

**Future-Directed Thinking and its Relationship to Subjective Well-being in Older  
Adults**

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## **Abstract**

Clinical psychology research has often explored what contributes to subjective well-being. One field with links to subjective well-being is future-directed thinking. This has been investigated in working-age adults but little research exists examining how this changes as we age and comparing age groups. The aim of the study was to determine whether older and younger adults differ in the number of positive and negative future thoughts generated and how future thinking correlated with subjective well-being in these groups. Exploratory analysis examined whether there was a difference in their thinking for different time periods and in the content of their future thoughts. Twenty six younger adults (20-35yrs) and 39 older adults (60+ yrs) were recruited. They completed the Future Thinking Task which asks participants to generate thoughts about events they are and are not looking forward to in three future time periods, and measures of subjective well-being.

Older adults generated significantly fewer positive future thoughts about the next five to ten years and significantly fewer negative future thoughts than younger adults. Negative future thinking for the next year and five to ten years correlated with satisfaction with life and depression in older adults. In younger adults there was a significant positive correlation between satisfaction with life and positive future thoughts about the next week. Content data showed that younger adults generated more thoughts about creating new social connections, work and education than older adults. Older adults thought more about activity and occupation and health and welfare.

The findings support aspects of existing literature around future-directed thinking in younger adults and help to elucidate how this changes as we age.

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## **Chapter 1. Introduction**

This introduction sets out the relevant theory and literature pertaining to this study on future-directed thinking and its relationship to subjective well-being in older and younger adults. It will begin by defining the relevant terms: old age, subjective well-being and future thinking. It will then move on to look at the relationships between these key areas and the existing body of research which has identified this. Finally, it will outline current gaps in the literature and how this study might address these, along with hypotheses.

### **Definition of Terms**

#### **Old Age**

The World Health Organisation (2002) state that most developed countries consider those aged 65 years and older to be an ‘older person’ and that this is linked with the receipt of pension payments. They also acknowledge that the UN classifies those aged over 60 years to be an ‘older person.’ However, it is clear that age is on a spectrum and that although typically measured by the chronological passing of time, many of the traits synonymous with being an older person are not always in line with this and in this sense ageing is not necessarily a linear process. This has indeed been recognised by some NHS services (e.g. some dementia services) which now operate an ‘ageless’ service, and there is perhaps scope for recognition of the social construction of age across different cultures and societies. However, it is noted that in the UK the standard criterion for an older adult service is aged 65 years and over. In addition to this, the time of life during which one is considered an older adult is perhaps the longest, potentially spanning 30 or more years. There are many traits often associated with the older adult phase of life, including role changes, shifts in

social positions and loss of loved ones and it has also been suggested that there is continued psychological development in old age which leads to shifts in views (World Health Organisation, 2015). The World Health Organisation (2015) therefore highlights the need to focus on factors which promote the adaptation and psychosocial growth of people during this time of life, rather than concentrating solely on those which ameliorate the difficulties associated with this stage. Indeed, there is a huge emphasis in the literature on ‘successful ageing’ which has been defined as ‘adaptation to the process of growing old’ which can include high levels of function, maintaining interpersonal relationships and active engagement with life (Dillaway & Byrnes, 2009). Healthy ageing has also been described as ‘the process of developing and maintaining the functional ability that enables well-being in older age’ (World Health Organisation, 2015).

The World Health Organisation (2015) predict that with medical advances, the number of people aged over 60 years is expected to reach over 20 million by 2031 and double by the year 2050, with the number of people over 75 projected to double in the next 30 years and an estimated 280, 000 people aged over 100 by 2051. The pace of population ageing is also greater than in preceding years with the largest population increases in the oldest-old. Therefore, radical social change will be required to ensure that these years are meaningful, healthy and dignified. Unfortunately, evidence has found that the extra years of life are currently not being experienced in better health than previous generations at the same stage of life and that this is particularly the case for those from the most disadvantaged backgrounds (World Health Organisation, 2015). If these extra years are not spent in good physical and mental health, greater demands in health and social care are an inevitable consequence.

Therefore, there is likely to be an increased demand for therapy services by this group and thus, a greater need for specialism in working effectively with older adults. This means that practitioners will need an adaptable skill set to feel confident to work with people across a rapidly changing, wide age spectrum client group (Chellingsworth, Kishita & Laidlaw, 2016). This will also need extending across not only an individual basis but also the broader socio-political basis on which Clinical Psychologists work, applying the knowledge and understanding of ageing on a population level to ensure that the needs of older people are met, in line with NICE guidelines (NICE, 2015).

### **Subjective Well-being**

Improving the well-being of the population is a societal ambition (Stephoe, Deaton & Stone, 2015), and well-being is a measure regularly collected by the Office for National Statistics in the UK. If a person is helped to improve their well-being, it stands to reason that they are less likely to experience high levels of psychological disorder. Happier people also tend to display desirable characteristics such as positive work behaviour (Diener, Lucas & Oishi, 2011). The role of a therapist can also be to help people to think broadly about maximising their well-being, in addition to dealing with presenting problems which cause psychological distress. However, it is an area which has to some extent been neglected by clinicians and researchers (MacLeod, 2012) with a relative paucity of direct interventions being offered, but with positive results where they have been, suggesting they would be of benefit (Diener et al., 2011).

Subjective well-being is a term used regularly in research into mental health and ageing. It has been proposed that subjective well-being consists of two

components, an affective component (positive and negative affect) and another cognitive component which has also been conceptualised as life satisfaction (Diener, 1984). Similarly, Charles and Carstensen (2009) define emotional well-being in terms of “happiness, life satisfaction, or the balance between positive and negative affect” (p. 388). It has been argued that the inclusion of positive emotional states and well-being rather than a focus solely on the reduction of negative emotion is an important aspect of mental health research (MacLeod & Moore, 2000; Huppert & Whittington, 2003).

Although there are a number of theoretical and philosophical strands to well-being, from a psychological perspective what is of concern is having a concept which can apply in clinical practice and underpin interventions aimed at increasing well-being. The earliest conceptualisations of the term built upon a hedonic notion of achieving a balance between positive and negative affect, with a secondary conception which emphasised the role of life satisfaction, thereby creating a two component structure of well-being (Ryff & Keyes, 1995). Some researchers go further to suggest that construct of subjective well-being can be captured by measuring at least three key aspects: life evaluation (e.g. overall life satisfaction or an individuals’ thoughts about the quality of their life); hedonic well-being (a multidimensional measure of positive and negative every day feelings); and eudaimonic well-being (e.g. thoughts about the purpose of one’s life) (Steptoe et al., 2015). With regards to hedonic well-being, there has been some debate as to whether positive and negative affect operate independently of each other or as separate ends of one dimension; however research generally seems to support the former hypothesis and therefore also the importance of including positive well-being in measures of subjective well-being,

rather than merely the absence of symptoms (e.g. Huppert & Whittington, 2003). Generally, a broader view of well-being now encompasses both subjective and objective components which measure different aspects of an individual's well-being and researchers warn that it must consider also ones' self-observation and self-construction as an experience in time (Guell, Orchard, Yopo & Jimenez-Molina, 2015). One of the most widely known and used models of well-being now is Ryff's (1989a) six dimensional model of well-being which is comprised of autonomy, environmental mastery, positive relations with others, self-acceptance and personal growth.

Although subjective well-being has been measured using a variety of tools such as single item measures, multi item scales or more complex multidimensional scales which all have their benefits and downfalls, researchers recommend a multimethod battery where possible (Diener et al., 2011). In addition, the majority of studies of well-being have generally been limited by assessments focussed on one point in time, with less research looking at the impact of variables such as past memories and future expectancies, which are likely to contribute (Edmondson & MacLeod, 2014).

### **Future-Directed Thinking**

According to Fortunato and Furey (2011) three types of thinking exist: present, past and future, with researchers (e.g. Lennings, 2000) positing that past and present can both be further subdivided into distant and near periods. They postulate that these thinking perspectives influence the mental representations individuals form of events and objects and that the extent to which individuals utilise them influences their interaction with and perception of others and the world more broadly. Time



perspective is multidimensional, reflecting the distance hopes and fears are from the present (extension), preference for a particular perspective (orientation), emotional response (affect) and how events are grouped together within a specific period (density) (Lennings, 2000). In order to achieve this ‘mental time travel’, individuals must be able to mentally disengage from the present, use both episodic and semantic memory in order to actively reconstruct both future and past events and temporally locate the reconstructions as belonging in the future or past (Fortunato & Furey, 2011).

The area of thinking considered in the current study is future thinking. Future thinking has been defined as the pattern of thinking associated with the ability to mentally time travel into the future, form abstract mental representations of potential future events, creatively imagine future possibilities and combine these mental representations generatively into practically countless numbers of novel sequences (Suddendorf & Corballis, 1997). It has been suggested that this representation of potential futures is the main organising feature of cognition, perception, affect, motivation, memory and action (Seligman, Railton, Baumeister & Sripada, 2013) and is incorporated into every major theory of personality (Lennings, 2000). Indeed, the projection of positive future events has been found to be related to optimism (Sharot, Riccardi, Raio & Phelps, 2007) and to have profound implications for emotion, motivation, cognition and social relationships (e.g. Scheibe & Carstensen, 2010). Lennings (2000) outlines that the influence of time perspective (and therefore future thinking) on cognition and behaviour can be via a ‘weak model’, whereby the effects of time perspective are mediated by other variables such as self-efficacy, or a ‘strong model’ in which the effect is direct. The generation of positive and negative future

thoughts has also been found to be underpinned by specific differential neurological systems, suggesting they are two distinct processes (Sharot et al., 2007).

There has been much discussion about the further potential benefits of future-orientated thinking, including motivation for academic achievement, promotion of healthy behaviour and influence on social relationships (Holman & Silver, 2005). It has additionally been proposed that the way we perceive time has implications for how we plan for the future and present (Lennings, 2000). Therefore, the way in which we think about the future is a useful avenue for research.

A number of measures have been employed to capture future thinking. One measure which has commonly been used in research into future thinking is the Future Thinking Task (FTT; MacLeod et al, 1993). This measure looks at events participants are, and are not, looking forward to over specific time periods in the near and distant future. Although established results have been found using the FTT in adults (e.g. MacLeod & Salaminou, 2001), there has been limited research to date utilising it in research with older adults. Also, when compared to the body of research examining links between affect and past experience, research into the relationships between future thinking and affect is still an emerging field. Therefore, it is an area which warrants further exploration.

### **The Relationship between Old Age and Subjective Well-being**

The UK has a population of 11.4 million people aged 65+, expected to rise by 48.7% by 2042 (Age UK, 2015). Therefore, it is important for people to age well psychologically and for services to facilitate this. In general, older adults experience greater life satisfaction than their younger counterparts, with the exception of the oldest old, which has come to be known as the ‘paradox of ageing’. However, this

certainly isn't the case for everyone as older adults can experience sharper declines in well-being (Jivraj, Nazroo, Venhoutte & Chandola, 2014) and rates of depression tend to be higher than in younger adults. Estimates of depression vary from 5% of people over 65 and 20% of people aged over 80, with some estimates reaching as high as 22% of men and 28% of women aged 65 years and over (Mental Health Foundation, 2015). One in 10 older adults are thought to experience depressive symptomatology (Meeks, Vahia, Lavretsky, Kulkarni & Jeste, 2011) and depression is still the most common mental health problem experienced in later life (Chellingsworth et al., 2016) with 36% of older people with a depressive disorder also experiencing a co-morbid anxiety disorder (Van Balkom, Beekman, de Beurs, Deeg, van Dyck & van Tilberg, 2000). General rates of anxiety disorders in older adults have been predicted to be around 6-10% (Schuurmans & Van Balkom, 2012).

A number of demographic factors have been found to correlate with subjective well-being, including age, with some specific components of subjective well-being having a positive relation with age whereas other components a negative or no relationship (Ryff, 1989b). Taking into consideration the definition of subjective well-being encompassing a balance of both positive and negative affect, studies have also looked into the frequency of positive affect in older populations and it has been found older adults experience positive affect less frequently than younger adults (Kunzman, Little & Smith, 2000) with different patterns across different age groups (Stacey & Gatz, 1991) and that this positive affect declines steadily with age, regardless of income, marital status or nationality (Diener & Suh, 1997). In keeping with this, unpleasant affect and life satisfaction have been found to show little change (Diener & Suh, 1997). However, with the older population consisting of such a heterogeneous

population spanning a number of decades it could also be reasonably assumed that differences might be apparent between different cohorts within that sample. This has been borne out by research, with findings that negative affect is experienced more frequently in the 'old old' (75-92 years) compared to the 'young old' (65-75) (Ferring & Fillipp, 1995). Therefore it has been suggested that an advancement of theory in this area requires research into the individual components of subjective well-being rather than relying on an assumption of 'happiness' as a whole (Diener et al., 1999).

Depression in older adults is often assumed to be a normal consequence of ageing, something termed 'the understandability phenomenon' (Blanchard, 1992), which can present a significant barrier to older adults seeking support. It is also estimated that 85% of older people with depression receive no support from the NHS (Mental Health Foundation, 2016) and according to some sources, older people are less likely to seek support for anxiety (Scott, Mackenzie, Chipperfield & Sareen, 2010). However treatments for affective disorders in older adult populations have been shown to be effective (e.g. Jayasekara et al, 2015) and research has also found that as we age, those who experience more positive emotions than negative emotions tend to live longer (Chellingsworth et al., 2016). Positive subjective well-being has also been found to be a protective factor for health and beneficial across a number of life domains (see review by Lyubomirsky, King & Diener, 2005). In addition to these findings, when they access therapy, older adults consistently achieve higher recovery rates than their younger counterparts, with the exception of those aged over 90 years who do not do as well as other age groups, something that may be due to facing an increase in challenges associated with ageing (Chellingsworth et al., 2016). Furthermore, studies have shown that older adults prefer talking treatments to

pharmaceutical interventions (Gum et al, 2006). Therefore, successful ageing should be considered achievable.

