraversion and neuroticism were shown to be most strongly related to life satisfaction via their affective facets of depression and positive emotions (Schimmack et al., 2004), Agency, Communion and RISC may simply not measure the most relevant aspects of an individual’s traits. The lack of

relationship between the aspiration measures and judged life satisfaction identified in Study 3a can be explained by personal traits having little effect on the judgements of someone else life.

The SWLS, a reliable, multi- item measure, (or a multi-item proxy in the case of Study 3b) was used throughout the studies in this thesis and this was a key strength. Using the same measure consistently, rather than using different single and multi-item measures in separate studies, means that the results are comparable despite using very different methodologies. A further benefit is that using a multi-item measure throughout avoids the limitations of single item measures, which have been found to be most susceptible to temporarily accessible information (Schimmack & Oishi, 2005). Thus unexpected results cannot simply be attributed to a single item measure being unreliable.

An important strength of Studies 1-5, and Study 1 in particular, is the broad age of the sample and recruitment beyond a student population. While the lack of ethnic diversity clearly limits the generalisability of the results, and the on-line methodologies have the aforementioned issues of sample recruitment, the present studies had a mean participant age of 35. Well-being research tends to focus on student samples, as they are the most convenient, but studies are then limited in terms of the generalising the conclusions to the general public. A sub-section of well-being research uses older-adult samples. Predictors of well-being for older people, as well as potential interventions to improve well-being, are particularly pertinent as the US and UK have ageing populations (Cracknell, 2010; Jacobsen, Kent, Lee, & Mather, 2011). It can be argued then that there is a tendency to ignore the middle-aged in well-being research. This is especially true of the studies that

have used a descriptive approach to life satisfaction judgements. Previous studies used student samples, participants over the age of 70 years, students and their parents, and young adults (Dubé et al., 1998; Martikainen, 2008; Mehlsen et al., 2005; Mellor et al., 1999; Schimmack, Diener & Oishi, 2002; Updegraff & Suh, 2007). It can be argued that, as a result of the broad sample, the code categories found in Study 1 provide the most generalisable list of information relating to life satisfaction to date. Further the areas of information found in Study 1 can be said to overlap with the most methodologically similar previous study, which used a sample of students aged between 18-25 (Mellor et al., 1999). The apparent tendency for both students and middle aged professionals to use some similar information supports the idea of universally relevant information (Schimmack, Diener & Oishi, 2002).

Despite its limitations (which were ultimately addressed by 3b) an important strength of Study 3a was that it was a between-participants rather than a within-participants analysis. Participants only viewed the two control vignettes and one target vignette and were therefore not able to directly compare the targets. Put another way, participants could not directly compare the Relationships-Only vignette with the Money-Only vignette. This design reduced the likelihood of socially desirable or folk-theory led responses.

### **Future research**

The results of the studies in this thesis provide a number of avenues for further research. Future studies can be split into two areas: validating aspects of the present studies, for example, the free response methods used in Studies 1 and 5, or the code categories identified in Study 1; and expanding on the findings, such as the

use of feelings of ease or difficulty of retrieval. Potential methodologies that would support the novel approaches used in this thesis are outlined below.

To establish the whether the 13 code categories identified in Study 1 do indeed reflect the full extent of the information used in a life satisfaction judgment their relevance across more varied samples needs to be established. This would involve further studies that encourage free responses to life satisfaction questions, an area of life satisfaction research that requires more attention, across broad samples of people from different ethnic and cultural groups and socio-economic backgrounds. Deductive rather than inductive analysis could be used to identify information that is already represented by the 13 core categories, while information that is not covered by the categories would require further definition. Such work would also improve and validate the least reliable code categories.

Further studies should establish whether or not participants providing free and open responses to life satisfaction items are genuinely articulating their judgements. There are a number of methods that could be used to verify the accuracy of participant reports, methods that assume that making the life satisfaction judgement increases the salience and accessibility of the information that was used. Word-stem completion tasks could be used to assess the salience of certain information after a judgement; an increased ability to complete words related to the used information, compared to words related to information not brought to mind, would be expected. Further work could also utilise the Implicit Association Test (IAT; Greenwald, Mcghee, & Schwartz, 1998), or the conceptually related Go-No-Go task (GNAT; Nosek & Banaji, 2001). Both of these methods establish the strength of association between concepts. Put simply, the IAT asks participants to

rapidly assign an attribute to one of two target concepts. A common example for the IAT is the association between black and white American faces with pleasant or unpleasant attributes. The faster the decision is made (i.e., the faster response times) the stronger the cognitive association between the target concept and the attribute.

The GNAT measures the time taken to agree with the combination of a target category (e.g., types of fruit) with one of two poles of an attribute (e.g., good or bad) but the target categories are presented amongst distracter categories (e.g., insects).

The GNAT differs from the IAT in that participants are asked to agree (i.e., press the “Go” response) or not agree (i.e., “No Go” – no response) to particular pairings, for example, good-fruit in the first trial and bad-fruit in the second. If fruit is associated with “good”, and insects with “bad”, then participants should be faster at accepting “good-fruit” pairings from amongst the distracter information (i.e., bad-insect and good-insect) than “bad-fruit” pairings. Unlike the IAT the GNAT is therefore not limited to the comparison of one target against the other. In other words, in the earlier example the IAT results would show the extent to which participants associated pleasant and unpleasant words with white faces in comparison to black faces, and different targets would be necessary for different comparisons.

Essentially, as with the word stem completion task, the IAT and GNAT rely on cognitive accessibility. Thus these methods could be used to establish the general associations between the concept of life satisfaction and different life domains, for example, the associations between money and relationships with satisfaction and dissatisfaction with life. These methods could also be used after a measure of life satisfaction as recently used information would be expected to be more strongly related to the concept of life satisfaction than not-used information.

A limitation to the idea of examining the salience of information directly after the life satisfaction judgement however is that such tests could not follow participants reporting the information they used in a judgement, as the results may reflect information that had been brought to mind specifically to complete the reporting aspect rather than the actual judgement. There is therefore an argument for a longitudinal, multi-method approach in which implicit tests of salience are used at a separate occasion from direct participant reports. The validation of methods that allow participants to report their use of information in a judgement is vital, to provide support for previous studies, and to encourage the use of such methods in the future.

Along similar lines is the issue that the act of Thinking Aloud (Study 1) or writing a list of information after making the judgement (Study 5) may result in the use of different information compared to the usual Likert scale based responses. As there was little difference between the rapid and thoughtful judgements in Study 2 it was an insufficient test of these different contexts. Again, a longitudinal method would allow the direct comparison of individuals' life satisfaction judgements made using the SWLS in its usual format, with more open-ended questions that allow fuller responses. The effect of the SWL measure on information use could be examined by measuring multiple sources of information, including current mood, personality traits and domain satisfactions, across multiple occasions, whilst also using different methods to measure life satisfaction and measuring self-reported information use.

With regards to expanding on the findings of the present studies this thesis suggests three areas of life satisfaction judgement research that warrant further

consideration: the weighting of information, the motivational use of cognitive routes and the difference in information use between individuals with high and low satisfaction. Potential studies for these areas will now be discussed.

The results of Studies 3a and 3b highlight that certain domains are given more weight than others in a life satisfaction judgement. However the hypothesis that a single satisfactory domain can have a greater impact on life satisfaction than two satisfactory domains, if the single domain is more important, still needs to be tested. While this would demonstrate the concept of weighting it may not be the most useful way of conceptualising the idea. For example if the single domain of relationships was found to be given more weight than two other domains it would provide further support for the already well documented idea that relationships are extremely important for life satisfaction. A different approach may therefore be useful. Given that the area of relationships has been consistently demonstrated to be important to life satisfaction, an important question is whether or not other domains could make up for this area being unsatisfying? Panel studies such as the ESS and British Household Panel Survey could be used to identify individuals who are dissatisfied with their relationships with others, and examine any differences between those who maintain an average or higher overall life satisfaction score and those who do not. This idea is related to a general limitation of Studies 3a and 3b: a focus on the satisfaction provided by each domain that failed to take into account the potentially greater contribution of negative information.

The interpretation of the analysis of the sub-sample in Study 4 supported the idea that life satisfaction judgements are considered judgements and suggested that different cognitive processes or routes could be used in a life satisfaction judgement,

without a difference in the context of the measure (i.e., open response or Likert scale, rapid or thoughtful). The results of Study 4 suggested that metacognitive feelings may be used as a heuristic, or as an alternative to retrieved information. The use of the feelings of ease or difficulty in life satisfaction judgements is an area that has only been investigated in one published study so far, a study that focussed on the judgement of future satisfaction (O'Brien, 2013). There is clearly a need to confirm the use of such metacognitive feelings, especially given the apparent use of feelings of ease or difficulty by only some of the participants of Study 4. Further, the circumstances under which metacognitive feelings are used needs to be established. The speed at which the judgement is made could be considered a starting point for such research. To examine the effect of judgement speed a future study could combine the methods of Study 2 and Study 4. The ease-of-retrieval paradigm could be used before measuring life satisfaction with the SWLS and then the time taken to respond to the SWLS could be manipulated or recorded. If rapid responders used their metacognitive feelings, while slow responders used the retrieved content, this would support a number of ideas: 1) that the speed of the judgement affects information use; 2) that feelings of ease or difficulty of retrieval are used as a heuristic; 3) that retrieved content is used in the judgement given sufficient time.

Previous studies have found that individuals in a more positive frame of mind use their metacognitive feelings in various judgements (Greifeneder et al., 2011). Participants with mild to moderate symptoms of depression have been found to rely on accessible content, when judging kitchen tools and reasons for airport expansion, while those with low or no symptoms were more likely to use the feelings of ease or difficulty (Greifeneder & Bless, 2008). Whether a similar effect occurs with life

satisfaction judgements could be investigated with a further ease-of-retrieval paradigm study that splits the sample according to current affect. Based on previous research it might be expected that those in a sad mood (high NA, low PA) would be found to base their life satisfaction judgements on the retrieved content while those in a good mood (low NA, high PA) would use their feelings of ease or difficulty. However the results of the sub group of Study 4 suggested that there may be a motivational aspect to the use of information in the judgement. While this idea explained the lack of overall effect it suggests that the ease-of-retrieval paradigm may continue to yield null results. For example, if participants in a positive mood tended to use the information that yielded the best score then a general use of feelings of ease or difficulty would not be found: those who made a long list of satisfactory life aspects or a short list of unsatisfactory aspects should use the content of the list, rather than the respective feelings of difficulty and ease. The results of Study 5 contributed to this idea by demonstrating that participants with high life satisfaction scores reported using their most satisfactory domains while those with low life satisfaction used domains that were less satisfying than their unused domains.