It is widely accepted that psychological therapies with older adults differ from those with younger adults in a number of respects due to factors such as cohort belief systems, changes in cognitive capacity and potential loss, amongst others (Chellingsworth et al., 2016). Therefore, it can be reasonably assumed that the development of interventions which aim to improve emotional ageing outcomes for those who do not appear to be following a trajectory of positive affect would be beneficial. Steptoe, Deaton and Stone (2014) suggest the well-being of older adults is a crucial objective for economic and health policy which should be considered in measurements of health evaluation and resource allocation, but that current psychological theories do not account for age variations in well-being. Additionally, The Department of Health has stated that particular attention must be paid to ensure appropriate access to psychological therapies for people over 65 is available (Department of Health, 2011). Therefore, a clarification of the relationship between age and well-being, which has been described as ‘vague’ (Mroczek & Kolarz, 1998), and a theoretical understanding of what contributes to positive subjective well-being in older adults could potentially provide avenues for further research and effective intervention.

### **The Relationship between Future-Directed Thinking and Subjective Well-being**

Some researchers have posited that differences in subjective well-being can be the product of differences in how an individual thinks about the world (Diener et al., 2011), and in keeping with this one area which has been found to have an association with well-being is cognitions about the future. Humans are able to project thoughts

and goals into the future. These cognitive representations form a significant part of our inner life and are accompanied by emotion (Zaleski, 1994). Indeed, time perspective has been proven to be key variable in the study of subjective well-being, quality of life and mental health (Moore, Hofer, McGee & Ring, 2005) with a stronger moderating effect than chronological age (Allemand, Hill, La Marca-Ghaemmaghami & Martin, 2012). However, it has been argued that existing bodies of research have ignored the role of how a negative future orientation may impact on well-being (Holman & Silver, 2005).

McFadden and Atchley (2001) state that ‘there can be little doubt that temporal perspective is a touchstone of well-being’. In keeping with this view, previous research has established links between well-being and future-thinking, with evidence suggesting that negative and positive cognitions regarding the future may be separate dimensions of experience (MacLeod, Byrne & Valentine, 1996). Pertinent to this idea is the fact that anxiety and depression have been described in terms of positive and negative affect (Clark & Watson, 1991), with depression consisting of high negative affect and low positive affect and anxiety consisting of high negative affect (MacLeod et al, 1996). Correlations have been found between negative affect and worry about the future and expectancies for negative events whereas positive affect and hopelessness correlate with expectancies for positive events (MacLeod et al. 1996). Therefore it has been hypothesised that individuals with depression should demonstrate both decreased positive expectancies and increased negative expectancies as a function of its respective positive and negative affective components. Those with anxiety should demonstrate increased negative expectancies only as a function of its negative affective component.

## **Future-Directed Thinking and Depression**

It has been shown that individuals with depression do demonstrate a decrease in positive future-thinking but no increase in negative future-thinking (MacLeod & Byrne, 1996; MacLeod, et al., 1997; MacLeod & Salaminou, 2001; Andersen and Limpert, 2001; Kosnes et al., 2013) although some studies do suggest there is also an increase in negative future-thinking (Miranda & Mennin, 2007). Similarly, it has been shown that compared to controls, suicidal individuals are less able to suggest events they are looking forward to and anticipate fewer positive experiences, without any elevation in the numbers of events they are not looking forward to (MacLeod, Rose & Williams, 1993), and this is independent of whether they're depressed (MacLeod, Pankhania, Lee & Mitchell, 1997). These studies have been criticised for using a parasuicidal group who met diagnostic criteria for depression which meant that the differences observed in future thinking could not be attributed to depression or hopelessness decisively (Conaghan & Davidson, 2002). It has also been proposed that when individuals become certain that positive future outcomes will not occur or negative outcomes will, they develop 'depressive predictive uncertainty' (Andersen, 1990; Andersen, Spielman & Bargh, 1992) but that a certainty about a lack of positive outcomes is partially mediated by hopelessness (Miranda, Fontes & Marroquin, 2008). Overall the findings that negative views about the future are associated with depression are considered in theoretical conceptualisations of depression. For example, Beck's (1967) cognitive triad which suggests that depressed individuals develop maladaptive mental representations of the future and an expectation that positive future events are unachievable and that negative events are unavoidable.

### **Future-Directed Thinking and Anxiety**

In contrast to the pattern displayed in individuals with depression, anxious individuals have been shown to demonstrate an increase in negative future-thinking only (MacLeod & Byrne, 1996; MacLeod et al., 1997), a greater certainty in negative future outcomes (Miranda & Mennin, 2007) and are more able to generate reasons as to why future negative events will occur in comparison to controls. Again this somewhat aligns with cognitive models of anxiety, which consider the anticipation of future threat and intolerance of uncertainty as a key component (Finlay-Jones & Brown, 1981; Dugas, Marchand & Ladouceur, 2005). However, this does not represent the fact that reduced positive thinking is a stronger effect than increased negative thinking.

When thinking about time perspective generally, studies have shown that those who are more future orientated have lower levels of depression and higher levels of subjective well-being (Allemand et al, 2012). Positive associations between future time perspective and indicators of positive subjective well-being and negative associations with indicators of negative well-being have also been found (Allemand et al., 2012). Thinking in a future directed way has been found to be associated with openness to new experience and an optimistic outlook on life (Fortunato & Furey, 2011). It has also been found that when asked to think about the future, people who are more positively future orientated and able to think positively about and plan towards future events have higher levels of well-being than those who have more fears and worries about the future (Holman & Silver, 2005).

However, to date there are methodological inconsistencies, with some studies using participants with mixed anxiety and depression, limiting the interpretations



attributable to each that can be drawn from results, in addition to different levels of mood disturbance employed. Although some initial links between subjective well-being and future thinking have been made, existing studies have been criticised for focussing solely on the quantity of events, with a lack of attention on qualitative aspects of these events (Edmondson & MacLeod, 2014). One study which looked at the relationship between depression and psychological well-being and anticipated personal events utilised a semi-structured interview to allow for participants' own ideas about why future events were important. This technique provides a unique way of assessing future thinking which could be worth building upon in order to address this need (Edmondson & MacLeod, 2014). Another avenue of suggested research is a focus on the impact of a lack of anticipated positive events on psychological well-being (Edmondson & MacLeod, 2014).

### **Future-Directed Thinking in Older Adults**

The ability to anticipate and plan for the future is therefore an important component of mental health (Lapierre, Bouffard, Dube, Labelle & Bastin, 2001) and some researchers posit that this remains the case for older adults (Rakowski, 1986). However, with increasing age our perception of time becomes altered (Lennings, 2000) and it is believed that at some point in the lifespan, perspective shifts from time lived since birth to time to live until death (Rakowski, 1979) with time primed periodically by salient events and monitored unconsciously (Carstensen, Isaacowitz & Charles, 1999). Therefore, it could be expected that ageing poses a challenge for future-thinking due to this diminished sense of future time.

This expectation has been supported by a body of research. A decreased future time perspective has been found in older adults (Kornfeld & Marshall (1987, as cited

in Fingerman and Perlmutter, 2001), with a less extensive and 'dense' future perspective in middle aged and older adults (Kastenbaum, 1963). Studies have shown a negative relationship between age and future planning (Prenda & Lachman, 2001) and that with each additional year lived, people make fewer plans for the future and are less optimistic (Kotter-Gruhn & Smith, 2011). In addition, it has been demonstrated that older community residing men are less future orientated than younger men (Eson & Greenfield, 1962, as cited in Rakowski, 1979) and in a study of older women, the majority reported thinking about the present more frequently than the future or past but also considered the past the most important time in their lives and enjoyed thinking about this period the most (Strumpf, 1982 as cited in Strumpf, 1987). In a study in which war veterans were instructed to speak about whatever they liked, the majority referred to events from the remote past, with the fewest responses relating to the future (McMahon & Rhudick, 1964). Furthermore, in a piece of research which examined the relationship between temporal variables and optimism and satisfaction in older people, it was further confirmed that there was a much greater focus on the present than the future and the past was somewhat neglected (Lennings, 2000). The author also concluded that this present orientation was related to optimism and predictive of satisfaction generally. More recent research comparing older and younger adults has suggested that in comparison to younger adults, older adults do describe their future as limited (Carstensen et al., 1999). Fingerman & Perlmutter (2001) directly compared younger and older adults to establish age differences in future time perspective and found that younger adults considered the near future in the context of a distant future and thought frequently about more distant time periods. However, they also highlight that a methodological issue with the assessment of future time perspective about the way in which the question is posed

having a bearing on how far ahead older adults think in comparison to younger adults. Nevertheless, Schmotkin (1991) argues that although older adults are more focussed on the present time perspective than younger adults, they still impute a great importance to the near future. The author also notes that the role of the future in the subjective well-being of older people is as yet undetermined. However, the research looked only into the next five years and therefore can be said to have neglected the distant future. Indeed, comparisons of existing data are difficult when the time which is considered to be the 'future' differs so broadly.

In addition to propensity for future thinking, age differences have also been found in how this is experienced. For example, studies have found that in comparison to younger adults, older adults have difficulty combining past events into plausible future events with a reduced richness of imagined constructions (e.g. Rendell et al, 2012). However, this effect was not only true of future thinking. Although a body of research clearly exists examining how time perspective is perceived and experienced in older adults, there is little in the way of how this changes as we age. However, some studies have begun to address this. For example, Lapp and Spaniol (2017) investigated how age differences in episodic future thinking was affected by personal goals. They prompted older adults with relevant age-related goals and found that it was more difficult for both groups to generate episodic future thoughts and that most imagined events occurred in the near future, but that age-relevant goals did not mitigate deficits in episodic future thinking in older adults. However, older adults did tend to rate their responses as more positive and personally significant than younger adults and that younger adults were more responsive to cues relating to achievement,

which the authors state is in line with expectations borne out of the literature around Socioemotional Selectivity Theory, as discussed below (Carstensen et al, 1999).

### **Socioemotional Selectivity Theory**

Many theoretical models within clinical psychology focus on the passage of time since birth. Although chronological age can be utilised as a good predictor of a number of abilities (e.g. cognitive, sensorimotor), in older ages the influence of difference of experience over the life span renders age a less precise predictor (Carstensen, 2006). As we age, the sense of time which becomes more salient is time left until death, rather than time lived since birth. It is likely that our perception of this time is internal, but influenced by external factors such as health (Allemand et al., 2012).

One theory which might account for this reduction in future thinking in older adults is Socioemotional Selectivity Theory (SST; Carstensen et al., 1999). SST helps to couch future time perspective into a theoretical framework of lifespan development. It is based on the premise that humans are able to monitor time, adjust their time horizons and appreciate that ultimately, time will run out. The theory suggests that our priorities change based on our perception of time and proposes that goals are always set within temporal contexts. When time is perceived as largely open ended, individuals tend to select goals which will benefit them in the future to come, such as meeting new people and acquiring knowledge. However, when time is perceived as limited, individuals favour more emotionally meaningful goals which occur in the present. This includes goals such as feeling satisfied and investing time in close relationships whilst distancing oneself from more peripheral social contacts and engaging in behaviours which achieve short-term emotional benefits, which can

confer advantages for the regulation of emotional states. Therefore, the perception of future time influences the appraisal process that precedes goal selection and subsequent behaviour, enabling effective adaptation to particular circumstances. A number of studies suggest that this process occurs in part via age related increases in memory and attention for positive information and decreases for negative information, also known as the 'positivity effect' (see review by Mather & Carstensen, 2005). It is therefore reasonable to assume that due to the inherent relationship between age and future time perspective (older adults are likely to have a realistic sense of foreshortened time), older adults are more likely to display the latter pattern, with a subsequent focus on the present and reduced thinking about the future. According to the theory this would then result in maximisation of present focussed meaningful activity, greater emotion regulation and increased well-being with a move towards higher positive and lower negative affect (Mroczek & Kolarz, 1998). This increased focus on the present in older adults suggests they may benefit from therapies which adopt the same present-focus stance, such as CBT. Therefore understanding these underlying mechanisms may prove useful in developing and adapting therapeutic interventions for older people.

Age differences in goal selection and subsequent benefits for well-being is a well-researched finding within SST, with negative associations found between increasing age and open-ended time perspective (e.g., Fung & Carstensen, 2006; Lang & Carstensen, 2002) and this pattern has been replicated across cultures (E.g. Frederickson & Carstensen, 1990; Fung, Carstensen & Lang, 2001; Fung, Lai & Ng, 2001). Stronger associations between meaning in life and positive affect have also

been found in individuals with a limited future time perspective than those in which time perspective is more open ended (Allemand et al., 2012).

However, it must be noted that a reduced future orientation has also been demonstrated in those with a terminal illness (Carstensen & Frederickson, 1998) and primed endings (whereby the fragility of life was highlighted, e.g. during the SARS epidemic and following the 9/11 attacks; Fung & Carstensen, 2002), suggesting it is time left, not age per se, that leads to this shift. Strong negative correlations have also been found between future time perspective and chronological age, indicating more open time horizons in younger adults than old adults, with a moderating effect of perceived future time perspective occurring over and above the effect of chronological age (Allemand et al., 2012). In addition to this, it has been found in experimental designs which manipulate time horizons that those with limited horizons demonstrated enhanced positivity in recall, thought to be due to participants' motivation to optimise their emotional experience in line with SST, regardless of age (Barber et al, 2016). However, the authors also caution that the reflection on a limited time horizon also induced negative mood states.

It has also been found that reductions in future perspective with age is moderated by functional impairment and that people over 80 can still create long-term aspirations (Bouffard, Bastin & Lapierre, 1994). Additionally, support has been found for alternative theories, some of which are considered 'broader' in scope (Peningroth & Scott, 2012). For example, in contrast to SST's emphasis on selective processes which henceforth lead to the observed positive affect trajectories, some theories suggest that this is in fact the result of emotional-motivational changes which are adopted as a compensatory strategy to manage the decline of resources with age. For

example, selection, optimisation and compensation theory (Baltes, Wynne, Sirabian, Krenn & De Lange, 2014) proposes that individual goal selection is mediated by age related change (e.g. in function), and that individuals then adopt methods to maximise capacity to achieve the goal whilst also enlisting additional resource towards this aim. It has further been suggested that age related weakening in future thinking is attributable to a range of cognitive factors such as executive functions and working memory and individual differences in aspects such as proneness to avoidance (Jumentier, Barsics & Van der Linden, 2017). This latter suggestion rests on the assertion that individuals commonly associate later life with increased negative events and therefore as we age, a reduction in accessing information from episodic memory to recombine into future mental representations acts as an avoidance function in order to circumvent difficult future events. This idea has been substantiated by research which has demonstrated a proneness to avoidance for future thinking for the more distant future in older adults, and that this was particularly the case for negative future thoughts (Jumentier et al., 2017). In addition to this, Miloyan, Pechana and Suddendorf (2016) completed a review on literature pertaining to future thinking in anxiety and depression in older adults. They found that when considering the mental construction of negative future events, activation patterns measured by functional neuroimaging (e.g., in the hippocampus) are similar for both the remembering and imagining of past and future events. Given this role of the hippocampus in future thinking, its link to subjective wellbeing and the possibility of reduced hippocampal volume in later life, they comment that it is surprising that this has not been considered more widely in the literature base. They go on to suggest a possible impact of affective state on retrieval biases in anxiety and depression which therefore may have a bearing on the ability to construct negative future thoughts in these states, but

that the extent to which attentional biases are exhibited in anxious and depressed older adults and the subsequent effect on negative future thoughts has not yet been investigated. They suggest that an assessment of episodic foresight may help to distinguish anxiety from depression in older adults with emotional disorder.

### **The Relationship between Future-Directed Thinking and Subjective Well-being in Older Adults**

It has therefore been questioned whether positive future perceptions can be maintained in old age and what effect this has on subjective well-being. Some initial findings show that there is a relationship between general future orientation and well-being in ageing. Negative relationships have been found between age and self-reports of future oriented planning, but that those who are more future oriented have greater life satisfaction and this is more pronounced in older adults (Prenda & Lachman, 2001). Kotter-Gruhn & Smith (2011) write that older adults' expectations of their future is an under-researched issue. They examined the relationship between two indicators of future perception (future orientation and optimism) and age and their relationship to well-being. They found that older adults were less optimistic and that decreases in future orientation led to reduced well-being over time but that well-being did not predict changes in future orientation. These findings are juxtaposed against the predictions of SST. Nevertheless, it is difficult to separate age effects from identified contributing contextual factors such as loneliness and functional impairment (Lapierre, Bouffard & Bastin, 1993) which may account for some variance.

In contrast to the number of studies in younger adults demonstrating a link between future thinking and subjective well-being already cited, there is a relative lack of research looking directly at positive and negative future-thinking in older



adults' and the relationship of this to subjective well-being. To date, it has been found that depressed older adults demonstrate a decrease in positive future-thinking but no increase in negative future-thinking and it has been suggested that further research with this population would be beneficial to understand the underlying relationships which contribute to this (Conaghan and Davidson, 2002). When contrasted with similar studies in younger adult populations (e.g. MacLeod et al., 1997) older adults generate fewer positive future thoughts than younger adults but are relatively comparable with regards their generation of negative future thoughts (Conaghan & Davidson, 2002). However, this is an under-researched area and further research is required to clarify whether this is the case. The data on younger adults suggests this may be a worthwhile area of study. Other research suggesting a relationship between future perceptions and subjective well-being in older age supports this assertion. For example a positive future self has been found to be associated with better psychological well-being at baselines but poorer well-being at 12 months (Cheng, Fung and Chan, 2009) and weak associations have also been found between negative expectations and negative well-being in older adults (Lachman, Rocke, Rosnick & Ryff, 2008).

### **Future-Directed Thinking for Specific Time Periods**

Some existing research has also examined in detail the specific future time periods participants think about, which has revealed differences in the positive and negative future-thoughts generated by different young adult groups. For example, depressed parasuicidal individuals generate more negative future-thoughts about the next year than non-depressed parasuicidal individuals (MacLeod et al., 1997). Other

studies however have found no interaction between positive and negative future-thinking and different time periods (MacLeod and Byrne, 1996).

### **In Older Adults**

In one study looking at older adults, no significant differences in specific future time periods were found between depressed, parasuicidal and community control groups. However, the community control group demonstrated a (non-significant) pattern of means towards more positive future thoughts than negative future thoughts with the majority of both positive and negative future thoughts based in the next five to ten years, the least positive future thoughts based in the next one week and the least negative future-thoughts taking place in the next one year (Conaghan and Davidson, 2002). In another study which looked at the temporal extension of goals and well-being it was found that 46% of older adults thought about the distant future (one year and over), 31% the open present (now and forever) and 23% the near future (less than one year) and that there was a marginal reduction with age in the length of future perspective. However, this relationship depended mostly on functional impairment rather than age. There was a modest correlation between extension of goals and well-being (see Lapierre et al., 2001).

### **Comparing Older and Younger Adults**

Some initial studies have also directly compared older and younger adults' future thinking for specific time periods. For example, it has been found that older adults have a lower percentage of goals focussed on the far future than younger adults (Penningroth and Scott, 2012), although the sample of older adults was recruited from an activity centre and thus had limited generalisability. Another study found that there

are no significant age differences in how far ahead individuals report thinking on a day to day basis, however there were significant age differences in future time perspective with increasingly distant time periods: younger adults reported more frequent thoughts about the current year, following year and 10 years after the current year. Younger adults also had more distant future images of themselves than older adults and were more likely to class themselves as future thinkers (Fingerman and Perlmutter, 2001). These studies appear to suggest a reduction in future thinking in age overall and a relationship between subjective well-being and specific time periods, however results are inconsistent.

### **The Content of Future Thoughts**

It is clearly important to understand the psychological basis of future-thinking and its relationship to subjective well-being across the lifespan. Although an analysis of how older adults think about the future in comparison to younger adults helps us to achieve this, initial findings suggest that looking at the content of these thoughts may also prove illuminating. However, the majority of existing research is based around goals.

For example, Cameron, Desai, Bahador and Dremel (1977) found that older adults' future thinking was mostly around death, retirement, vacation, world problems and entering a nursing home. In comparison to this, adults aged 18-25 tended to think about work/jobs, marriage, schooling, vacation and parenthood and those aged 26 to 39 about work/jobs, vacation, world problems, sex-love life and parenthood. Similarly, Penningroth and Scott (2012) looked at the relationship between age and goals and found that in support of SST, younger adults had more goals for the future

and that older adults less frequently reported goals based around acquiring knowledge or novel experiences. Older adults also reported more goals around generativity (increasing life meaning) and emotion, with the authors concluding that older adults focussed more on social selection. They noted that there was a need for qualitative research which compares older and younger adults' future goals within the context of SST. Studies looking at the relationship of this to well-being have yielded clinically useful data. Salmela-Aro, Pennanen and Nurmi (2001) found an association between goals and well-being in young adults, with lower levels of well-being in those with self-focussed goals (defined as goals focussing on altering or improving the self). Similarly, Ryff (1989b) found a relationship between psychological well-being in older adults and goals involving others.

In perhaps one of the most comprehensive studies to date, Lapierre et al (1993, 1997) looked at the temporal extension of goals in the context of successful ageing and found a significant correlation between the extension of goals and well-being. A content analysis revealed that the majority of goals referred to the 'self' category (37.7%): keeping healthy, autonomy and improving certain characteristics. The second most popular category was 'aspirations of contact' (15.5%): helping people and maintaining existing relationships. This was followed by 'wishes for others' (9.5%) (such as well-being of family and friends) and 'useful activities' (9.3%), with minimal endorsements for 'contact with others', 'possession' and 'exploration.' Further exploration of the content of aspirations in relation to sociodemographic variables revealed that although age explained some differences in motivational profiles, factors associated with age such as loneliness and functional impairment explained the majority of variation (Lapierre et al., 1993). A later analysis found a

correlation between the content of the goals, in particular ‘altruistic contact’ (helping others) and ‘wishes for others’, and the well-being of the older adults (Lapierre et al., 1997). However, it is noted that the reported correlational data inhibits any inference of causality. Similar results demonstrating that intrinsic goals are related to well-being have been found in studies with younger adults (e.g. Salmela-Aro and Nurmi, 1997). Relationships between the content of aspiration and future perspective were also found. For example, desires to maintain existing relationships and aspirations for a good death were both associated with negative expectations about the future.

### **Conclusions and Suggestions for Future Research**

It has been suggested that an avenue for further research could be to test the moderation of future time perspective with respect to different conceptualisations of subjective well-being, including psychological well-being (Allemand et al., 2012). Overall to date, the evidence base is conflictual, with some support for the assertion that subjective well-being is associated with positive future aspirations in old age, but a large body of evidence suggesting that subjective well-being in older adults is associated with a focus on the present, as predicted by SST. This could also help to add to the evidence base around future thinking and affect which as aforementioned is still an emerging field and examine under-researched issues in the field of future thinking, such as the effect of lack of anticipated positive events on subjective well-being (Edmondson & MacLeod, 2014), and provide a broader assessment of subjective well-being. There is also scope for further analysis of whether future directed thinking is maintained as we age, and whether the way in which one thinks about the future changes from young adulthood to late adulthood. This includes a more in depth analysis of what types of future one imagines, whether near or distant.

To date, research has also tended to focus only on the quantity of events people are able to imagine for the future, with little exploration into how the way in which people see future events affects their well-being. It has therefore similarly been suggested that looking at qualitative differences in addition to quantitative differences may illuminate differences not highlighted in previous research (MacLeod and Byrne, 1996, MacLeod et al, 1997). It has been proposed that this might be usefully viewed within the framework of SST (Penningroth & Scott, 2012) and specifically that a useful focus for future research would be to analyse qualitative in addition to quantitative differences in the types of positive and negative future outcomes individuals anticipate (Atance and O'Neill (2001). It has been suggested that studies which allow for individual selection of goals would be worthwhile (Lapp & Spaniol, 2017). Research building upon the use of tools which allow participants to generate their own ideas about what they are and are not looking forward to may help to address this gap.

Penningroth and Scott (2012) also suggest an avenue for further research which looks at the differences between responses based in the near future and the distant future. Furthermore, it has been suggested that assessing subjective well-being using time-specific questions may result in the detection of more pronounced age differences in well-being (Kunzman et al., 2000) and that using self-report as a method to measure future thinking in older adults has not yet been adequately explored and would henceforth be a useful avenue for further research (Fingerman & Perlmutter, 2001).

Therefore, the existing body of research fails to address some pertinent issues highlighted within this review. There is scope for a more detailed analysis of how

older adults think about their future and for research into whether there are demonstrable differences in positive and negative future-thinking in direct comparison to younger adults, in addition to exploration around what specific future time periods each group thinks about. Also, to date no studies have directly compared older and younger adult's future-thinking in relation to their subjective well-being. Furthermore, there are a limited number of studies looking at the content of future thoughts of older and younger adults, particularly those which compare these directly. This may aid clinicians in assisting individuals to overcome the cognitive barriers that limit their ability to think effectively about the future and access positive expectancies more effectively with the goal of achieving a high level of subjective well-being. Having an understanding of these factors and processes could also help people to maintain good subjective well-being as they age, in addition to assisting those experiencing low subjective well-being.

### **Study Overview**

The current study therefore tested existing assumptions of SST and research into future thinking whilst applying this to a relatively under-researched area: older adults. It also addressed gaps in the literature relating to qualitative aspects of future-thinking.

A group of young adults (aged 20-35) and a matched group of older adults (aged 65+) were recruited through relevant organisations and convenience sampling. Participants completed the future thinking task to assess future thinking, with follow up questions providing further qualitative information on the content of their responses. They also completed self-report measures of well-being; the HADS (Bjelland, Dahl, Haug, and Neckelmann, 2001), Satisfaction with Life Scale (Diener,

Emmons, Larsen, and Griffin, 1985) and Office for National Statistics (ONS, 2016a) employed questions around Subjective Well-being.

### **Hypotheses**

Hypothesis 1: Based on means found in research to date looking at future thinking in older and younger adults, it was hypothesised that older adults would generate fewer positive future thoughts than younger adults, but the groups would not differ on negative future thoughts.

Hypothesis 2: Based on predictions made by SST, it was also hypothesised that subjective well-being would correlate less strongly with future-thinking in older adults when contrasted with findings from younger adults in the current study.

Additional exploratory analysis will look at whether there is a great difference between older and younger adults' thinking for different future time periods, with an expectation based on previous research that older adults would be more present/ short term focussed than younger adults. Using the content data obtained from follow up questions, it was also be determined whether there a difference in the content of thoughts between older and younger adults.



## **Chapter 2. Method**

### **Design**

A mixed model design was used with Group as a between subject factor and Valence (positive vs negative future thinking) as a within subjects factor. Time was also used as a within subjects factor. A correlational design was also used to establish the relationship between future thinking and subjective well-being. Coded data were also collected and analysed statistically using a content analysis and independent samples t-tests.

### **Participants and Recruitment**

A sample of older adults (N= 39, 29 women; age range 62-89; M = 72.31, SD = 7.33) were recruited from relevant third sector services working in the London (UK) region. Inclusion criteria were being aged over 60 years and able to engage in the tasks required. Recruitment posters were displayed in community activity centres for older adults and the researcher visited a number of community groups to advertise the study. Participants were seen either in a private room at the community centre from which they were recruited, at home or in a central London university location booked by the researcher.