There are therefore two outstanding questions resulting from Studies 4 and 5:

1) Can different cognitive routes or information sources for life satisfaction be used to yield greater scores? 2) Are certain people better at this than others, resulting in the maintenance of a high life satisfaction score? By focussing on the use of domain information these two questions could be addressed together using a long-term, longitudinal study in which participants regularly reported their general life satisfaction, satisfaction in numerous life domains and a measure of the information

they felt they used. Over months and years it would be expected that satisfaction in specific domains would vary. This study would then seek to demonstrate that for the most satisfied individuals the use of domains would vary with the satisfaction level of those domains. The inclusion of measures of personality traits, for example, extraversion and neuroticism, or optimism and pessimism, may help to identify groups of individuals for whom a tendency to focus on the best or worst sources is more likely and to identify those who are successful “motivational switchers”, i.e., changing their focus when necessary. A potential application of this idea is that individuals with chronically low life satisfaction, who were identified as “poor motivational switchers”, could be taught to use better sources when considering their life satisfaction.

### **Concluding remarks**

The studies included in this thesis contribute to and extend the existing literature. Novel and rarely used approaches were used, for example, Thinking Aloud, an inductive qualitative analysis, and the ease-of-retrieval paradigm. The results provided some support for the idea that life satisfaction judgements are considered judgements utilising bottom-up life domain information. The converging results from a multi-method study utilising both vignettes and cross-sectional survey data also provide support for life satisfaction being a considered judgement. These studies demonstrated that the bottom-up information is weighted according to relative importance, a process that had been previously been assumed but not clearly tested. The different weighting of domain information between life satisfaction and meaning, but not life satisfaction and happiness, also suggested that a considered

judgement process takes place; whilst also demonstrating the over-lap between lay-conceptions of life satisfaction and happiness.

While the present studies had their limitations their findings also expand on what is currently known about life satisfaction judgements. Under experimental manipulation, participants seemed to use the information source that provided the best life satisfaction score. In a separate study participants with high life satisfaction were found to use their most satisfying domains while those with low life satisfaction did not. Together these results suggest a motivational or cognitive-motivational aspect. The idea that life satisfaction judgements are based on information regarding one's life circumstance but are also party to persistent cognitive biases is not a new one (for example, Schimmack, Diener & Oishi, 2002). However the possibility that, as a considered judgement, the use of information is malleable and certain people can maintain a high life satisfaction via a "motivational switch", is a new area of interest for life satisfaction judgements. This idea provides potential new routes of research for interventions that would increase or maintain life satisfaction.

### **Potential implications and applications for mental health and public policy**

One of the main aims of well-being research is to improve people's well-being. The main routes for improving well-being are changes to public policy, for large scale improvement, or positive psychology interventions, for improvement at a more personal level. There are two findings from this thesis that may be relevant to these routes: 1) the idea that individuals with low life satisfaction are not using their best information; 2) the apparent importance of Money, as a domain, to life

satisfaction. A brief discussion of these findings in the context of mental health interventions and public policy follows.

The idea that individuals with high life satisfaction use their best information sources to make the judgement and maintain their satisfaction by switching to better information sources suggests that those with persistently low life satisfaction lack the same “motivational switch”. One implication of this idea is that life satisfaction can be improved by changing the way a person thinks, especially so, given that well-being judgements have already been found to be naturally malleable (Oishi et al, 2003; Trent & King, 2010). This implication leads to the idea that individuals with low life satisfaction could potentially be trained to think like those with high satisfaction. The idea of such training suggests a positive psychology intervention to facilitate an awareness of the information used when thinking about one’s life and to encourage a focus on the best sources. While interventions can be provided in various forms (e.g. group therapy, self-help books, and computerised) an intervention that takes the form of a one-to-one talking therapy for increasing and maintaining life satisfaction has, so far, not been pursued. This is likely to be due to high financial costs and time demands as positive psychology interventions tend to be administered on-line, reducing the need for therapists. Importantly such an approach may provide a therapeutic route for both clinical and non-clinical populations: for individuals who are clinically depressed; for those who may not fulfil the criteria to be diagnosed with clinical depression but have low life satisfaction; and for those people who do not tend to seek medical advice regarding depressive or low feelings, for example due to the stigma of mental health issues.

The importance of money to well-being, and life satisfaction in particular, has implications for public policy decisions and is especially pertinent in times of austerity during which governments make policy changes in response to budget cuts. Policy changes that involve significant and sudden changes to people's incomes are likely to result in decreased life satisfaction. For example, the UK introduced new housing benefit rules in 2013 intended to address under-occupancy of social housing. The rule changes meant that anyone living in a property which was under-occupied, that is, had spare bedrooms, would only receive housing benefit for the occupied bedrooms and would have to pay the shortfall in rent themselves (Shelter, n.d.). As such individuals who had been living in social housing for many years were faced with having to either move to a smaller property, or suddenly have a significant and unexpected financial outgoing. Given that the present studies suggest that both relationships and money domains are given similar weight in life satisfaction judgements it is clear that there are two ways this policy decision can effect an individual's life satisfaction. One way is via the Money domain, with increased worry about managing financial demands that may affect whether basic needs are met. A second way is via the Relationships domain as relocation may make staying in touch with friends and family more difficult. In an ideal world the monetary savings to the government resulting from such a policy change would be weighed up against the losses, which would not only include the economic impact on the relevant members of society having a reduced disposable income but also the knock-on effect on their life satisfaction and well-being.

In sum the results of the studies in this thesis provide avenues for further research which may be applied to areas of public policy, positive psychology

interventions and clinical psychology. An increased awareness of the life domains that have the greatest influence on life satisfaction may facilitate decisions regarding public policy and highlight their impact on people's lives. A new therapeutic route for clinical and non-clinical populations, in the form of a positive psychology intervention, may be possible if individuals can learn to be more aware of their life satisfaction and use their best information sources.

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## Appendix A

### First transcript with initial coding, in full

Figure A1. First transcript with initial coding and labelling

1 1) In most ways my life is close to my ideal

2 I would say no...er I suppose it would, you have ideas

3 about what your life is going to be like er erm probably

4 from growing up and my family like there are certain

5 things I want that I don't see in my, they're not

6 attainable just yet but I always think it will work out, I

7 always think it will happen) and I'm quite happy to

8 bumble along waiting for it) to erm there is a certain I

9 dunno...awareness of my age and also what people do

10 expect of you for being that age) erm but I also (when I

11 think about having a family I think it's something I

12 would like but I also don't feel quite ready for it yet

13 but... then when I was...aside from family, my job which

14 is, stable) and nice) and scientific I like, you know I love

15 the science) erm but I suppose I wanted a bit more

16 (responsibility by the time I was 29 erm) don't think

17 that I have) that but again I just think it'll happen.)

**Comment [C1]:** Expectations for life from younger self and family

**Comment [C2]:** List of wants (that assume will get in time)

**Comment [C3]:** Content to wait for expectations to be met

**Comment [C4]:** Comparison of age with expectations from self and others

**Comment [C5]:** Having family of own part of ideal life in future

**Comment [C6]:** Family part of ideal life

**Comment [C7]:** Job part of ideal life

**Comment [C8]:** Job stability

**Comment [C9]:** Positive about job

**Comment [C10]:** Aspects of job relate to likes and interests

**Comment [C11]:** Age as indicator of what should be in life

**Comment [C12]:** Responsibility as part of ideal

**Comment [C13]:** Not having achieved expectations makes life less ideal

**Comment [C14]:** Career progress

**Comment [C15]:** Positive assumptions

17 2) The conditions of my life are excellent.

18 My initial thought is home...erm ....i guess I'm not living

19 where I would expect to be living but it's, I enjoy it and it's

20 (comfortable) but again you have these ideas of where

21 you're going to be and I'm not there but that doesn't upset

22 me erm I just haven't found my er I don't think I have many

23 conditions but I would say excellent is quite a strong word

24 so I would say it doesn't feel like it is

**Comment [C16]:** Home/  
accommodation/ where live as conditions

**Comment [C17]:** Not meeting  
expectations

**Comment [C18]:** Enjoyment

**Comment [C19]:** comfort

**Comment [C20]:** compromise,  
accepting life's not perfect

**Comment [C21]:** not meeting  
expectations

**Comment [C22]:** not achieving  
expectations but being positive

**Comment [C23]:** compromise - life  
not perfect

**Comment [C24]:** not sure what  
conditions are or whether have them

**Comment [C25]:** feelings as measure  
of excellence of conditions

**Comment [C26]:** excellent doesn't  
describe the conditions

25 3) I am satisfied with my life.

26 I expect that I will become satisfied with my life and don't

27 think erm there's lots of things I want to do and experience

28 but I don't feel, I don't feel that I've done a lot of those yet

29 but it's all things that I just expect to happen erm but

30 without actually taking any practical steps as of now to do it

31 erm satisfied is quite an easy word, it's not a strongly

32 positive word so I guess I'll agree with it but I know

33 eventually that I'll be very satisfied with my life

**Comment [C27]:** list of things that  
would provide satisfaction

**Comment [C28]:** not satisfied  
because not achieved things on list

**Comment [C29]:** expectation/  
assumption that will be satisfied in future

**Comment [C30]:** not taking action to  
achieve what's on list

**Comment [C31]:** definition of  
satisfaction as not positive or difficult

**Comment [C32]:** assumption that  
satisfaction will come later on life

34 4) So far I have gotten the important things I want in life

35 No..erm.. I suppose if you think about it a lot of things are a

36 bit off what I wanted, erm and what you imagine you are

37 going to have erm and I still imagine things with my life, in

38 my future, cos it's far from over erm but I've had a lot of

39 good experiences and I think that's a lot of what life's about

40 but I would like to have more)

**Comment [C33]:** expectations and not meeting them

**Comment [C34]:** expectations for future

**Comment [C35]:** experiences as source of important things

41 5) If I could live my life over, I would change almost nothing

42 True, I would probably change um my degree of all things. I

43 feel like choosing the subject I did led me completely to

44 where I am now erm and it would just be a small change, no

45 massive changes but I don't think... (inaudible mumbling) I

46 suppose I'm here because of that one choice and I'm not

47 entirely satisfied really, that it could be better, and I think

48 that would be (the one thing that I would change) but

49 (childhood was fantastic, parents fantastic) and that's that

50 one thing, otherwise no.