A sample of younger adults (N= 27, 20 women; age range 20-35; M= 27.12, SD = 4.37) were recruited using a convenience sample in the same geographical region. Inclusion criteria were being aged 20-35 years and ability to participate in the study. Appropriate staff working in the community activity centres from which the older adult sample were recruited were approached, along with those in the

researcher's wider network via word of mouth. Participants were seen either at home or their place of work.

### **Power**

No single study has yet directly compared the Future Thinking Task in older and younger adults in this way and therefore means for the power calculation were taken from separate studies looking at older and younger adults. Comparing scores on future-thinking of older adults from Conaghan and Davidson (2002) and younger adults from MacLeod, Tata, Kentish and Jacobson (1997), an effect size (Cohen's  $d$ ) of .81 was obtained, indicating a large effect size. Therefore a sample size of 26 participants in each group was required to obtain statistical power at the recommended 0.8 level for t-tests comparing groups on positive and negative future-thinking. For the correlational analysis, a sample size of 28 is required in order to obtain a large effect size (Cohen's  $d$ ) of 0.5 at the recommended 0.8 level. As a total of 39 older adults and 26 younger adults were included in the analysis, the study was considered to have exceeded power with the exception of younger adults for the correlational analysis which was slightly underpowered.

### **Ethics**

The study received ethical approval by the Royal Holloway, University of London Research and Ethics Committee in July 2015 (Appendix 1).

## **Measures**

All participants completed the following measures.

### **Demographics Information**

All participants were asked to give demographic information about age, gender, ethnicity and level of educational attainment.

### **Control Task – Verbal Fluency – (FAS) Appendix 2**

The FAS task is a test of Phonemic verbal fluency which has been widely used in both clinical practice in neuropsychological assessment (Lezak, Howieson, Bigler, & Tranel, 2012) and clinical psychology research (e.g., Henry & Crawford, 2004). Letter fluency tasks have been shown to be more comparable in older and younger adults than category fluency tasks (Kozora & Cullum, 1995). Participants are typically given one minute to generate as many unique words as possible with the resultant score comprised of the number of correct words. In the present study, participants were asked to generate as many words as they could that began with the letters F, A and S. They were given one minute in each condition to do so. They were informed that the words generated should not feature the names of people, places, numbers or sequences involving the same basic word. The task was used to prime participants to get in the right frame of mind for completing the timed tasks on the Future Thinking Task (FTT) and also to control for possible effects of general verbal fluency. It is commonly used both as a control for and orientation to the FTT.

### **The Future Thinking Task (FTT) (MacLeod et al, 1993) Appendix 2**

A number of measures are available to assess future thinking and one tool which is widely used in published research is The Future Thinking Task (e.g.,

MacLeod and Byrne, 1996; MacLeod & Conway, 1996; MacLeod, Rose & Williams, 2003) The task was created in an attempt to understand the psychological processes involved in hopelessness and developed with the purpose of being able to examine thoughts about the near future through to the distant future and look specifically at the ability to imagine bad things in the future in addition to imagining good things in the future (MacLeod et al, 1993). It has also been previously used successfully in research with older adult populations (Conaghan & Davidson, 2002).

In this task, participants are cued with three future time periods (next week, next year and next five to ten years). They are then asked in turn to generate as many possible events that they are and are not looking forward to (positive and negative valence conditions which are counterbalanced) each within a set time limit (one minute), giving a total of six trials. The responses are then tallied to give a total number of positive and negative events. In the current study, participants were also then asked follow up questions about the events named ('what is it about [event] that you are looking forward to?'; 'what is it about [event] that you are worried about or not looking forward to?') in order to obtain further data about the content of their responses. This is similar to techniques adopted by other researchers who have sought to understand the meaning and themes behind responses given (e.g., Edmondson et al., 2014). The use of open ended questions also meant that participants generated their own ideas about what was important about the future events they identified and allowed for these responses to be coded and quantified in a theoretically meaningful way.

**The Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) Appendix 3**

The overlap of medical co-morbidities with physical manifestations of mood disorders can make the assessment of anxiety and depression in older populations less precise (Roberts, Fletcher & Merrick, 2014). The HADS is self-report measure of anxiety and depression which has a low reliance on physiological symptoms. It consists of seven items measuring anxiety and seven measuring depression, which are scored using a four-point likert scale. Final scores fall into an overall classification of ‘normal’, ‘mild’, ‘moderate’ or ‘severe.’ It is widely used both clinically and in research (e.g., Li, Guangbin, Xioaming, Ruiping & Xiayoi, 2015). It has demonstrated good validity (mean Cronbach alpha = 0.83, Bjelland et al, 2001) and is considered to have good validity for older adult samples (Roberts et al., 2014) in addition to general adult samples.

**The Satisfaction with Life Scale (Diener, Emmons, Larsen & Griffin, 1985) Appendix 4**

Satisfaction can be considered as a cognitive judgement about the quality of one’s life in both the present and potential future (Lennings, 2000). The Satisfaction with Life Scale developed is based on a conceptualisation of subjective well-being which consists of both negative and positive affective and judgemental cognitive components and was developed based on a lack of attention on the latter (Diener et al., 1985). It requires participants to self-report on five items related to how satisfied they are with their lives and allows participants to consider whatever life domains they may deem important. It has shown high reliability (Cronbach alpha = 0.85), correlates well with other measures of well-being and life satisfaction (Pavot, Diener,

Colvin & Sandvik, 1991) and can be used with different age groups, allowing comparison of different age groups with the same item (Diener et al., 1985).

### **Office for National Statistics measures of Well-being (2016) Appendix 5**

Well-being was also assessed by asking participants to complete the Office for National Statistics (ONS) (2016a) Index of Well-being. This consists of four questions measuring different aspects of well-being which the ONS collect within the annual population survey in order to compare year on year well-being by county, region, local areas and individual characteristics. The questions (presented on a likert scale) are:

1. Overall, how satisfied are you with your life nowadays?
2. Overall, to what extent do you feel that the things you do in your life are worthwhile?
3. Overall, how happy did you feel yesterday?
4. On a scale where nought is ‘not at all anxious’ and 10 is ‘completely anxious’, overall, how anxious did you feel yesterday?

The ONS (2016) gives the following thresholds for scores:

Questions 1-3	Question 4 (anxiety)
0 – 4 Low	0 -1 Very low
5 – 6 Medium	2 – 3 Low
7 – 8 High	4 – 5 Medium
9 – 10 Very high	6 – 10 High

Comparing scores on this measure helped to determine whether those who participated were representative of their national age counterparts or whether their well-being differed to the average.

### **Pilot Study**

Before inviting participants to take part in the study, a small sample of older adults were asked to look at the measures involved and trial completing these. The aims of the pilot study were as follows:

1. To ensure that the task and questionnaires could be understood by a representative sample
2. To identify any procedural challenges in administering the task and questionnaires in an older adult sample
3. To gain feedback from a relevant sample about how to aid facilitation of administering the task and questionnaires along with how to recruit and feedback from the study.

### **Phase One:**

In Phase 1, a group of older adults looked at the questionnaires and were asked for feed back on the accessibility of the measures and ideas on administration, recruitment and dissemination. The measures were generally thought to be fine, with some suggestions made for their presentation (e.g., ‘needs bigger writing’), administration (e.g., ‘talk through it’) and recruitment (e.g., ‘ask each person what they would prefer’, ‘finding a quiet space in the centre to do it best’). A full table of their comments is available in Appendix 6.

Subsequently, the following amendments were made to the measures:

- The scoring was taken off the questionnaires
- The researcher notes were removed
- The text size was increased
- Participants were given the choice as to whether to read and complete the questionnaires themselves with some guidance from the researcher or have them read out to them
- During recruitment participants were also given the opportunity to complete the task on the day where possible or to make an appointment for a later date. They were also given a choice of venues (e.g. in the community centre, in a central London location, etc).

### **Phase Two:**

In Phase 2, a small sample of older adults were involved in a practice administration. A full table of their comments is available in Appendix 7.

From the practice administration, it also became apparent that participants were elaborating on the positive and negative events generated during the timed portion of the task, potentially limiting the amount it was possible to generate within the 60 seconds. In addition to this, during the follow up prompts participants discussed each event at length, creating a large volume of information which it was difficult to capture. Therefore, the instructions on the task were amended to inform participants that during the timed portion ‘you may have more to say about them, but we’ll come back to them later’. They were also asked for a ‘brief sentence or two’ regarding what it was about the event they were/were not looking forward to during



the follow up prompts, to enable the researcher to capture the information accurately. There were no difficulties with the questionnaire administration.

## **Procedure**

Data were collected from August 2016 to February 2017. Once participants had expressed an interest in the study, they were given the option to participate immediately if there was a room available, or to make an appointment to meet with the researcher at a later date at a convenient location. Participation typically took up to one hour. Each session began with an overview of the study and session and the opportunity for the participant to read through the information sheet and ask questions (Appendix 8). They were informed that they could withdraw at any point and if they wished to continue, informed consent was then obtained (Appendix 9).

The demographic information was obtained first. The verbal fluency task was then completed, with the verbal introduction to the task standardised across all participants. Participants were asked to generate as many words as they could beginning with F, A and S within a minute for each condition. They were instructed that these should not contain the names of people, place or numbers or sequences involving the same basic word, with an example given of ‘run, runner, running, and so on’. The participants said the words aloud and these were written down by the researcher.

The participants then completed the FTT, with the order of positive and negative conditions counterbalanced to control for order effects. The verbal delivery of task instructions was again standardized for all participants. Participants were led through both the positive and negative conditions and asked to generate as many

things that they were or were not looking forward to over the three time periods beginning with one week, then one year and lastly the next five to ten years. They were asked to think about things which they thought would definitely happen, or were at least quite likely to happen. Positive occurrences were described as ‘things you are looking forward to, in other words, things that you will enjoy.’ Negative events were described as ‘things you are worried about or not looking forward to, in other words, things you would rather not be the case or rather not happen.’ If participants stated that they could think of nothing else to say within the minute, they were instructed to keep trying until the time limit was up. Following the generation of events, participants were then asked follow-up questions for their first three responses at least. These were ‘what is it about [event] that you are looking forward to/ are worried about or not looking forward to?’ This provided further content about the event and was written down verbatim by the researcher.

Following completion of the FTT, participants were given the choice of reading and completing the questionnaires themselves with support from the researcher, or of having them read out to them. They completed the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983), Satisfaction with Life Scale (Diener et al., 1985) and the four well-being questions (ONS, 2016).

### **Debrief**

After completing the measures, the researcher enquired with participants about how they were feeling now that they had completed the tasks and questionnaires and participants were provided with a debrief sheet with a list of organisations they could contact for support (Appendix 10) and the opportunity to ask any further questions. Finally, they were thanked for participating and asked whether they would like to

know the outcome of the study, then provided with relevant information on planned dissemination in their local area.

### **Statistical Analysis**

All data were analysed statistically using The Statistical Package for Social Sciences (SPSS) Version 21.0. Analysis consisted of completing three-way and mixed measures ANOVAs and subsequent t-tests to compare the two groups' scores on the number of positive and negative future thoughts generated in each time period. Correlations were then used to look at the relationship between future thinking and well-being for older and younger adults.

Finally the content data were coded using a content analysis. In order to analyse this data, an inductive approach to developing a coding scheme was adopted. This was due to the fact that the purpose of the structure of the task was to allow participants to generate their own responses about their future thinking and therefore an analytic approach driven by the data allows this to come to the fore, whereas utilising pre-determined coding schemes or categories such as those used in previous research (e.g., Fingerman & Perlmutter, 2001; Penningroth & Scott, 2012) restricts what comes from the data beforehand. The methodology used was a type of content analysis, which is adapted from Grounded Theory (Glaser & Strauss, 1978). These approaches are based on the premise that theory can be derived from the data provided by participants' responses rather than pre-formed theoretical ideas. Data are coded by identifying significant aspects of the data in a process known as 'open coding.' 'Category integration' then occurs whereby the categories are then refined and related categories are grouped. They are then given labels developed by the researcher and definitions of each category are written (Hardy and Bryman, 2009).

The themes which developed were then compared using independent samples t-tests.

Details of the analyses completed and consequent results are discussed in chapter 3.

### **Chapter 3. Results**

This chapter first describes the exploratory data analysis which was completed prior to statistical analysis. It then outlines the demographic characteristics of the sample and matching procedures, before presenting the analysis of the main hypotheses. Firstly, analysis comparing the two groups' scores on the number of positive and negative future thoughts generated in each time period will be discussed, before moving on to the relationship between future thinking and well-being for older and younger adults. Finally, a content analysis looking at the content of the thoughts generated by each group will be presented.

The Statistical Package for Social Sciences (SPSS) Version 21.0 was used for all data analysis. Findings are reported to two decimal places. Throughout the analyses, where homogeneity of variance assumptions were not met, separate variance estimates were used. Where Mauchley's test of sphericity were not met, Huynh-Feldt values were used.

#### **Preliminary Data Analysis**

All data were checked to ensure accuracy of input, with totals calculated in SPSS. There was no missing data and therefore numbers presented throughout the analyses are totals.

#### **Normality of Distribution**

Exploration of the distribution of each variable used in the analyses were carried out for each group independently.

The majority of variables satisfied assumptions for normality, based on histograms which demonstrated normal curves indicating a normal distribution and

calculations of skew and kurtosis which were considered to be in the normal range  $z < 2.58$ ,  $p < .01$  (Field, 2011). Total positive future thoughts generated in the younger adult sample was not in the normal range. Examination of histograms revealed a positive skew and calculations of skew and kurtosis scores were  $z = 7.52$  and  $z = 3.90$  respectively. Positive future thoughts for each time period were also found to be positively skewed for the younger adult sample. Examination of boxplots and calculations of standard deviations from the mean revealed one participant was an outlier for the majority of variables and they were therefore excluded from the data. Another outlier was identified for positive future thoughts for the next one year in the younger adult sample. Scores for this variable for this participant were manually winsorised. Resultant skew and kurtosis scores for total positive future thoughts generated were  $z = 2.10$  and  $z = 0.96$ . New skew and kurtosis scores for positive future thoughts for each time period were now also normal based on  $z < 2.58$ .