**Comment [C36]:** separation of effects some changes would have (small vs large)

**Comment [C37]:** not wanting to change much

**Comment [C38]:** desire to make changes

**Comment [C39]:** identification of a choice that has led to where you are now, i.e. set path from one choice e.g. Uni degree

**Comment [C40]:** desire to make changes

**Comment [C41]:** not wanting to change much

**Comment [C42]:** upbringing as important influence on life

51 **Probe Questions asked re verbal responses**52 1) In most ways my life is close to my ideal – response was 253 a) What would make it 4

54 I think erm on average everything is kind of ok erm all it

55 would really take is a few things to get a bit better, you

56 know like erm I think if I managed to get into the career

57 that I wanted, if my pay went up a little bit if, er, I could be

58 with the person I wanted to be, if I could erm live where I

59 wanted to live, All of those things aren't quite right at the

60 moment erm it doesn't mean I'm unhappy living in London I

61 just feel I don't want to live in London erm but I'm ok, I'm

62 alright being here at the moment so I think I'm just working

63 towards it and so I don't really expect my ideal to be met

64 just yet

**Comment [C43]:** having said 2 - disagree on scale, now everything ok**Comment [C44]:** life in sections, a few sections better to increase the whole**Comment [C45]:** job/ vocation**Comment [C46]:** money**Comment [C47]:** career, progress**Comment [C48]:** partner/longterm relationship**Comment [C49]:** home/ accom/environment**Comment [C50]:** list of life sections to be improved - getting what think want**Comment [C51]:** not meeting expectations**Comment [C52]:****Comment [C53]:** happiness not synonymous with not achieving ideal**Comment [C54]:** progress to ideal**Comment [C55]:** expectations for future**Comment [C56]:** compromise - life not perfect65 b) What would make it 0

66 I think..if I had..just..no(friends), or erm no prospects, if I

67 wasn't or if I lost all belief in myself erm I just think that

68 would be really..i don't know erm..if I didn't have my job, I

69 would feel quite lost without a job, I don't think I'm one of

70 those people who could win the lottery and stop working

71 erm.... I'm just trying to think what would make me

72 miserable..I think it would just be a lot of things ( inaudible)

73 at the moment, you know, if I had nowhere to live, no

74 friends that would put me up that kind of thing, touch wood

75 that seems a very distant prospect.

**Comment [C57]:** having friends part of ideal**Comment [C58]:** future success**Comment [C59]:** self esteem**Comment [C60]:** having/ doing job as part of sense of self/ personality**Comment [C61]:** extreme sadness indicating not ideal**Comment [C62]:** accommodation**Comment [C63]:** having friends as part of ideal

76 *2) The conditions of my life are excellent. Response was 5*

77 *a) What would make it 7*

78 (Living where I want to live,) and (er just having enough  
 79 money to be able to you know follow the things I want) and  
 80 you know something big with a couple of weeks of saving  
 81 and you know the bill thing, (being able to go out without  
 82 worrying about any of them, which I suppose I have to a  
 83 certain degree now but I feel, I suppose, I'd just like to earn  
 84 a little bit more than what I am.. erm.. I don't know why I  
 85 say a little ( inaudible) but you know work's ok, but when  
 86 you hear about how other people erm how other people  
 87 work and the way that their company look after them you  
 88 think, why don't we get that , and it does make you feel a  
 89 little bit rubbish you know, and I think it can make you kind  
 90 of feel like you've had enough, (I think it wouldn't take a lot  
 91 to make me feel 7), you know because (I do things with my  
 92 life) and (I have nice things) and I suppose everything, (most  
 93 people could ( identify?) with having a bit more.)

**Comment [C64]:** home/  
accommodation

**Comment [C65]:** getting what think  
want

**Comment [C66]:** more money ,  
enough money

**Comment [C67]:** money as source of  
worry

**Comment [C68]:** work/ job -  
employment environment

**Comment [C69]:** quantifying amount  
to get to strongly agree

**Comment [C70]:** "doing thing with  
life" broad but related to activities and  
progress

**Comment [C71]:** Having material  
possessions

**Comment [C72]:** Generalisation  
about everybody not strongly agreeing re  
conditions

94 b) What would make it 3

95 I think I would live in a hole and I would just find it really  
 96 difficult to make the rent and the bills and just that  
 97 constant worry about money erm it's a horrible place to be,  
 98 it's just never off your mind er if I had a bit of a dead end  
 99 job, er, that was, that could possibly go, I think there's just  
 100 a couple of stable things, (my home) and (my work), if they  
 101 were just rubbish then my life would be rubbish.)

**Comment [C73]:** Home/  
accommodation

**Comment [C74]:** money as basic  
need

**Comment [C75]:** Money as source of  
worry

**Comment [C76]:** Job without  
prospects as negative

**Comment [C77]:** Accommodation /  
home

**Comment [C78]:** Job/work

**Comment [C79]:** Life into sections  
and hierarchy w 2 sections affecting  
whole

102 3) I am satisfied with my life. Response was 5103 a) What would make it 7

104 I could just, I would just be, I can picture myself being happy  
 105 and I wake up generally happy everyday anyway, erm, it  
 106 just sounds very clichéd (doesn't it really to say I'd just want  
 107 to be in the house that I want to be in, and with the person  
 108 I want to be with um ) have lots of, I'll have done things that  
 109 I want to do, er at the moment I just have those things that I  
 110 want to do but I can't do them er so I suppose to be able to  
 111 do them, to have done them and to move onto new things  
 112 that would make me say 7.)

**Comment [C80]:** Happiness as  
measure of satisfaction

**Comment [C81]:** Happy even though  
not completely satisfied

**Comment [C82]:** Accommodation /  
home

**Comment [C83]:** Relationship/  
partner

**Comment [C84]:** Getting what think  
want

**Comment [C85]:** Having achieved  
aims

**Comment [C86]:** Having new aims  
after achieving old - progress?

**Comment [C87]:** List of aims that feel  
can't do at present, achieving in future

**Comment [C88]:** List of things need  
to achieve for satisfaction

113 *b) What would make it 3*

114 Probably if I hadn't had (the experiences that I've already)

115 had, er cos erm I'm very aware of er wanting (to enjoy

116 myself) rather than (inaudible) and it's just something that's

117 come home to me, this last year I guess so I'm please that

118 (I've had the experiences I've had but if I hadn't've had

119 them, if I couldn't draw on the fact that I'd done certain

120 things) erm then that would make me slightly disagree.

**Comment [C89]:** Experiences as source of satisfaction

**Comment [C90]:** Enjoyment

**Comment [C91]:** Experiences as source of satisfaction

121 *4) So far I have gotten the important things I want in life.*

122 *Response was 3*

123 *a) What would make you say 5*

124 (I guess compared to where I was 10 years ago I would

125 probably, I think, me younger would say, give a higher

126 number) because (I would think I was in the right job) erm but

127 finding out that my interests are elsewhere erm that makes

128 me feel I want to do that (and I don't really see a way of

129 doing that at the moment) so I think that would, if I was

130 doing that, (that would make me (happier), er.. and I would

131 like a career, and I don't think a career is something I have

132 here). Erm... (I would like to have a boyfriend, um, you know,

133 who erm who was (just nice and not a (inaudible). Erm you

134 know, I dunno, someone just reliable) guess erm, yeah.... (

135 mumbles - asks for the statement again)

136 I suppose that implies that, well I have (experienced things,

137 a lot of things, that makes me feel that I have had good

138 things out of life) er (I just I always feel like there's more) erm

139 so (if I had a bigger career it would be)

**Comment [C92]:** Implies younger self would be wrong - changing aims/ ideals with age

**Comment [C93]:** Job as source of important thing "right job"

**Comment [C94]:** Not achieving aims, not able to get what think will improve life as source of dissatisfaction

**Comment [C95]:** Wanting job that matches interests

**Comment [C96]:** Happiness as outcome of achieving aims

**Comment [C97]:** Achieving aims/ getting what think want

**Comment [C98]:** Career as different to job i.e. dead end job

**Comment [C99]:** Support from others

**Comment [C100]:** Having partner/ relationship

**Comment [C101]:** Assess experiences

**Comment [C102]:** What have never enough

**Comment [C103]:** Career/ job

140 *b) What would make it 1*

141 I think if I just wasted, wasted time, just not put any effort

142 into anything erm it's really hard to imagine actually um if I

143 hadn't moved out of my little village I think I'd just, I

144 wouldn't feel very much now...but then that's me (

145 inaudible, 9:17)..i think if I'd just wasted time, I hate the

146 feeling of wasting time, so I'm glad I moved, I'm glad I've

147 got a job, I'm glad I came to London, really, all that kind of

148 stuff and I think if I hadn't done that I think I would be at a 1

**Comment [C104]:** Own efforts important to achievement

**Comment [C105]:** Wasting time - not doing anything to improve life as see fit

**Comment [C106]:** Use of time

**Comment [C107]:** Accommodation/home

**Comment [C108]:** Job/ career

**Comment [C109]:** Having done or doing things towards aims/ goals

149 *5) If I could live my life over, I would change almost nothing.*

150 *Response was 6*

151 *a) What would make it 8*

152 Erm...i guess I would..that's really difficult, erm...cos erm I do

153 like my life I think I would just feel better if, again, if I'd just

154 done a few more things but I wouldn't change, I've got so

155 many good memories and I suppose I just think compared

156 to my memories of 21 and younger and from them till now

157 are very pale in comparison you know there's only a couple

158 of things that stand out from my 20's and that does sadden

159 me a little because I think well that's the time you're

160 supposed to be going out you know there's all these ideals

161 that I you know that I feel I should meet but a lot of them,

162 I'd feel ok to just carry on so I really can't think of anything,

163 I think I'd just have done a lot more with my 20's and again

164 if I'd just chosen the right degree I think a lot goes with that

165 and it's hard once you've passed university and you've

166 chosen, to go back so I think perhaps yeah ( mumbles)

**Comment [C110]:** Assessment of life as likeable/ positive with awareness of lacking

**Comment [C111]:** Getting what think want

**Comment [C112]:** Positive memories as indicator of good/ satisfactory life

**Comment [C113]:** Segmenting life

**Comment [C114]:** Comparison of memories from different segments

**Comment [C115]:** Use of time?

**Comment [C116]:** Fun/ recreation

**Comment [C117]:** Age denoting life stages

**Comment [C118]:** Having ideals that feel should meet

**Comment [C119]:** Doing achieving experiencing as measure of (success) in past

**Comment [C120]:** Desire to change

**Comment [C121]:** Decision denotes certain path (Uni degree)

167 *b) What would make it 4*

168 I just think I would have had a pretty average life, a bit of

169 doing this, a bit of doing that and you end up in a job that

170 you don't mind er and everything just feels kind of

171 average er and I hate to think of myself as doing that and

172 just blobbing along I want to be I want to be doing

173 something er so I think if I was just ok , you know ok

174 living ok friends ok I think that's how I think of it neither

175 this nor that so.. I think that's all.