### **Internal Reliability**

The internal reliability of key variables was checked, adopting the acceptable cut off point of 0.7 (Field, 2011). Cronbach's alpha was calculated for both the HADS scale as a whole ( $\alpha = 0.82$ ), the anxiety variables of the scale ( $\alpha = 0.88$ ), the depression variables of the scale ( $\alpha = 0.56$ ) and SWL Scale ( $\alpha = 0.82$ ) and therefore both scales had good internal reliability, consistent with previous studies, with a slightly low internal reliability for the depression variables.

### **Demographic Characteristics of the Sample**

After the exclusion of one participant, the total sample consisted of 65 participants. There were 39 participants in the older adult sample and 26 in the

younger adult sample. Table 1 gives a breakdown of the demographic characteristics of the sample.

Table 1. Demographic characteristics of the groups

	Whole Sample	Older Adults	Younger Adults
<b>Age, n</b>			
Mean (SD)	54.23 (23.18)	72.31 (7.33)	27.12 (4.37)
Minimum/ Maximum	20 / 89	62 / 89	20 / 35
Range	69.00	27.00	15.00
<b>Gender, n (%)</b>			
Female	49 (75.4)	29 (74.4)	20 (76.9)
Male	16 (24.6)	10 (25.6)	6 (23.1)
<b>Ethnicity, n (%)</b>			
White British	44 (67.7)	24 (61.5)	20 (76.9)
White American	6 (9.2)	5 (12.8)	1 (3.8)
White European	4 (6.2)	3 (7.7)	1 (3.8)
Asian British	2 (3.1)	1 (2.6)	1 (3.8)
White Irish	3 (4.6)	0	3 (11.5)
Black African	1 (1.5)	1 (2.6)	0
White Canadian	1 (1.5)	1 (2.6)	0
South Asian	1 (1.5)	1 (2.6)	0
Indian	1 (1.5)	1 (2.6)	0
White Australasian	1 (1.5)	1 (2.6)	0
Mixed	1 (1.5)	1 (2.6)	0

<b>Education, n (%)</b>			
Up to GCSE or apprenticeship	9 (13.8)	8 (20.5)	1 (3.8)
A-Level or NVQ	17 (26.2)	8 (20.5)	9 (34.6)
University	39 (60.0)	23 (59.0)	16 (61.5)

The youngest participant was aged 20yrs and the eldest was aged 89yrs. The youngest participant in the older adult group was aged 62yrs and the eldest participant in the younger adult group was aged 35. The majority of the entire sample was female. This was also reflected in each individual group, with the majority of the older adult and younger adult samples also being female. The majority of the entire sample was white British. This was equally the case in the older adult sample and younger adult sample. In older adults, white Americans make up the second largest number of participants and in the younger adult sample this was the case for white Irish participants, of which there were none in the older adult sample. The older adult sample was more diverse than the younger adult sample, comprising of participants from ten different ethnic groups, in comparison with five in the younger adult sample. The majority of the sample was university educated. The fewest number of participants were educated to GCSE or apprenticeship level.

### **Matching Data**

Groups were compared to ensure they were matched on key demographic variables. Chi square tests revealed there were no significant differences between groups on gender ( $\chi^2_{(1)} = 0.55, p = 0.81$ ), level of education ( $\chi^2_{(2)} = 4.33, p = 0.12$ ) or ethnicity ( $\chi^2_{(10)} = 10.87, p = 0.37$ ). An independent samples t-test compared older and



younger adults' scores on the FAS verbal fluency task. There was no significant difference between the two groups on scores on the FAS verbal fluency task ( $t_{(63)} = 1.42, p = 1.61$ ). Therefore, the groups were matched and further analysis could proceed without any adjustments.

### **Comparing Data to the General Population**

Means from each of the four ONS well-being questions for each age group were established from ONS data (2016). As the ONS publish these data in age bands, the means of the relevant age bands (20-24, 25-29, 30-34; 60-64, 65-69, 70-74, 75-70, 80-84, 85-90) were extracted and the mean of the means calculated to give an overall mean for that age group which matched the samples in the current study (20-35 and 60+). Firstly, means of the group as a whole were established and compared to the general population as a whole (Table 2) before looking at the older (Table 3) and younger (Table 4) adult samples individually.

Based on the thresholds outlined above, the scores indicate that the sample as a whole experience medium levels of well-being in relation to satisfaction, high levels of well-being in relation to things feeling worthwhile and happiness, and low levels of anxiety. This is comparable to the general population, with the exception of satisfaction whereby the general population achieved a 'high' score. A one sample t-test was utilised to compare means between the general population and the current sample. For Question 1, there was a significant difference between the two groups ( $t_{(64)} = 2.81, p = 0.01$ ) showing that the general population as a whole felt more satisfied with their life than the sample of the current study. For Question 2 there was also a significant difference ( $t_{(64)} = 2.30, p = 0.03$ ) demonstrating that the general population felt more that the things they do in life are worthwhile in comparison to

the current sample. For Question 3 there was no significant difference between the two groups ( $t(64) = 1.30, p = 0.20$ ) demonstrating that the two groups did not differ with regards to how happy they felt yesterday. For Question 4 again there was no significant difference between the two groups ( $t(64) = 1.21, p = 0.23$ ) indicating that there was no difference in how anxious the two groups felt yesterday.

Table 2. Means of well-being questions in general population and entire sample

	<b>General population (ONS)</b>	<b>Current sample</b>
<b>Q1 (satisfaction)</b>	7.7	6.94
<b>Q1 (worthwhile)</b>	7.8	7.12
<b>Q3 (happiness)</b>	7.5	7.08
<b>Q4 (anxiety)</b>	2.9	3.36

### *Younger Adults*

A one sample t-test was used to compare means on each of the questions between younger adults in the current sample and the age equivalents of the general population. There was a significant difference between the two groups on Question 1 ( $t(25) = 2.80, p = 0.01$ ) showing that younger adults in the general population feel more satisfied with their life than the younger adults in the current sample. There was no significant difference between the groups on Question 2 ( $t(25) = 1.61, p = 0.12$ ), demonstrating that the groups did not differ in how much they felt that the things they do are worthwhile. There was a significant difference between the two groups on Question 3 ( $t(25) = 2.50, p = 0.02$ ), indicating that younger adults in the general population felt happier yesterday than the younger adults in the current sample.

There was also a significant difference between the two groups on Question 4

( $t(25) = 2.33, p = 0.03$ ) showing that the younger adults in the current sample felt more anxiety yesterday than younger adults in the general population.

Table 3. Means of well-being questions in younger adult sample

	<b>General population younger adults (ONS)</b>	<b>Current sample younger adults</b>
<b>Q1 (satisfaction)</b>	7.58	6.44
<b>Q1 (worthwhile)</b>	7.72	6.93
<b>Q3 (happiness)</b>	7.33	6.07
<b>Q4 (anxiety)</b>	2.83	4.15

### *Older Adults*

A one sample t-test was used to compare the means of older adults in the general population and those of the sample in the current study. For Question 1, there was no significant difference between the two groups, indicating that they experienced similar levels of satisfaction ( $t(38) = 1.45, p = 0.16$ ). There also was no significant difference between the two groups on Question 2 ( $t(38) = 1.73, p = 0.09$ ), Question 3 ( $t(38) = 0.32, p = 0.75$ ) or Question 4 ( $t(38) = 0.31, p = 0.76$ ) demonstrating that the groups felt similarly about things in their life being worthwhile and how happy and anxious they were yesterday.

Table 4. Means of well-being questions in older adult sample

	General population older adults (ONS)	Current sample older adults
Q1 (satisfaction)	7.76	7.28
Q1 (worthwhile)	7.88	7.26
Q3 (happiness)	7.65	7.77
Q4 (anxiety)	2.67	2.82

In summary, younger adults in the current sample were less satisfied with their life, less happy and more anxious than the matched general population. There were no significant differences between older adults in the current sample and the comparable general population on the ONS (2016) well-being questions. Therefore, results for younger adults must be interpreted in light of this finding.

### Main Analyses

This section will outline the main analyses that were conducted to test the hypotheses stated in the introduction and also the additional exploratory data analysis.

**Hypothesis 1: Based on means found in research to date looking at future thinking in older and younger adults, it is hypothesised that older adults will generate fewer positive future thoughts than younger adults, but the groups will not differ on negative future thoughts.**

**Exploratory data analysis looking into whether there is a difference between older and younger adults' thinking for different future time periods.**

In order to compare older and younger adults ('group') scores of number of positive and negative future events generated ('valence') in different future time periods ('time') a mixed model ANOVA was used.

Table 5. Means and standard deviations of positive and negative future thoughts generated by older and younger adults

	Positive			Negative		
	1 week	1 year	5-10 years	1 week	1 year	5-10 years
<b>YA</b>	5.54	5.15	4.62	4.00	4.00	3.73
<b>M (SD)</b>	(2.30)	(1.78)	(1.68)	(1.83)	(1.41)	(1.61)
<b>OA</b>	6.72	4.44	3.49	3.56	2.74	3.10
<b>M (SD)</b>	(3.10)	(1.57)	(1.99)	(2.77)	(1.46)	(1.80)

There was a significant main effect for valence ( $F(1, 63) = 42.61, p < 0.001$ ) with participants generating more positive future thoughts (Mean = 4.99) than negative future thoughts (Mean = 3.52). There was also a significant main effect for time ( $F(1.76, 110.58) = 19.10, p < 0.001$ ). There was no significant effect for group, indicating that older and younger adults do not differ significantly in the number of positive and negative future thoughts generated across the three time periods ( $F(1, 63) = 2.39, p = 0.13$ ). There was a significant interaction for time and group ( $F(2, 126) = 6.89, p = 0.001$ ) indicating that the future thoughts generated in each time period differed between older and younger adults.

There was also a significant interaction for valence and time ( $F(1.65, 104.16) = 8.23$ ,  $p = 0.001$ ) indicating that different amount of positive and negative future thoughts were generated in each time period.

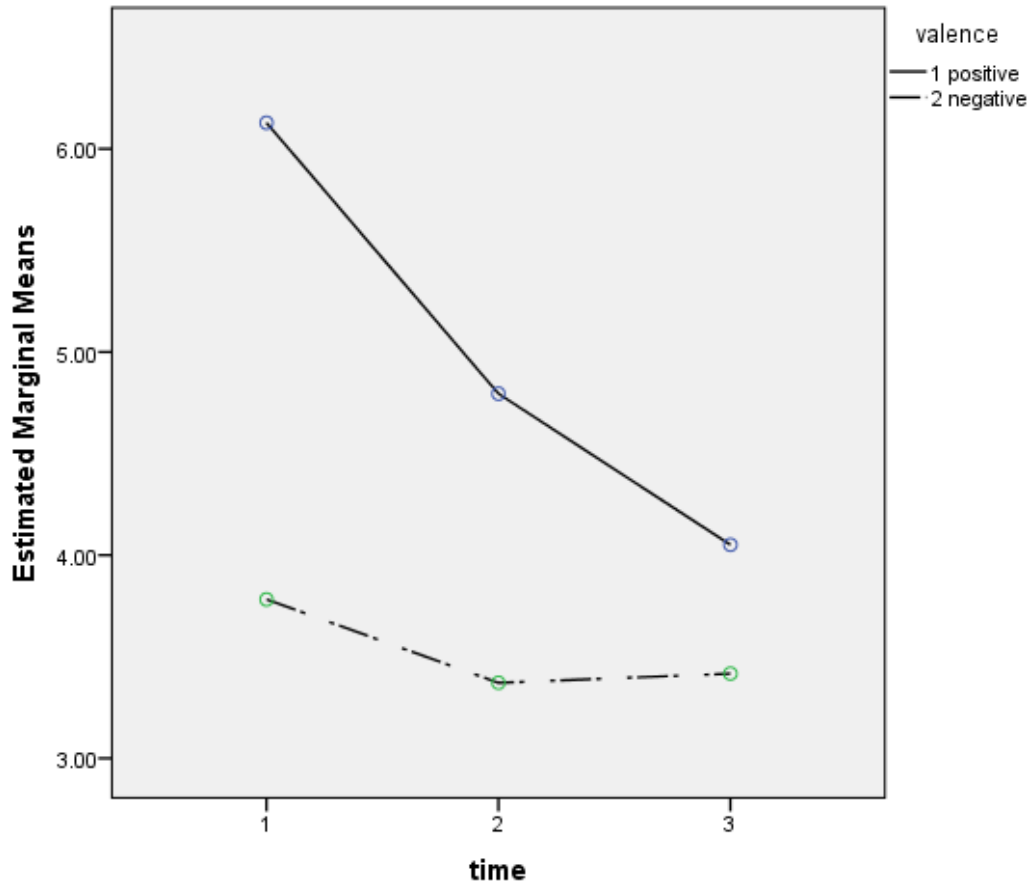


Figure 1. Mean number of positive and negative future thoughts generated for each time period.

Importantly, there was no significant interaction for valence and group ( $F(1, 63) = 1.50$ ,  $p = 0.23$ ) Therefore, in relation to Hypothesis 1, older adults did not generate fewer positive future thoughts than younger adults overall.

There was a significant three way interaction between time, group and valence ( $F(2, 126) = 3.14, P = 0.047$ ) indicating that the ability to generate positive and negative future thoughts in different time periods differed between older and younger adults. This interaction was decomposed by carrying out two separate group x time ANOVAs for positive and negative future thoughts.