**Comment [C122]:** Comparison with imaginary "average" life deemed less successful

**Comment [C123]:** Doing progress

**Comment [C124]:** Splitting life onto sections

## Appendix B

### File cards

The summary sheet of 51 file cards resulting from the analysis and labelling of the first transcript is presented below. Each file card represents a label, the labels assigned are in **bold** with the relevant excerpt from the transcript beneath. The excerpts are labelled with a numerical code which shows the participant number, section and line number, for example: 02.1b.62, refers to participant number 2, answer to item 1b, line 62. Some file cards also include memos regarding the of labels that existed earlier in the constant comparison process, in other words the labels in bold represent the labels decided upon having completed the constant comparison process between the 15 different answers within a single transcript.

1. File card **Comfort**

02.2.14 I'm not living where I would expect to be living but it's, I enjoy it and it's comfortable

2. File card **Having and liking home**

02.02.14 My initial thought is home...erm ....i guess I'm not living where I would expect to be living but it's, I enjoy it and it's comfortable,

02.4a.49 if I could erm live where I wanted to live

02.4b.62 if I had nowhere to live,

02.2a.66 Living where I want to live,

02.2b.81 I think I would live in a hole

02.3a.89 I'd just want to be in the house that I want to be in,

02.4b. 128 so I'm glad I moved, I'm glad I've got a job, I'm glad I came to London,

**3. File card *Viewing where live negatively***

02.2b. 80 I think I would live in a hole

**4. File card *Changing aims wants with age***

02.4a 109 .I guess compared to where I was 10 years ago I would probably, I think, me younger would say, give a higher number because I would think I was in the right job

02.1.7 when I think about having a family I think it's something I would like but I also don't feel quite ready for it yet but

02.5a.140 you know there's only a couple of things that stand out from my 20's and that does sadden me a little because I think well that's the time you're supposed to be going out

02.5a.146 if I'd just chosen the right degree I think a lot goes with that

**5. File card *Other people's ideals previously Having ideals that feel should meet***

02.5a. 143 you know there's all these ideals that I you know that I feel I should meet but a lot of them

02.1.6 what people do expect of you for being that age

**6. File card *Having different ideals earlier in life previously Considering what younger self would think of life now***

02.4a.108 I guess compared to where I was 10 years ago I would probably, I think, me younger would say, give a higher number because I would think I was in the right job

**7. File card Age consideration**

02.1.6 awareness of my age and also what people do expect of you for being that age

02.1.11 I suppose I wanted a bit more responsibility by the time I was 29 erm I don't think that I have that

02.5a.140 there's only a couple of things that stand out from my 20's and that does sadden me a little because I think well that's the time you're supposed to be going out

Merged with **progress to ideal**

02.1a.52 I'm just working towards it and so I don't really expect my ideal to be met just yet

**8. File card Comparison with worse life or Average life as negative *previously* Comparison with imaginary "average" life deemed less successful**

02.5b.150 pretty average life, a bit of doing this, a bit of doing that and you end up in a job that you don't mind erm and everything just feels kind of average er and I hate to think of myself as doing that

**9. File card Not taking action to achieve what's on list of things for better life**

02.1.4 I always think it will happen and I'm quite happy to bumble along waiting for it

02.3. 21 but I don't feel, I don't feel that I've done a lot of those yet but it's all things that I just expect to happen erm but without actually taking any practical steps as of now to do it

02.4b. 123 I think if I just wasted, wasted time, just not put any effort into anything

02.5b. 150 I hate to think of myself as doing that and just blobbing along I want to be I want to be doing something

**10. File card Wasting time - not doing anything to improve life as see fit**

02 4b.123 I think if I just wasted, wasted time, just not put any effort into anything erm it's really hard to imagine actually um if I hadn't moved out of my little village I think I'd just, I wouldn't feel very much now...but then that's me ( inaudible, 9:17)..i think if I'd just wasted time, I hate the feeling of wasting time,

**11. File card Doing things to contribute to life/ get what want prev Own efforts contribute to achievement**

02.1a.47 erm I think if I managed to get into the career that I wanted

02.2a.75 I think it wouldn't take a lot to make me feel 7, you know because I do things with my life

02.3a.91 I'll have done things that I want to do er at the moment I just have those things that I want to do but I can't do them er so I suppose to be able to do them, to have done them and to move onto new things

02.3b.123 just not put any effort into anything

02.5a.135 erm I do like my life I think I would just feel better if, again, if I'd just done a few more things

02.5a.144 I think I'd just have done a lot more with my 20's

02.05b 153 I hate to think of myself as doing that and just blobbing along I want to be I want to be doing something

Merged with **progress to ideal**

02.1a.52 I'm just working towards it

## 12. File card **Continually striving**

02.3a. 94 I suppose to be able to do them, to have done them and to move onto new things that would make me say 7.

02.1a.53 think I'm just working towards it and so I don't really expect my ideal to be met just yet

02.1b. 59 I don't think I'm one of those people who could win the lottery and stop working

02.4a.121 that makes me feel that I have had good things out of life er I just I always feel like there's more

02.4b. 127 i think if I'd just wasted time, I hate the feeling of wasting time,

02.5a.136 I do like my life I think I would just feel better if, again, if I'd just done a few more things

02.5b.154 everything just feels kind of average er and I hate to think of myself as doing that and just blobbing along I want to be I want to be doing something

Memo: Poss relate this to wasting time and to not taking action and doing things and what have never enough

### 13. File card **Consider life productive**

02.1b. 57 if I didn't have my job, I would feel quite lost without a job, I don't think I'm one of those people who could win the lottery and stop working

02.2b. 83 if I had a bit of a dead end job..

02.3a.91 I'll have done things that I want to do er at the moment I just have those things that I want to do but I can't do them er so I suppose to be able to do them, to have done them and to move onto new things that would make me say 7.

02.4a. 120 if I had a bigger career

02.4b.123 I think if I just wasted, wasted time, just not put any effort into anything

02.5a. 136 I do like my life I think I would just feel better if, again, if I'd just done a few more things

02.5a. 144 , I think I'd just have done a lot more with my 20's

02.5b 153 I want to be doing something

**14. File card Achievement of list of wants aims in future *previously* Achieving aims**

02.3a.92 I'll have done things that I want to do

**15. File card Happiness as outcome of achieving aims (or as measure?)**

02.4a.114 if I was doing that, that would make me happier

Memo: Poss issue of happiness as outcome or measure within transcripts, i.e. is used as both

**16. File card Happiness as measure of satisfaction**

02.3a. 89 I could just, I would just be, I can picture myself being happy

**17. File card Feelings as a measure**

02.2.18 I would say excellent is quite a strong word so I would say it doesn't feel like it is

02.3.22 there's lots of things I want to do and experience but I don't feel, I don't feel that I've done a lot of those yet

02.5.36 I feel like choosing the subject I did led me completely to where I am now

02.1a.51 it doesn't mean I'm unhappy living in London I just feel I don't want to live in London erm but I'm ok

02.1b.58 I would feel quite lost without a job, I don't think I'm one of those people who could win the lottery and stop working

02.2a.74 and it does make you feel a little bit rubbish you know, and I think it can make you kind of feel like you've had enough

02.2a.76 I think it wouldn't take a lot to make me feel 7

02.4a.111 erm but finding out that my interests are elsewhere erm that makes me feel I want to do that

02.4a.119 well I have experienced things, a lot of things, that makes me feel that I have had good things out of life er I just I always feel like there's more

02.4b.126 if I hadn't moved out of my little village I think I'd just, I wouldn't feel very much now...but then that's me ( inaudible, 9:17)..i think if I'd just wasted time, I hate the feeling of wasting time,

02.5a.136 I do like my life I think I would just feel better if, again, if I'd just done a few more things

**18. File card *Enjoyment as a measure/ indicator***

02.2.15 I enjoy it

**19. File card *Extreme sadness indicating not ideal***

02.1b.60 .... I'm just trying to think what would make me miserable.

**20. File card *Ideal job requirements***

02.1.9 job which is, stable and nice and scientific I like, you know I love the science

02.2a.73 how other people work and the way that their company look after them you think, why don't we get that , and it does make you feel a little bit rubbish you know, and I think it can make you kind of feel like you've had enough

02.2b.84 bit of a dead end job..

**21. File card *Negative aspects of Job***

02.2a.71 but you know work's ok, but when you hear about how other people  
 erm how other people work and the way that their company look after them  
 you think, why don't we get that , and it does make you feel a little bit  
 rubbish you know, and I think it can make you kind of feel like you've had  
 enough

02.2b.83 bit of a dead end job..

**22. File card *Simply having a job or having doing job as part of sense of self/ personality ( contributes to ideal life )***

02.01.08 my job which is, stable and nice

02.1b.57 if I didn't have my job, I would feel quite lost without a job, I don't  
 think I'm one of those people who could win the lottery and stop working

**23. File card *Having material possessions***

02.2a.77 and I have nice things

**24. File card *Money as basic need***

02.2b.80 just find it really difficult to make the rent and the bills

**25. File card *Lack of money as source of worry***

02.3b. 82 make the rent and the bills and just that constant worry about  
 money erm it's a horrible place to be, it's just never off your mind

**26. File card *Having more money / feeling like have enough money***

02.2a.66 just having enough money to be able to you know follow the things  
 I want and you know something big with a couple of weeks of saving and  
 you know the bill thing, being able to go out without worrying about any of

them, which I suppose I have o a certain degree now but I feel, I suppose, I'd just like to earn a little bit more than what I am

02.2b.82 just find it really difficult to make the rent and the bills and just that constant worry about money

02.1a.48 if my pay went up a little bit i

**27. File card What I have is never enough**

02.4a.120 well I have experienced things, a lot of things, that makes me feel that I have had good things out of life er I just I always feel like there's more

**28. File card Assumption that will be more satisfied in the future**

02.1.3 there are certain things I want that I don't see in my, they're not attainable just yet but I always think it will work out, I always think it will happen

02.1.11 I suppose I wanted a bit more responsibility by the time I was 29 erm I don't think that I have that but again I just think it'll happen

02.3.21 I expect that I will become satisfied with my life and don't think erm there's lots of things I want to do and experience but I don't feel, I don't feel that I've done a lot of those yet but it's all things that I just expect to happen

02.3.26 I know eventually that I'll be very satisfied with my life

Merge with **Positive assumptions**

02.1.1 like there are certain things I want that I don't see in my, they're not attainable just yet but I always think it will work out, I always think it will happen

02.1.12 I just think it'll happen

02.3.21 I expect that I will become satisfied with my life

02.3.23 but it's all things that I just expect to happen erm but without actually taking any practical steps

**29. File card *Splitting life onto sections and assessing separately***

02.01.08 ..aside from family, my job

02.1a.46 you know like erm I think if I managed to get into the career that I wanted, if my pay went up a little bit if, er, I could be with the person I wanted to be, if I could erm live where I wanted to live, All of those things aren't quite right at the moment

02.3b 84 . I think there's just a couple of stable things, my home and my work, if they were just rubbish then my life would be rubbish.

Merge with File card ***Segmenting life (by age?)***

02.01.5..awareness of my age and also what people do expect of you for being that age

02.01.10 but I suppose I wanted a bit more responsibility by the time I was 29

02.4a.108 I guess compared to where I was 10 years ago I would probably, I think, me younger would say, give a higher number because I would think I was in the right job

02.5a.138 I suppose I just think compared to my memories of 21 and younger and from them till now are very pale in comparison you know there's only a couple of things that stand out from my 20's and that does sadden me a little

02.5a.144 , I think I'd just have done a lot more with my 20's

Merge with **Life into sections and hierarchy w 2 sections affecting whole**

Merge with **identification of life sections that would improve the whole if they improved**

### **30. File card Positive outlook**

02.01.3 but I always think it will work out, I always think it will happen

02.02.13 guess I'm not living where I would expect to be living but it's, I enjoy it and it's comfortable

02.03.20 I expect that I will become satisfied with my life

02.03.25 but I know eventually that I'll be very satisfied with my life

02.1a.45 I think erm on average everything is kind if ok

02.1a. 52 but I'm ok , I'm alright being here at the moment

02.3a.89 I wake up generally happy everyday anyway,

02.4a.119 I have had good things out of life

02.4b.127 I'm glad I moved, I'm glad I've got a job, I'm glad I came to London,

**MEMO - ABOVE COULD ALSO BE GRATITUDE / BEING GRATEFUL**

**31. File card Positive outlook (happiness) regardless of not meeting expectations or happiness not synonymous with not achieving ideal i.e not sad because not ideal**

02.01.5 and I'm quite happy to bumble along waiting for it

02.2.14 I'm not living where I would expect to be living but it's, I enjoy it

02.2.16 you have these ideas of where you're going to be and I'm not there but that doesn't upset me

02.1a.51 All of those things aren't quite right at the moment erm it doesn't mean I'm unhappy living in London I just feel I don't want to live in London erm but I'm ok

02.3a. 89 I wake up generally happy everyday anyway,

Merged with **Happy even though not completely satisfied**

02.1.5 and I'm quite happy to bumble along waiting for it

02.2.14 I'm not living where I would expect to be living but it's, I enjoy it and it's comfortable

02.1a.51, All of those things aren't quite right at the moment erm it doesn't mean I'm unhappy living in London I just feel I don't want to live in London

02.3a.89 I could just, I would just be, I can picture myself being happy and I wake up generally happy everyday anyway,

**32. File card Generalisations about others**

02.2a.78 most people could ( identify?) with having a bit more.

**33. File card self esteem (contributes to ideal life)**

02.01b.56 if I lost all belief in myself

**34. File card Having relationship/ partner ( being part of couple?)**

02.1a.49 if, er, I could be with the person I wanted to be

02.3a.92 with the person I want to be with

02.4a.116 ... I would like to have a boyfriend, um, you know, who erm who was just nice and not a (inaudible). Erm you know, I dunno, someone just reliable

**35. File card Support from others**

02.1b.61 no friends that would put me up that kind of thing,

02.04a. 115I would like to have a boyfriend, um, you know, who erm who was just nice

**36. File card Having friends (contributes to ideal life )**

02.1b.62 friends that would put me up

02.1b.56 I think..if I had..just..no friends

**37. File card Having family of own as part of ideal life**

02.1.7 when I think about having a family I think it's something I would like but I also don't feel quite ready for it yet but

**38. File card Averaging - balancing out info**

02.1a.46 think erm on average everything is kind if ok

**39. File card uncertainty re how to define statement**

02.02.17 I would say excellent is quite a strong word so I would say it doesn't feel like it is

02.02.17 er I don't think I have many conditions

02.03.24 satisfied is quite an easy word, it's not a strongly positive word

**40. File card Quantifying amount to (get to strongly agree) improve life**

02.2a.76 I think it wouldn't take a lot to make me feel 7,

**41. File card Upbringing as important influence on life**

02.05.40 but childhood was fantastic, parents fantastic

**42. File card Memories as indicator**

02.5a.138 I've got so many good memories

02.5a.139 I just think compared to my memories of 21 and younger and from them till now are very pale in comparison you know there's only a couple of things that stand out from my 20's and that does sadden me a little

**43. File card Identification of a choice that has led to where you are now, i.e. set path from one choice e.g. Uni degree**

02.5.37 I would probably change um my degree of all things. I feel like choosing the subject I did led me completely to where I am now

02.5a.145 if I'd just chosen the right degree I think a lot goes with that and it's hard once you've passed university and you've chosen, to go back

02.4b.128 I'm glad I moved, I'm glad I've got a job, I'm glad I came to London,

02.4a. 110 I would think I was in the right job erm but finding out that my interests are elsewhere erm that makes me feel I want to do that and I don't really see a way of doing that at the moment so I think that would, if I was doing that, that would make me happier

**44. File card Distinguishing size of effect a change would have on life**

02.05. 37 choosing the subject I did led me completely to where I am now erm and it would just be a small change, no massive changes

02.5a. 136 erm I do like my life I think I would just feel better if, again, if I'd just done a few more things

Possibly

02.1a.46 all it would really take is a few things to get a bit better

**45. File card Source of life expectations**

02.01.1 you have ideas about what your life is going to be like er erm probably from growing up and my family

02.01.7 ..awareness of my age and also what people do expect of you for being that age

02.01.11 but I suppose I wanted a bit more responsibility by the time I was  
29

**46. File Card Difference between short term and long term wants/ aims (previous title Future ideal life different from present)**

02.1.7 when I think about having a family I think it's something I would like but I also don't feel quite ready for it yet but

**47. File card Having responsibility as part of ideal life (previous title What would expect to have by now previously Responsibility as progress indicator )**

02.01.10 I suppose I wanted a bit more responsibility by the time I was 29  
erm I don't think that I have that

02.1b.58 if I didn't have my job, I would feel quite lost without a job, I don't  
think I'm one of those people who could win the lottery and stop working

**File card Future success (contributes to ideal life)**

02.1b.56 erm no prospects

02.2b.84 bit of a dead end job..

02.3.21 I expect that I will become satisfied with my life

02.4.31 and I still imagine things with my life, in my future, cos it's far from  
over

02.1a.47 you know like erm I think if I managed to get into the career that I  
wanted, if my pay went up a little bit if, er, I could be with the person I  
wanted to be, if I could erm live where I wanted to live

02.3a.92 I'll have done things that I want to do er at the moment I just have  
those things that I want to do but I can't do them er so I suppose to be able to  
do them, to have done them and to move onto new things that would make  
me say 7.

02.4a.13 and I don't really see a way of doing that at the moment so I think  
that would, if I was doing that, that would make me happier

02.4a.14 and I would like a career, and I don't think a career is something I have here

02.4a.20 that makes me feel that I have had good things out of life er I just I always feel like there's more

**48. File card Experiences as source of important things**

02.4.33 I've had a lot of good experiences and I think that's a lot of what life's about but I would like to have more

**COMBINED WITH Experiences as source of satisfaction**

02.3b.100 Probably if I hadn't had the experiences that I've already had

**49. File card Not having achieved expectations makes life less ideal**

02.1.10 I suppose I wanted a bit more responsibility by the time I was 29 erm I don't think that I have

02.2.14 I'm not living where I would expect to be living but it's, I enjoy it and it's comfortable, but again you have these ideas of where you're going to be and I'm not there

02.3.21 there's lots of things I want to do and experience but I don't feel, I don't feel that I've done a lot of those yet but it's all things that I just expect to happen

02.4.29 No..erm..I suppose if you think about it a lot of things are a bit off what I wanted, erm and what you imagine you are going to have

02.4a. 47 I think if I managed to get into the career that I wanted, if my pay went up a little bit if, er, I could be with the person I wanted to be, if I could erm live where I wanted to live, All of those things aren't quite right at the moment

02.1.1 I would say no..er I suppose it would, you have ideas about what your life is going to be like er erm probably from growing up and my family like there are certain things I want that I don't see in my, they're not attainable just yet

Merged with **Life expectations** ( ideas and thoughts about what life would be like now)

**50. File card List of wants or (having list of ) things I want that I think will make life better**

02.01.1 like there are certain things I want that I don't see in my, they're not attainable just yet

02.03.21 there's lots of things I want to do and experience but I don't feel, I don't feel that I've done a lot of those yet

02.1a.45 all it would really take is a few things to get a bit better, you know like erm I think if I managed to get into the career that I wanted, if my pay went up a little bit if, er, I could be with the person I wanted to be, if I could erm live where I wanted to live, All of those things aren't quite right at the moment

02.2a.65 Living where I want to live, and er just having enough money to be able to you know follow the things I want

02.3a.88 I'd just want to be in the house that I want to be in, and with the person I want to be with um I have lots of, I'll have done things that I want to do er at the moment I just have those things that I want to do but I can't do them er so I suppose to be able to do them, to have done them and to move onto new things that would make me say

02.4a. 109 finding out that my interests are elsewhere erm that makes me feel I want to do that and I don't really see a way of doing that at the moment so I think that would, if I was doing that, that would make me happier..er.. and I would like a career, and I don't think a career is something I have here. Erm... I would like to have a boyfriend, um, you know, who erm who was just nice

02.3a.93 do er at the moment I just have those things that I want to do but I can't do them

MEMO - ISSUE OF WHETHER LIST NEEDS TO BE SPLIT UP INTO

SECTIONS - wht does it represent, people segmenting life? Poss merge with that?