### ***Positive Future Thoughts***

It was hypothesised that older adults would generate fewer positive future thoughts than younger adults. A mixed model ANOVA was used to look at the interaction between time and group on number of positive future thoughts generated. There was a significant main effect for time ( $F(1.76, 126) = 78.41, p < 0.001$ ), with more positive future thoughts generated in the next one week, followed by the next one year and then the next five to ten years, as in Table 7 above. There was no significant effect for group ( $F(1, 63) = 0.30, p = 0.59$ ) indicating no difference between older and younger adults in the number of positive future thoughts generated overall. There was however a significant interaction for time and group ( $F(2, 126) = 23.64, p = 0.001$ ). Independent samples t-tests were carried out looking at the number of positive future thoughts generated by older and younger adults in each time period. There was no significant difference in the number of positive future thoughts generated by older and younger adults in the next one week ( $t(62) = 1.76, p = 0.08$ ), although there was a trend towards older adults generating more. There was also no significant difference in the number of positive future thoughts generated by older and younger adults in the next one year ( $t(63) = 1.7, p = 0.09$ ), but again there was a trend this time for older adults generating less. There was a significant difference in the number of positive future

thoughts generated by older and younger adults regarding the next five to ten years ( $t(63) = 2.39, p = 0.02$ ), showing that older adults generated significantly fewer positive future thoughts than younger adults.

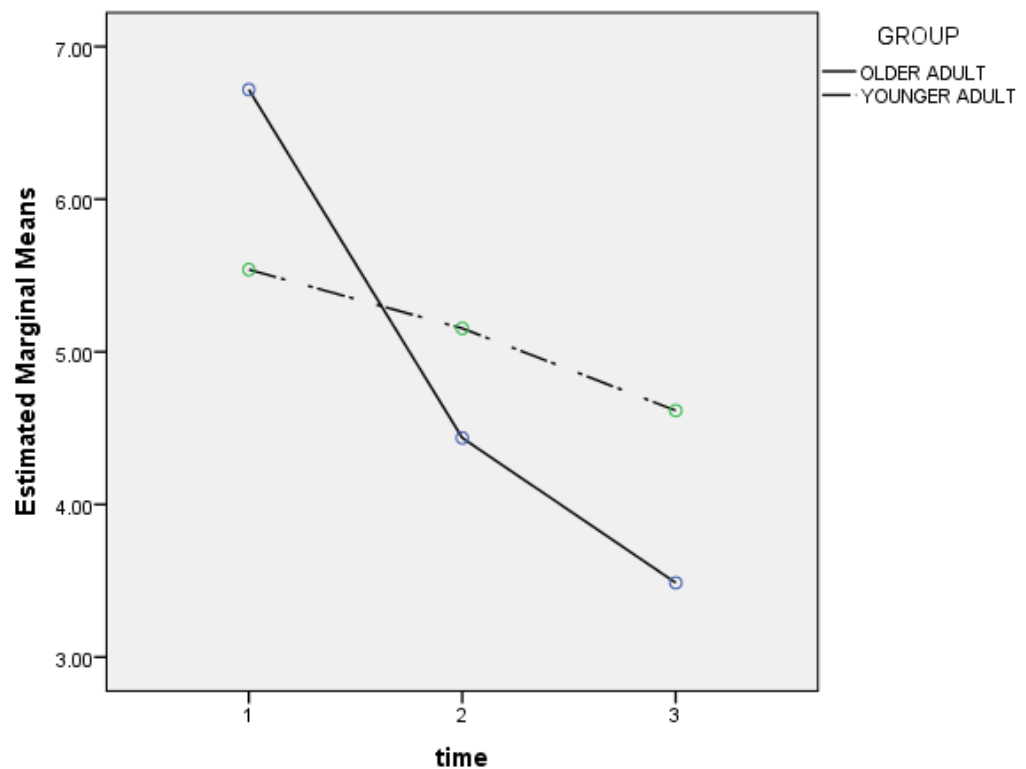


Figure 2. Mean number of positive future thoughts generated by older and younger adults for each time period.

Therefore Hypothesis 1 was partly met as although older and younger adults did not differ in the number of positive thoughts generated for the next one week and one year, younger adults generated significantly more positive thoughts than older adults about the next five to ten years.



### *Negative Future Thoughts*

It was hypothesised that there would be no difference in the number of negative future thoughts generated by older and younger adults. A mixed model ANOVA was used to look at the interaction between time and group and number of negative future thoughts generated. There was no significant effect for time ( $F(1.62, 126) = 1.466, p = 0.24$ ) but there was a significant effect for group ( $F(1, 63) = 4.16, p = 0.046$ ), as younger adults generated more negative future thoughts than older adults. There was no interaction between time and group ( $F(2, 126) = 2.87, P = 0.27$ ). Therefore, this part of the hypothesis was not met, as the groups differed on the number of negative future thoughts generated.

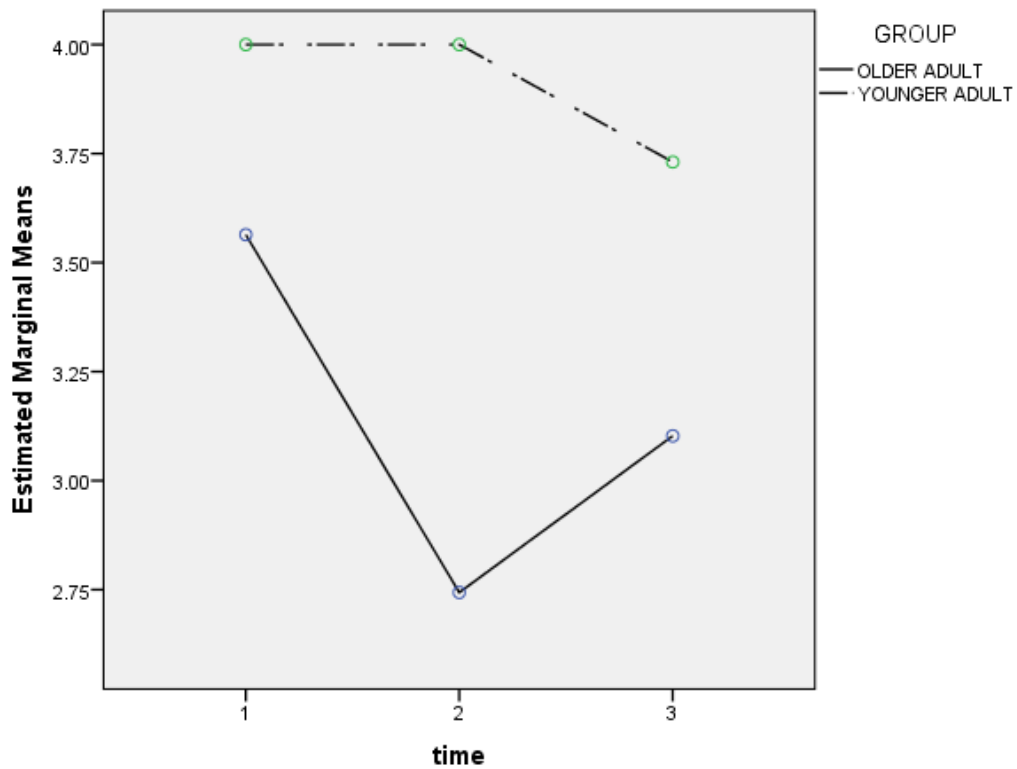


Figure 3. Mean number of negative future thoughts generated by older and younger adults for each time period.

**Hypothesis 2: Based on predictions made by SST, it is also hypothesised that subjective well-being will correlate more strongly with future-thinking in younger adults than it will in older adults.**

In order to measure psychological well-being, participants completed the HADS and SWL. Scores obtained are presented in Table 6 below.

Table 6. HADS and SWL scores for each group

	<b>Whole Sample</b>	<b>Older Adults</b>	<b>Younger Adults</b>
<b>HADS Anxiety</b>			
<b>Score</b>			
Mean (sd)	7.23 (4.45)	5.79 (4.38)	9.38 (3.67)
Minimum/ Maximum	0 / 18.00	0 / 18.00	3.00 / 15.00
Range	18.00	18.00	12.00
<b>HADS Depression</b>			
<b>Score</b>			
Mean (sd)	3.51 (2.72)	3.69 (2.95)	3.23 (2.35)
Minimum/ Maximum	0 / 11.00	0 / 11.00	0 / 7.00
Range	11.00	11.00	7.00
<b>Satisfaction with Life Scale Score</b>			
Mean (sd)	24.28 (6.20)	24.31 (6.40)	24.23 (6.01)
Minimum/ Maximum	12.00 / 35.00	12.00 / 35.00	14.00 / 32.00
Range	23.00	23.00	18.00

Correlations were carried out on the data to determine whether there was a relationship between scores for anxiety, depression and satisfaction with life and the number of positive and negative future thoughts generated for the two groups

separately. Examination of scatter graphs prior to completing the correlations showed that for the group as a whole, there appeared to be a relatively good spread of the data, with no obvious bivariate outliers. Older and younger adults' scores on the depression and anxiety variables of the HADS and the SWL scale were then compared using independent samples t-tests. There was a significant difference between the two groups on scores for anxiety, with younger adults scoring higher than older adults ( $t(64) = 3.62, p = 0.001$ ). This is somewhat in keeping with the results from the ONS (2016) wellbeing questions. There was no significant difference between the two groups on scores for depression ( $t(64) = 0.69, p = 0.49$ ), indicating that they experience similar levels of depression. There was also no significant difference between the two groups on scores on the SWL scale ( $t(64) = 0.46, p = 0.64$ ) indicating that they experience similar levels of satisfaction with life.

Initially, inter-correlations between the anxiety, depression and SWL variables were completed and results are shown in Table 7 below. All measures were moderately correlated.

Table 7. Correlations between subjective wellbeing variables

	<b>Satisfaction with life</b>	<b>Anxiety</b>	<b>Depression</b>
<b>Satisfaction with life</b>		-.378**	-.407**
<b>Anxiety</b>	-.378**		.368**
<b>Depression</b>	-.407**	.368**	

\*. Correlation is significant at the 0.05 level

\*\* . Correlation is significant at the 0.01 level

***Correlations between Positive and Negative Future Thinking and Subjective Well-being***

*Older adults*

It was hypothesised that future thinking would correlate less strongly with subjective well-being in older adults than in younger adults. The correlations are shown in Table 8. There was a significant negative correlation between satisfaction with life and total number of negative future thoughts, that is higher levels of satisfaction with life were associated with fewer negative thoughts about the future. There was a significant positive correlation between total negative future thoughts and depression, that is higher depression scores were associated with more negative future thoughts. There were no significant relationships with the scores on anxiety, depression and satisfaction with life measures and the number of positive future thoughts generated.

Table 8. Correlations between positive and negative future thoughts and aspects of subjective well-being in older adults

		<b>Anxiety</b>	<b>Depression</b>	<b>Satisfaction with Life</b>
<b>Positive</b>	<b>future</b>	-.019	.271	-.173
<b>thoughts</b>				
<b>Negative</b>	<b>future</b>	.243	.445**	-.377*
<b>thoughts</b>				

\*. Correlation is significant at the 0.05 level

\*\*. Correlation is significant at the 0.01 level

*Younger adults*

It was hypothesised that future thinking would correlate more strongly with subjective well-being in younger adults than in older adults. There were no significant correlations between satisfaction with life, anxiety, depression or total positive or negative future thoughts generated in the younger adult sample. Correlations are outlined in Table 9 below. However, the correlation between positive future thoughts and satisfaction with life is medium and therefore with a larger sample size might have reached significance.

Table 9. Correlations between positive and negative future thoughts and aspects of subjective well-being in younger adults

	<b>Anxiety</b>	<b>Depression</b>	<b>Satisfaction with Life</b>
<b>Positive future thoughts</b>	-.119	-.026	.317
<b>Negative future thoughts</b>	-.107	.191	.033

*Correlations between Positive and Negative Future Thinking and Subjective Well-being in Specific Time Periods*

Further correlations were then carried out to establish whether there was a relationship between anxiety, depression and satisfaction with life and the number of positive and negative future thoughts generated in each specific time period.

### *Older adults*

The correlations are shown in Table 10. There was a significant negative correlation between satisfaction with life and negative future thoughts about the next year, that is higher levels of satisfaction with life were associated with fewer negative thoughts about the next one year ( $p = 0.02$ ). There was also a significant negative correlation between satisfaction with life and negative future thoughts in the next five to ten years, that is higher levels of satisfaction with life were associated with fewer negative thoughts about the next five to ten years ( $p < 0.001$ ). There was again a significant positive correlation between depression and negative future thoughts in the next year, that is higher levels of depression were associated with more negative future thoughts about the next one year ( $p = 0.01$ ). There was also a significant positive correlation between depression and negative future thoughts in the next five to ten years, that is higher levels of depression were associated with more negative future thoughts about the next five to ten years ( $p = 0.01$ ).

There were no correlations with anxiety and any of the time periods for positive or negative future thoughts.

Table 10. Correlations between positive and negative future thoughts in each time period and aspects of subjective well-being in older adults

	Positive			Negative		
	1 week	1 year	5-10 years	1 week	1 year	5-10 years
<b>Anxiety</b>	.023	-.151	.036	.192	.229	.192
<b>Depression</b>	.171	.240	.229	.312	.432**	.402*
<b>Satisfaction with Life</b>	-.272	.036	-.041	-.151	-.362*	-.518**

\*. Correlation is significant at the 0.05 level

\*\* . Correlation is significant at the 0.01 level

### *Younger adults*

Correlations are outlined in table 11. The only significant correlation was between satisfaction with life and positive future thoughts for the next week, where higher levels of satisfaction with life were associated with more positive future thoughts about the next one week ( $p = 0.03$ ).

There were no significant relationships between anxiety or depression and positive or negative future thoughts in each time period.