Also sections of life that are important to SWL

Merge with **List of things need to achieve for satisfaction**

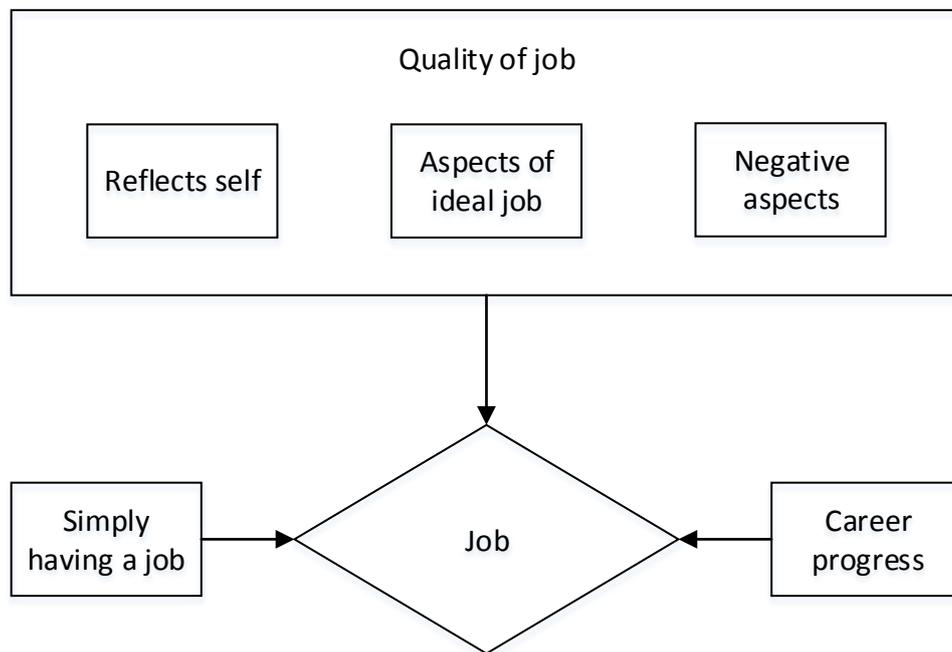
02.1a.47 erm I think if I managed to get into the career that I wanted

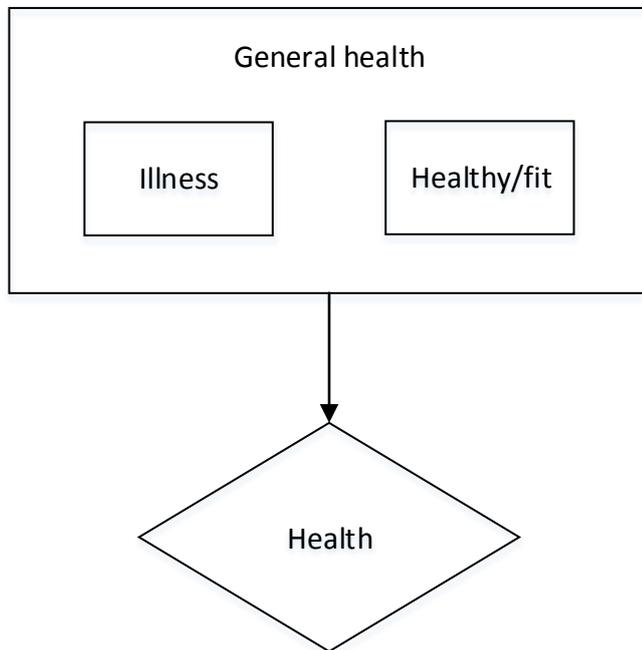
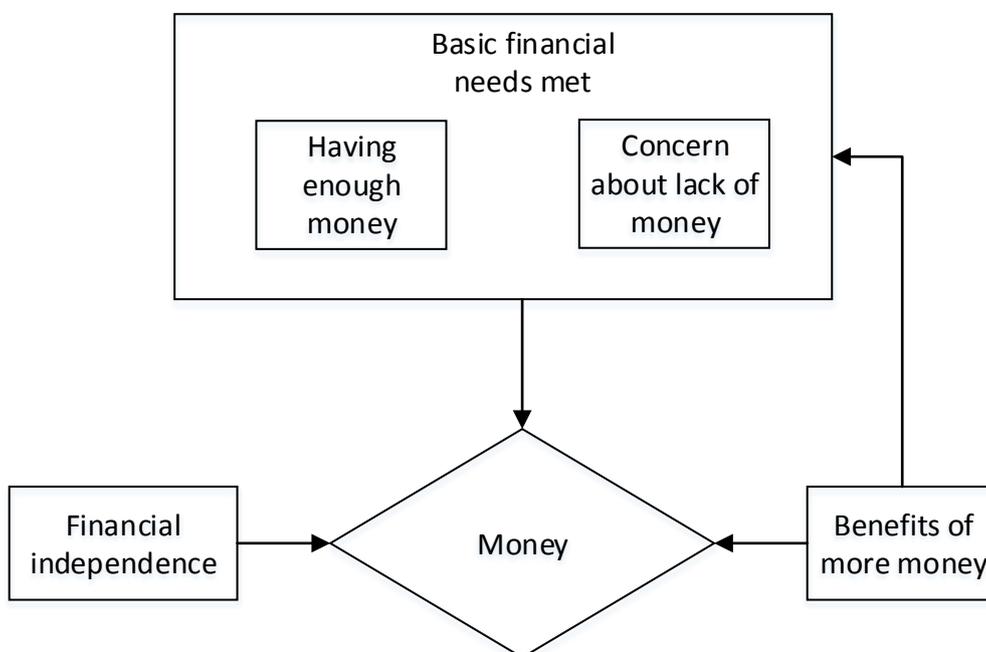
Related to own efforts contribute to achievement ?

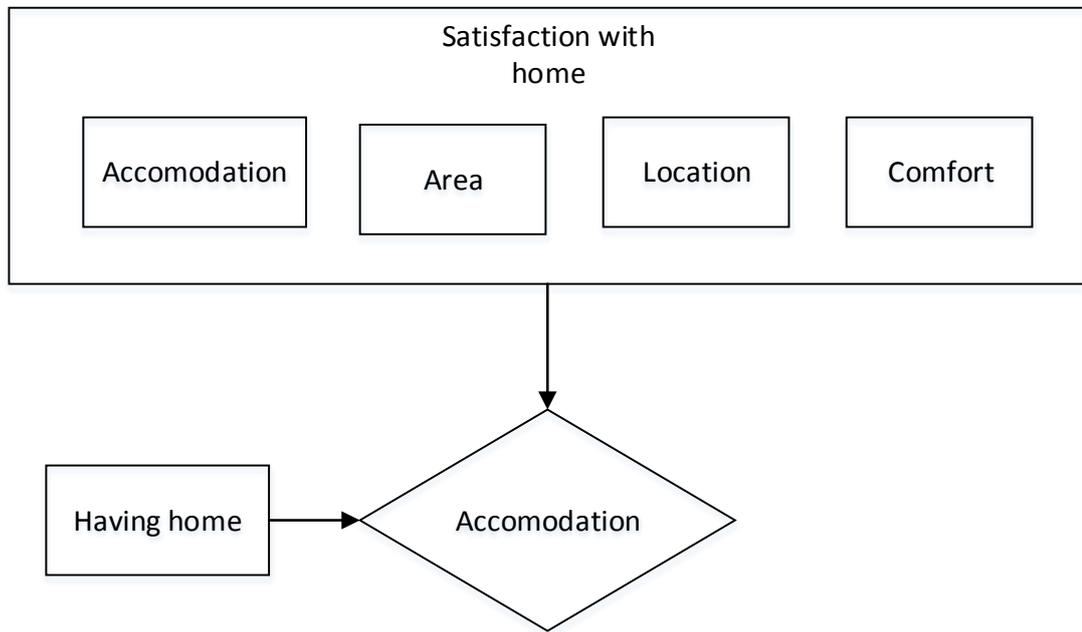
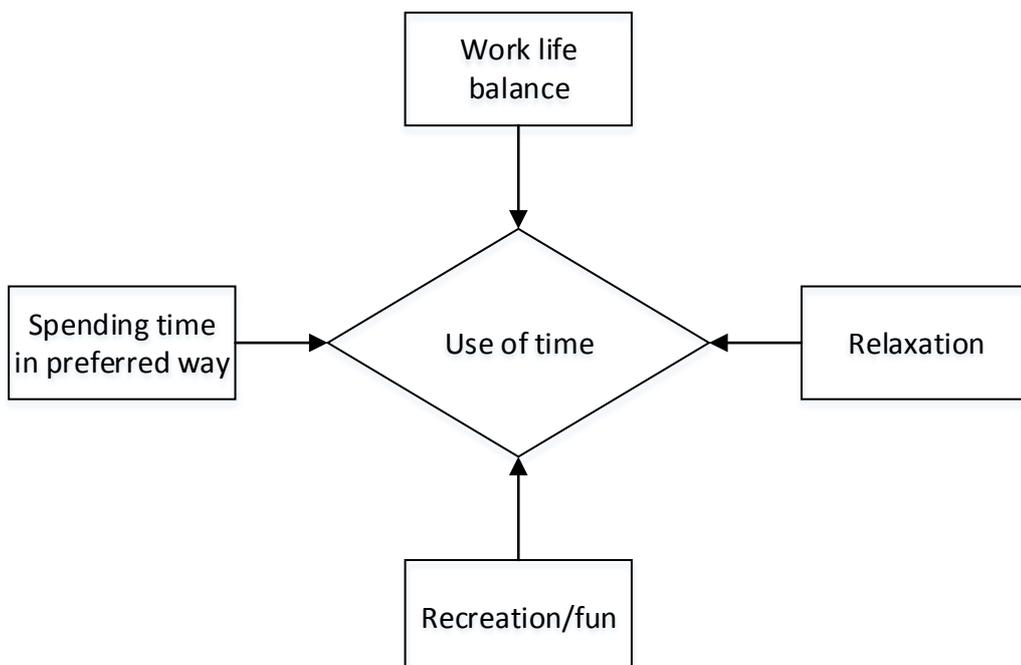
## Appendix C

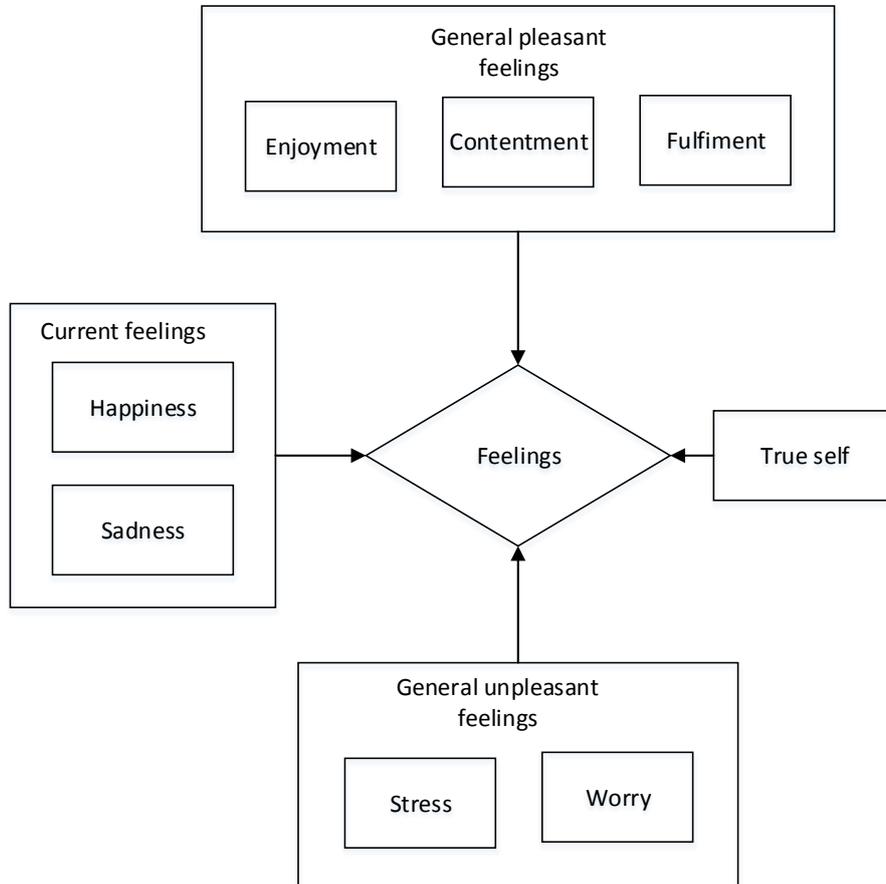
### Diagrams illustrating label integration for each code category

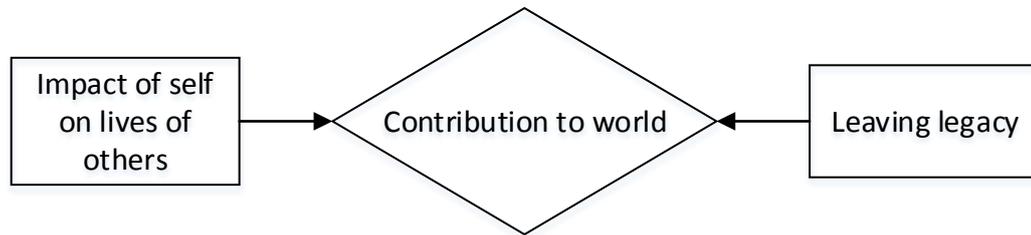
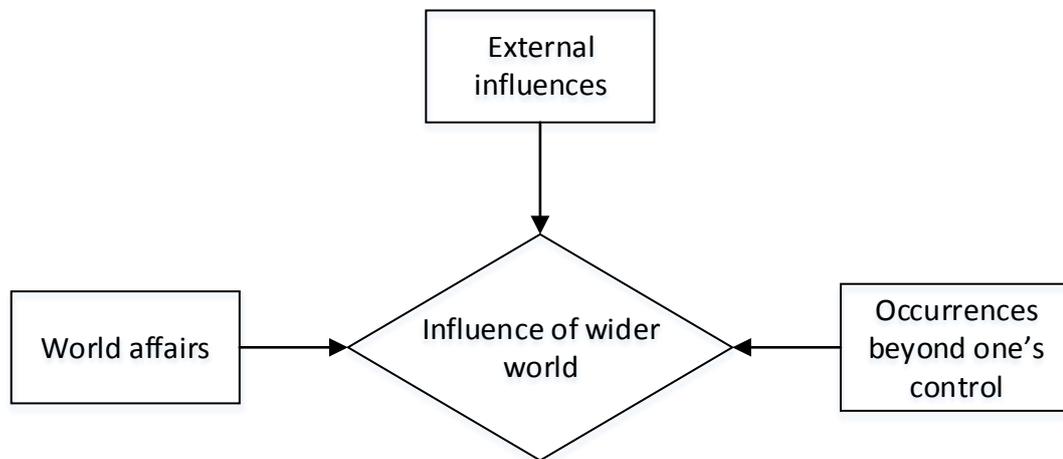
**Figure C1. Job**



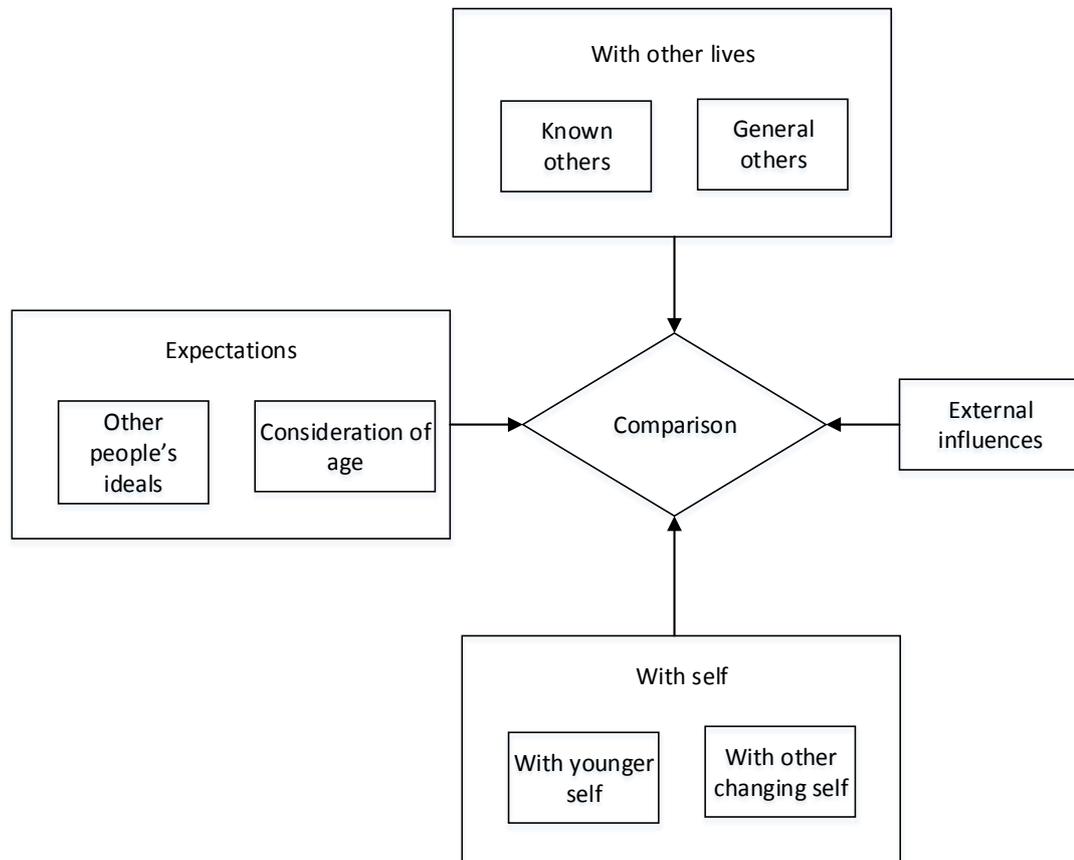
**Figure C2. Health****Figure C3. Money**

**Figure C4. Accommodation****Figure C5. Use of time**

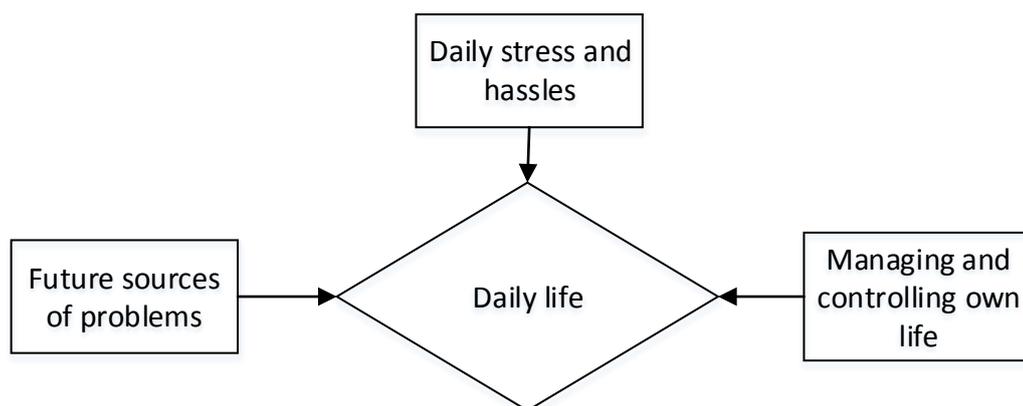
**Figure C6. Feelings**

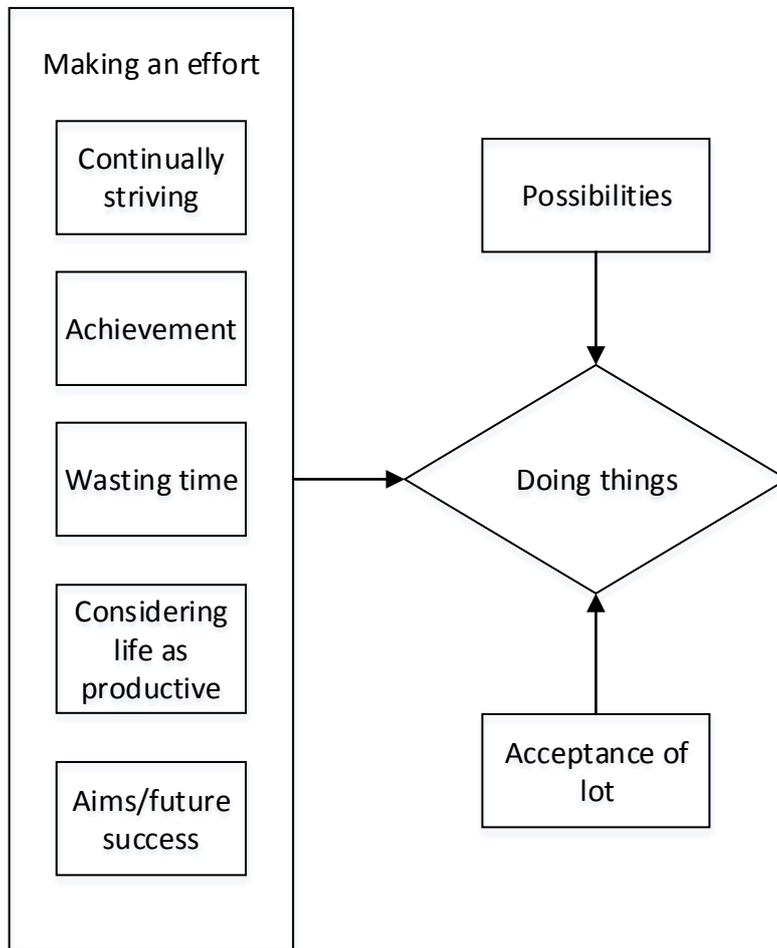
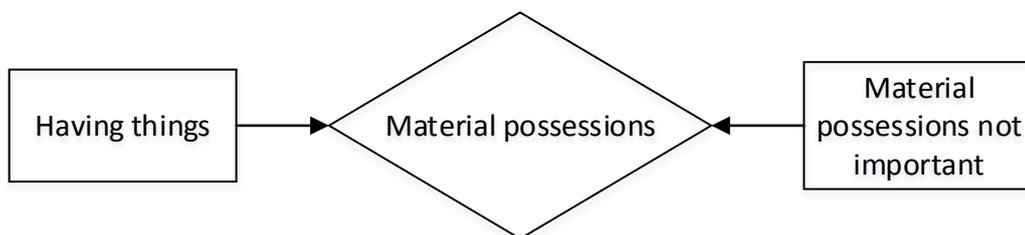
**Figure C7. Contribution to the world****Figure C8. Influence of the wider world**