Table 11. Correlations between positive and negative future thoughts in each time period and aspects of subjective well-being in younger adults.

	Positive			Negative		
	1 week	1 year	5-10 years	1 week	1 year	5-10 years
<b>Anxiety</b>	-.310	-.132	.214	-.327	.000	.133
<b>Depression</b>	.006	-.056	-.007	.111	.144	.175
<b>Satisfaction with Life</b>	.436*	.004	.208	.174	.094	-.208

\*. Correlation is significant at the 0.05 level

\*\* . Correlation is significant at the 0.01 level

Where significant correlations were found, the difference between the correlation in older and younger adults was tested. There was a significant difference between older and younger adults' correlations between satisfaction with life and positive future thoughts about the next week ( $p = 0.005$ ), where a positive correlation was found in the younger adult sample. There were no significant differences between the two groups on correlations for depression and satisfaction with life and negative future thoughts about the next year and five to ten years.

Based on these results, the hypothesis that subjective well-being would correlate more strongly with future thinking in younger adults than it would in older adults was not supported. This is due to the lack of correlations with future thinking and well-being in younger adults, with the exception of satisfaction with life and

positive future thoughts about the next one week, however correlations were found in older adults.

**Exploratory data analysis examining whether there a difference in the content of thoughts between older and younger adults.**

Content data were obtained from older and younger adults, in that they gave verbal responses regarding what they were/ were not looking forward to. For at least the first three responses, participants were also then asked ‘what is it about [response given] that you are/ are not looking forward to or are worried about?’ These prompted responses were mainly used as a validity check to ensure that the information generated by first responses was understood correctly and in the context in which it was intended.

Eight code themes were developed through the inductive coding analysis by collapsing the themes which emerged from reading through responses and drawing out important aspects into overarching categories. For the positive condition the context was often that certain aspects of these themes were present, for example having good health or social connection, whereas the converse was often the case in the negative conditions, for example poor health or lack of social connection. These themes were.

1. Creating new social connections/ relationships

This category referred to the development of new relationships and growth of family and included examples such as:

- Meeting new people, e.g. ‘meeting new people’
- Forming new relationships, e.g. ‘meeting a partner’

- New family members being born/ starting a family, e.g. ‘whether I’ll be able to have children’
- New family connections being made, e.g. ‘getting married.’

## 2. Maintaining/ attending to existing social connections/ relationships

This referred to spending time with friends and family, aspects of those relationships and the people involved, social events and occasions and included:

- Doing things with friends/ family, e.g. ‘going on holiday with my friends’
- Spending time with friends/ family, e.g. ‘spending time with my parents’
- Social events or occasions, e.g. ‘a wedding’ ‘christmas’
- Difficulties within relationships, e.g. ‘I’ve got quite a difficult family, we don’t always talk to eachother’
- The welfare of friends/ family, e.g. ‘my husband’s health deteriorating’, ‘children having problems at work.’

## 3. Activity/ occupation

This referred to how the participant spent their time both on a daily basis and larger upcoming events. Responses in this category included things such as:

- Travel/ holidays, e.g. ‘to travel more’, ‘going on holiday’
- Day to day activities, e.g. ‘going for a meal’, ‘reading’, ‘walking’
- Ability to engage in an activity, e.g. ‘not being able to do the things I like.’

#### 4. Work/ employment/ education/ qualification/ learning new skills

This referred to the employment or other relevant occupation the participant spoke of, in addition to any courses or exams they were due to take. Responses included in this category were:

- Work/ employment, e.g. ‘work’
- Career aspirations, e.g. ‘I want to use my PhD and not work at a job because I have to’
- Taking a test/ exam, e.g. ‘passing my driving test’
- Unemployment, e.g. ‘I’ll be out of a job at the end of March if I don’t do something’
- Completing qualifications, e.g. ‘starting a new course and not getting the right results.’

#### 5. Health and welfare

This category encompassed a broad view of both mental and physical health and well-being, both practically and in terms of how participants felt about themselves. Items in this category related to:

- Physical health, e.g. ‘my eyesight deteriorating’
- Mental health/ well-being, e.g. ‘depression’, ‘stress’, ‘relaxation’, ‘dementia’
- Nutrition, e.g. ‘food’
- Sleep, e.g. ‘having a lie in’
- Death, e.g. ‘dying’
- Independence, e.g. ‘living independently’

- Ageing, e.g. ‘growing old gracefully’
- Loneliness, e.g. ‘feeling lonely’, ‘being alone.’
- Feeling settled, e.g. ‘being able to get settled’, ‘the idea of feeling more settled’
- Feeling good about oneself/ self-acceptance, E.g. ‘feeling more confident and growing as a person’, ‘being content.’

#### 6. Aspects of eudaimonic well-being

Eudaimonic well-being developed as a complement to notions of hedonic well-being. It encompasses aspects of well-being not necessarily captured by the former such as personal growth, meaning in life and the degree to which a person is fully functioning. In the current analyses, responses which were deemed to fall under this category included:

- Achievement, e.g. ‘achieving my goals’
- Purpose, e.g. ‘having a sense of purpose’, ‘fulfilling my role as a grandmother’
- Recognition, e.g. ‘feeling recognised’, ‘being remembered’
- Feelings of responsibility, e.g. ‘growing up and being a bit more adult’, ‘looking after myself’
- Clarity in life, e.g. ‘a sense of being more clear about what’s important to me in general. Being clear on motivations and aims and being happy with these choices’, ‘having different priorities.’

## 7. Practical/ political issues

This referred to issues relating to housing and finance, other practical daily tasks such as legal issues and social and environmental issues, such as travel and weather. This included:

- Housing and home repairs, e.g. 'moving house', 'where I live', 'buying a home', 'bathroom and conservatory not getting renovated
- Finances, e.g. 'making sure I've got enough to see myself out', 'having sufficient in the kitty in order to pay the required sum requested'
- Weather, e.g. 'summer coming to an end', 'climate change'
- Travel, e.g. 'travelling to Manchester', 'my car breaking down', 'the tube'
- Politics, e.g. 'current things in the country, terrorism and politics'
- Legal tasks, e.g. 'getting my will written', 'going as much in the way of legal work before Christmas.'

## 8. New/ different experiences/ change/ new things

This referred to any new experience or change that was expected to take place in the participants' life and included responses such as:

- Having a new experience, e.g. 'a new challenge', 'something new', 'its something that really teaches you, its great to learn about other cultures, different ways of the world, it opens your mind'
- Seeing new things, e.g. 'seeing new places', 'seeing new things'
- Change, e.g. 'the change. I love change. I've got a sadistic quality in me where I like to push myself out of my comfort zone, moving somewhere I don't know anyone', 'it'll be a fresh start'

- The unexpected, e.g. ‘never knowing what’s around the corner, there could be terrible things’, ‘the unexpected.’

Following the development of these, the data were then coded, applying the superordinate categories. Following this coding, inter-rater reliability was calculated to determine the level of agreement between initial response and subsequent follow up response using the first three follow ups for each person ( $n = 1009$ ). These follow up responses were the answers given to the questions ‘what is it about [response] which you are/ are not looking forward to’ which were used mainly as a validity check for understanding of the first responses given, which were very brief. A second coder was then trained by the researcher in order to determine inter-rater reliability for the initial responses only (excluding the follow up data). This involved providing the second coder with the categories which had been developed, demonstrating how they were applied, coding some of the data together and then checking some of the second coder’s response. Once agreement had been determined about how to utilise the codes, the second coder then coded 20% ( $n=307$ ) of the initial responses independently. A third coder was then also trained by the researcher in the same way as outlined above in order to code 20% ( $n = 192$ ) of the first three responses given by each participant in each condition with the extra follow up data.

The resulting Cohen’s Kappa value for comparison of the first response and follow up was 0.80 which was considered excellent (Robson, 2002). Inter-rater reliability was then calculated for the coding of the first response between the first coder and second coder with a resultant Cohen’s Kappa value of 0.81 which was also considered excellent. Cohen’s Kappa for responses which included the follow up data

between the first and third coder was 0.94 indicating that the level of agreement was again excellent.

Independent samples t-tests were then used to determine the frequency of each category in both the older and younger adult samples. As the data were not normally distributed, analyses were conducted using the bootstrapping bias-corrected accelerated (BCa) method with 1000 bootstraps and a 95% confidence interval. Bootstrapping is a robust method for controlling for violations of assumptions for parametric data by using the sample data to estimate properties of the sampling distribution (Efron & Tibshirani, 1994). Initially, overall responses were considered (positive and negative valence in all time conditions). Where significant results were found, positive and negative conditions were then considered separately, which were then broken down by time period where a further significant result was found.



Table 12. Means and standard deviations of the number of thoughts generated in each theme by older and younger adults

	<b>Theme</b>	<b>Theme</b>	<b>Theme</b>	<b>Theme</b>	<b>Theme</b>	<b>Theme</b>	<b>Theme</b>	<b>Theme</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>OA M</b>	0.41	6.13	7.56	0.66	6.58	0.28	4.34	0.63
<b>(SD)</b>	(0.76)	(3.41)	(4.72)	(1.36)	(3.46)	(0.85)	(3.59)	(0.25)
<b>YA M</b>	2.24	7.08	4.16	5.52	2.88	0.36	4.60	1.92
<b>(SD)</b>	(1.42)	(4.03)	(3.33)	(2.61)	(2.50)	(0.64)	(3.15)	(3.28)

Theme 1: Creating new social connections/ relationships

Theme 2: Maintaining/ attending to existing social connections/ relationships

Theme 3: Activity/ occupation

Theme 4: Work/ employment/ education/ qualification/ learning new skills

Theme 5: Health and welfare.

Theme 6: Aspects of eudaimonic well-being

Theme 7: Practical/ political issues

Theme 8: New/ different experiences/ change/ new things

For Theme 1 (Creating new social connections/ relationships), younger adults scored significantly higher than older adults ( $t(35) = 5.8, p < 0.001$ ), BCa CI [-2.50, 1.20] indicating that younger adults were more concerned than older adults with creating new social connections/ relationships. Further independent samples t-tests

revealed that this was true for both positive future thoughts ( $t(40) = 4.27, p < 0.001$ ), BCa CI [-1.43, -5.01] (older adults mean = 0.39, SD = 0.75; younger adults mean = 1.35, SD = 0.98) and negative future thoughts ( $t(25) = 4.52, p < 0.001$ ), BCa CI [-1.24, -0.50] (older adults mean = 0.03, SD = 0.17; younger adults mean = 0.88, SD = 0.93). Further analysis demonstrated that younger adults generated significantly more positive future thoughts about this category about next five to ten years specifically ( $t(34) = 4.27, p < 0.001$ ), BCa CI [-1.16, -0.43] (older adults mean = 0.23, SD = 0.42; younger adults mean = 1.04, SD = 0.82) and more negative future thoughts about it again in relation to the next five to ten years ( $t(24) = 4.93, p < 0.001$ ), BCa CI [-0.96, -0.41] (older adults mean = 0.00, SD = 0.00; younger adults mean = 0.65, SD = 0.69).

For Theme 3 (Activity/occupation), older adults scored significantly higher than younger adults ( $t(55) = 2.70, p = 0.009$ ), BCa CI [0.69, 4.55] demonstrating that older adults thought more about activity and occupation than younger adults. Further independent samples t-tests showed that when separating out positive and negative future thoughts this remained this case for positive future thoughts ( $t(51) = 3.22, p = 0.002$ ), BCa CI [1.28, 5.26] (older adults mean = 6.29, SD = 4.48; younger adults mean = 3.38, SD = 2.71) but was not the case for negative future thoughts ( $t(55) = 0.58, p = 0.57$ ), BCa CI [-0.41, 0.76] (older adults mean = 0.85, SD = 1.03; younger adults mean = 0.68, SD = 1.07) suggesting that older adults were looking forward to engaging in occupation/ activity more than younger adults, but that they were similarly concerned about a lack of it. Further analysis revealed that this was the case for positive future thinking about the next week ( $t(59) = 4.46, p < 0.001$ ), BCa CI [1.38, 3.46] (older adults mean = 3.58, SD = 2.08; younger adults mean = 1.15, SD = 1.51) but not the next five to ten years ( $t(62) = 1.30, p < 0.199$ ), BCa CI [-0.12, 0.90]

(older adults mean = 1.00, SD = 1.32; younger adults mean = 0.62, SD = 0.80) or the next year ( $t(62) = 0.26, p = 0.797$ ), BCa CI [-0.63, 0.78] (older adults mean = 1.72, SD = 1.39; younger adults mean = 1.62, SD = 1.50).

For Theme 4 (Work/ employment/ education/ qualification/ learning new skills) younger adults scored significantly higher than older adults on this category ( $t(34) = 8.41, p < 0.001$ ) BCa CI [-5.96, -3.80] suggesting that younger adults think more about work/ employment/ education/ qualification/ learning new skills, and this was the same for both positive ( $t(39) = 4.75, p < 0.001$ ), BCa CI [-2.69, -1.15] (older adults mean = 0.53, SD = 1.08; younger adults mean = 3.45, SD = 1.70) and negative ( $t(25) = 8.14, p < 0.001$ ), BCa CI [-3.72, -2.26] (older adults mean = 0.09, SD = 2.92; younger adults mean = 3.04, SD = 1.79) future thinking. More in depth analysis demonstrated that this remained significant for positive thinking about the next week ( $t(28) = 3.34, p = 0.002$ ), BCa CI [-1.18, -0.29] (older adults mean = 0.13, SD = 0.34; younger adults mean = 0.81, SD = 1.02), the next year ( $t(43) = 2.91, p = 0.004$ ), BCa CI [-0.98, -0.19] (older adults mean = 0.23, SD = 0.58; younger adults mean = 0.88, SD = 0.86) and the next five to ten years ( $t(35) = 2.77, p = 0.009$ ), BCa CI [-1.10, -0.18] (older adults mean = 0.15, SD = 0.48; younger adults mean = 0.77, SD = 0.99). There were also significant differences for negative future thinking about the next week ( $t(27) = 6.09, p < 0.001$ ), BCa CI [-1.74, -0.87] (older adults mean = 0.09, SD = 0.29; younger adults mean = 1.40, SD = 1.04), the next year ( $t(24) = 5.88, p < 0.001$ ), BCa CI [-1.58, -0.77] (older adults mean = 0.00, SD = 0.00; younger adults mean = 1.15, SD = 0.97) and the next five to ten years ( $t(24) = 4.10, p < 0.001$ ), BCa CI [-0.71, -0.27] (older adults mean = 0.00, SD = 0.00;

younger adults mean = 0.46, SD = 0.58), showing that younger adults consistently generated more thoughts about this than older adults.