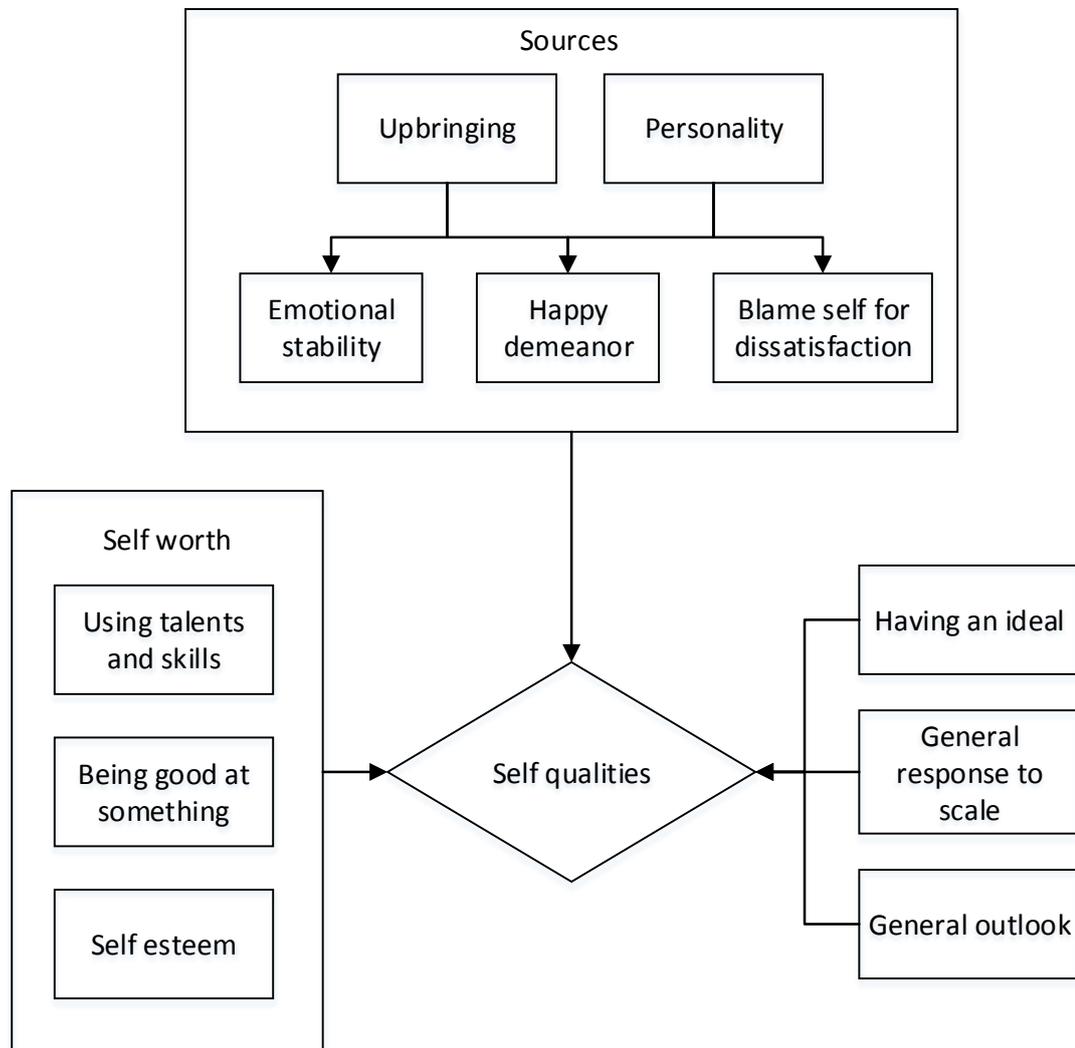
**Figure C9. Comparison**

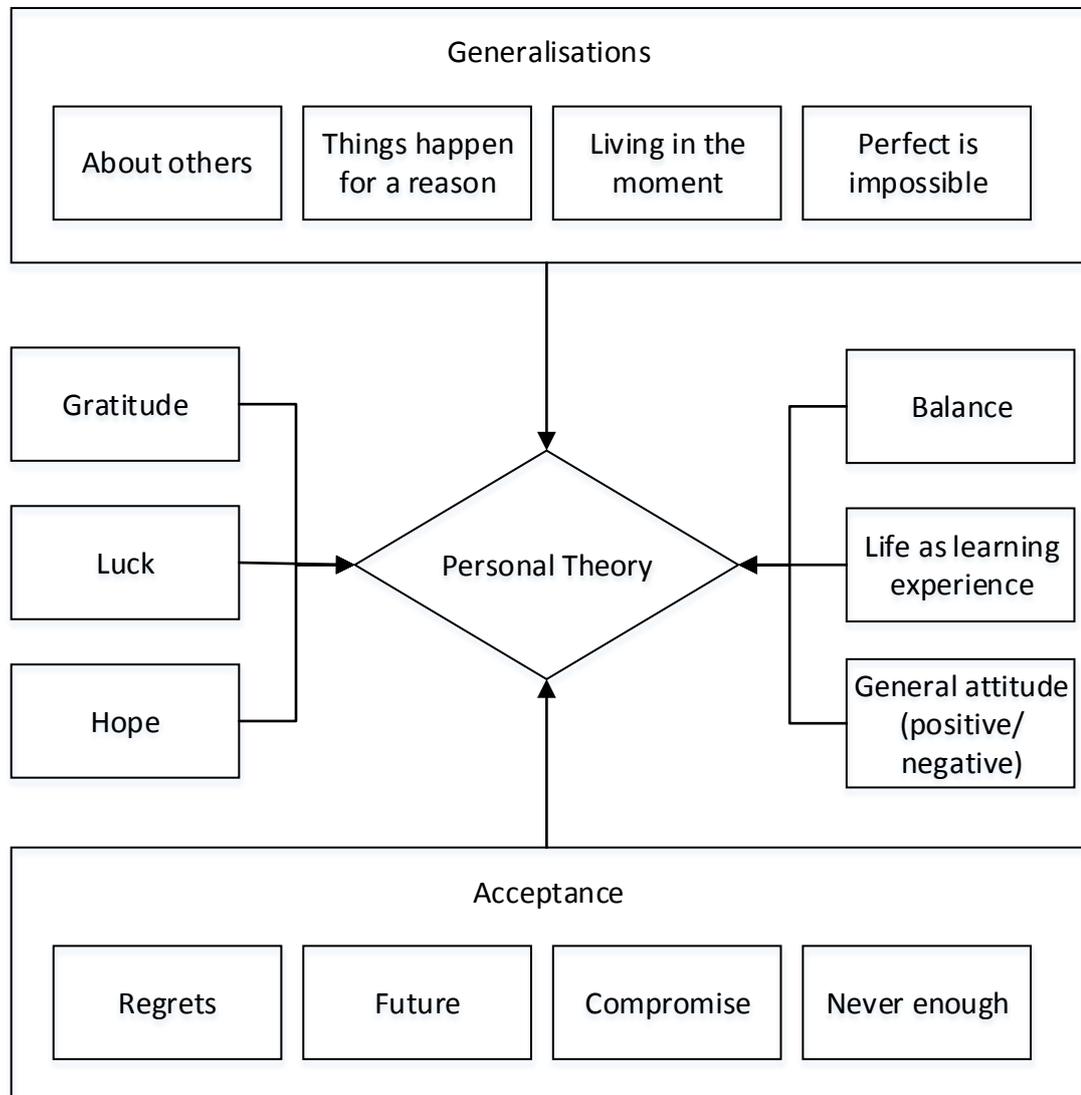


**Figure C10. Daily Life**



**Figure C11. Doing things****Figure C12. Material possessions**

**Figure C13. Self-qualities**

**Figure C14. Personal theory**

## Appendix D

### Raw mean and SD scores for satisfaction, happiness and meaning

Table D1. Raw mean scores mean (and standard deviation) scores reflecting the judgements of satisfaction, happiness and meaning of the control and target vignettes for each experimental group

Target Vignette Group (sample size)	Dependent Variable	Type of vignette					
		Positive control		Negative Control		Target	
		Mean	(SD)	Mean	(SD)	Mean	(SD)
Relationships Only (N = 53)	Satisfaction	23.13	(3.08)	7.34	(2.56)	14.80	(4.22)
	Happiness	5.89	(.82)	2.17	(.75)	4.74	(1.18)
	Meaning	5.92	(.85)	2.34	(1.19)	4.66	(1.13)
Money Only (N = 54)	Satisfaction	23.41	(2.78)	7.80	(3.81)	14.69	(5.74)
	Happiness	6.02	(.76)	2.06	(1.02)	3.76	(1.64)
	Meaning	5.98	(.91)	2.37	(1.38)	3.54	(1.62)
Contribution-to-the-world Only (N = 53)	Satisfaction	24.13	(2.72)	7.74	(2.82)	12.49	(3.93)
	Happiness	6.11	(.70)	2.09	(1.02)	3.55	(1.20)
	Meaning	6.04	(.88)	2.62	(1.26)	5.08	(.96)
Money-and-Contribution-to-the-world (N = 56)	Satisfaction	23.54	(3.00)	7.34	(2.79)	15.11	(4.42)
	Happiness	6.13	(.81)	2.13	(.99)	4.04	(1.24)
	Meaning	5.98	(.88)	2.27	(1.17)	4.79	(1.36)

## Appendix E

### The reliability scores of the core categories across Study 1, Study 4 and Study 5

Table E1. Inter-rater reliability correlations between the first and second coder for all code categories

Code Category	Cohen's Kappa Study 1	Cohen's Kappa Study 4	Cohen's Kappa Study 5
Money	0.91	.95	.85
Accommodation	0.88	.81	.86
Job	0.87	.78	.90
Health	0.84	.76	.91
Feelings	0.83	.64	.75
Relationships	0.81	.87	.92
Material Possessions	0.73	.92	.62
Contribution to world	0.70	.88	.83
Use of time	0.69	.89	.88
Self-qualities	0.70 <sup>a</sup>	.76	.81
Comparison	0.52 <sup>ab</sup>		
Doing things	0.60 <sup>a</sup>	.62	.75
Personal Theory	0.67 <sup>a</sup>	.67	.70
Daily Life	0.61 <sup>a</sup>	.55 <sup>c</sup>	.67

Notes: <sup>a</sup> Kappa value established following recalibration of code, <sup>b</sup> Code excluded due to low reliability, <sup>c</sup> Code not used in main analysis due to low reliability