On Theme 5 (Health and welfare) older adults scored significantly higher than younger adults in this category ( $t(55) = 4.42, p < 0.001$ ), BCa CI [1.95, 5.23] with older adults generating significantly more future thoughts about health and welfare than younger adults. Further analysis using independent samples t-tests revealed that this was the case when generating negative future thoughts ( $t(47) = 4.84, p < 0.001$ ), BCa CI [1.67, 3.82] (older adults mean = 4.09, SD = 2.72; younger adults mean = 1.44, SD = 1.33) however was not the case when generating positive future thoughts ( $t(55) = 1.84, p = 0.072$ ), BCa CI [-0.10, 1.79] (older adults mean = 2.18, SD = 1.59; younger adults mean = 1.38, SD = 1.68) suggesting older adults were more concerned about a lack of good health but were equally worried about maintaining good health. Further analysis showed that this was significant for the next week ( $t(45) = 2.87, p = 0.006$ ), BCa CI [0.30, 1.45] (older adults mean = 1.45, SD = 1.54; younger adults mean = 0.60, SD = 0.65), the next year ( $t(51) = 3.53, p = 0.001$ ), BCa CI [0.33, 1.25] (older adults mean = 1.12, SD = 1.08; younger adults mean = 0.35, SD = 0.56) and the next five to ten years ( $t(52) = 3.89, p = 0.001$ ), BCa CI [0.48, 1.58] (older adults mean = 1.49, SD = 1.30; younger adults mean = 0.50, SD = 0.76) demonstrating that older adults generated more negative future thoughts about health and welfare consistently.

For Theme 8 (New/ different experiences/ change/ new things) younger adults scored significantly higher than older adults on this category ( $t(24) = 2.83, p = 0.009$ ), BCa CI [-3.36, -0.66] suggesting younger adults thought more about new/ different experiences/ change/ new things than older adults.

However further independent samples t-tests demonstrated that this was not the case for positive future thoughts, ( $t(25) = 1.74, p < 0.094$ ), BCa CI [-1.52, -0.07] and in fact only very nearly reached significance for negative future thoughts ( $t(24) = 2.06, p = 0.051$ ), BCa CI [-2.47, -0.14].

There were no significant differences between the two groups on Themes 2 ( $t(55) = 0.97, p = 0.337$ ) BCa CI [-2.92, 0.89], 6 ( $t(55) = -0.39, p = 0.70$ ) BCa CI [-0.44, 0.35] or 7 ( $t(55) = 0.28, p = 0.78$ ) BCa CI [-1.90, -0.66] suggesting that there was no difference in the number of thoughts generated by older and younger adults about maintaining/ attending to existing social connections/ relationships, aspects of eudaimonic well-being or practical/ political issues.

***Exploratory Data Analysis Examining the Content of Thoughts for Significant Correlations in the Older Adult Population.***

When looking at correlations between future thinking and subjective well-being in older adults there were significant correlations for negative future thinking about the next year and five to ten years and depression and satisfaction with life. Therefore, it was decided to analyse the content of the themes generated by older adults who obtained high and low scores on these measures to determine whether there was a significant difference in the content of future thoughts between the more and less depressed older adults. A mean score for depression on the HADS and the SWL scale were used to divide the group into high and low depression/ satisfaction scorers.

Independent samples t-tests showed that there was no significant difference between high and low scorers for depression on themes generated for negative future

thinking about the next year. There were also no significant difference for themes generated about the next five to ten years, with the exception of Theme 5 (Health and welfare) ( $t(24) = 3.43, p = 0.002$ ) BCa CI [-1.53, -0.31] with those with higher depression scores generating more negative thoughts about this theme. A table of means and standard deviations can be found in Appendix 11.

## **Chapter 4. Discussion**

The study aimed to advance existing assumptions of SST and research into future-directed thinking whilst applying this to a relatively under-researched area; older adults. Specifically, the aim was to determine whether there is a difference in how older and younger adults think about the future, what time periods they think about and whether this is related to their subjective well-being. It also aimed to address gaps in the literature relating to qualitative aspects of future-directed thinking.

Based on means in existing literature focussing on future directed thinking in older and younger adults, it was hypothesised that older adults would generate fewer positive future thoughts than younger adults, but the groups would not differ on negative future thoughts. It was further hypothesised based on predictions made by SST that subjective well-being would correlate more strongly with future-thinking in younger adults than it would in older adults. Additional exploratory analysis also aimed to look at whether there was a difference between older and younger adults' thinking for different future time periods and whether there was a difference in the content of thoughts between older and younger adults.

### **Summary of Results**

Hypothesis 1 predicted that older adults would generate fewer positive future thoughts than younger adults, but that the groups would not differ on negative future thoughts. This hypothesis was partly met, as it was found that although older and younger adults did not differ in the number of positive future thoughts generated for the next one week and one year, younger adults generated significantly more positive future thoughts than older adults about the next five to ten years. However, younger adults generated significantly more negative future thoughts than older adults.

Hypothesis 2 predicted that subjective well-being would correlate more strongly with future thinking in younger adults than it would in older adults. This hypothesis was not supported as it was found that negative future thinking correlated with depression and satisfaction with life scores in older adults, but surprisingly no correlations were found for younger adults. However, it is possible that with a larger sample size, a positive correlation between positive future thinking and satisfaction with life in younger adults may have been observed. When looking at each time period individually, no relationships were found between positive and negative future thoughts generated in each of these and anxiety and depression scores in younger adults, however there was a significant positive correlation between satisfaction with life and positive future thoughts about the next one week. Older adults however showed significant correlations between depression and satisfaction with life and negative future thoughts about the next year and the next five to ten years, indicating that the way in which they think about their more distant future has a stronger relationship to their subjective well-being than it does for younger adults. However there were no differences in what types of things older adults were thinking about in these time periods, with the exception of those with higher depression scores thinking more about health and welfare over the next five to ten years.

Further exploratory data analysis investigated whether there was a difference in the content of thoughts between older and younger adults. This demonstrated that younger adults thought about creating new social connections/ relationships, which was the case for both positive and negative future thinking, specifically in the next five to ten years. They were also more concerned about work/ employment/ education/ qualification/ learning new skills with regards both positive and negative



future thinking in each time period. Conversely, older adults generated significantly more future thoughts about activity and occupation, but only with regards to positive future thinking about the next one week. They also thought more about health and welfare than younger adults however this was only the case for negative future thinking in each time period. There were no significant differences between the two groups on the number of thoughts generated about maintaining/ attending to existing social connections/ relationships, aspects of eudaimonic well-being or practical/ political issues.

### **Interpretation of Results**

The results will now be discussed in relation to the pertinent theory and literature which led to the research questions.

#### **The Relationship Between Future-directed Thinking and Subjective Well-being**

There were correlations between negative future thinking and depression and satisfaction with life in the older adult sample, with higher levels of depression and lower levels of satisfaction with life associated with increased negative future thoughts, but there were no correlations in the younger adult sample. However as already mentioned, the trend towards a correlation between positive future thinking and satisfaction with life observed in the younger adult sample may have been found to be significant in a larger sample. Theories around future thinking and subjective well-being hypothesise that individuals with depression should experience both a decrease in positive expectancies and an increase in negative expectancies as a function of its respective positive and negative affective components. This

expectation was not ultimately borne out by research, most of which demonstrated that individuals with depression demonstrated a decrease in positive future thinking but no increase in negative future thinking (e.g. MacLeod & Byrne, 1996; Kosnes et al., 2013). The pattern displayed by older adults is therefore different from what has been found in research in younger adult populations, suggesting that the relationship between well-being and future thinking may change as we age, with long term negative future thoughts becoming more important. The current results do fit with existing literature around positive and negative well-being acting as two separate dimensions of experience (MacLeod et al., 1996), potentially due to the hypothesised respected positive and negative affective components. These findings are also aligned with the CBT literature around models for depression, for example Beck's (1967) cognitive triad which suggests that expectations of the unavailability of negative events contribute to depression.

It has also been hypothesised that individuals with anxiety should exhibit an increase in negative future expectancies, which has been substantiated by research which demonstrates that this is the case (e.g. MacLeod & Byrne, 1996; MacLeod et al., 1997, 1997). Interestingly, in this study no correlations were found with anxiety in either the older or younger adult samples. This may be due the fact the current study utilised a healthy and relatively high functioning population of older adults, and therefore the relationship between future thinking and well-being may operate somewhat differently in comparison to a clinical population, which the majority of previous research is based upon. One difficulty in comparing the results of the current study with previous studies is that as aforementioned, the operationalisation and measurement of subjective well-being differs slightly between them.

One area of interest to further develop this question was what time periods specifically older and younger adults thought about and how this related to their well-being, which was an under researched issue. In the current study, older adults' depression and satisfaction with life scores were found to correlate with negative future thoughts about the next year and five to ten years, therefore the more distant future. Younger adults' satisfaction with life scores correlated with positive future thoughts about the next one week. This therefore fits somewhat with previous literature relating to the relationship between future thinking and subjective well-being, namely that a future focus may impact negatively upon an older person's subjective well-being, in keeping with the framework of SST (Carstensen et al., 1999). However the younger adults' results are juxtaposed to this as, in theory, they would be more inclined to focus on the future. Previous literature focussing on future thinking for different time periods has also found that anxious individuals generate more positive future thoughts about the next five to ten years than depressed individuals (MacLeod et al., 1997), although interestingly in the current study although correlations were found between depression and future thoughts there were no correlations with anxiety. Again, this may be due to the use of a non-clinical population.

It is interesting that only certain aspects of the measures chosen to capture subjective well-being in the current study correlated with future thinking. This may be something to do with depression, anxiety and satisfaction with life operating as very separate dimensions of experience, or alternatively that they don't adequately capture subjective well-being as a construct. If this were the case, it would make

interpretations of the results found somewhat tentative. However, they were found to be highly correlated.

### **Future-Directed Thinking in Older and Younger Adults**

Older adults' thinking across the three time periods decreased linearly, with more future thoughts about the next one week, followed by the next one year and then five to ten years, suggesting that they may be more near future/ present focussed. There is a wealth of research which demonstrates that future thinking in older adults is reduced (e.g. Prenda & Lachman, 2001; Kotter-Gruhn & Smith, 2011) and that there is an increased focus on the present (e.g. Strumpf, 1982, as cited in Strumpf, 1987). The findings of the current study therefore could align with existing literature on future thinking in older adults which suggests that ageing does indeed pose a challenge to future thinking, potentially due to a diminished sense of future time.

When separating this into positive and negative future thinking, older adults generated significantly fewer negative future thoughts than younger adults. This was not what was predicted based on previous literature and suggests that the relationship between future thinking and ageing may be more complex than originally thought. It is of note that the younger adults in the sample reported lower levels of wellbeing on the ONS questions than older adults and therefore it is possible that this may be a reflection of higher levels of negative expectancies associated with anxiety as demonstrated in previous research into younger adults, however there were no correlations between negative future thoughts and subjective wellbeing for younger adults in the correlational analysis. Alternatively this could potentially be a result of older adults not accessing these future thoughts as well as younger adults do, as somewhat predicted by theories such as SST. Younger adults also generated

significantly more positive future thoughts about the next five to ten years than older adults and there was a trend towards older adults generating more thoughts about the next one week and less thoughts about the next year in comparison to younger adults.

When taking into account the number of future thoughts generated in previous similar studies (e.g. MacLeod et al, 1997) both the younger and older adult samples in the current study generated comparatively fewer future thoughts in general. Comparisons of the number of future thoughts generated in previous studies by younger (MacLeod et al, 1997) and older adults (Conaghan & Davidson, 2002) illustrated that older adults generate fewer positive future thoughts than younger adults but are relatively comparable with regards the generation of negative future thoughts. Additionally, this previous research has shown that participants typically generate more positive future thoughts than negative future thoughts. The current study confirmed the latter finding as both groups generated more positive future thoughts than negative future thoughts. Additionally, younger adults did indeed generate more positive future thoughts than older adults but only about the more distant future. However, importantly the groups differed on the number of negative future thoughts generated. These findings therefore go some way to consolidate the way in which older adults think about the future, particularly in comparison to younger adults, and provide the first direct comparison of future-directed thinking in these groups.

Broadly the literature pertaining to the affective and cognitive elements of depression and anxiety have focussed on affective systems of positive and negative affect (Clark & Watson, 1991) and their operation as different dimensions of experience. Theoretically it is supposed that depression is comprised of both positive

and negative affective components and therefore should demonstrate both decreased positive expectancies and increased negative expectancies. Anxiety on the other hand consists of a negative affective component and in terms of future thinking should therefore result in increased negative expectancies only. However, this was not borne out by the current research as although depression was associated with negative future thinking in the older adult sample, there were no correlations with positive future thinking. Surprisingly, there were no relationships between depression, anxiety and positive or negative future thinking in the younger adult sample. However, this finding may be due to the fact that healthy, high functioning samples of people who were not thought to be experiencing clinical levels of depression or anxiety were utilised and therefore it was unlikely to detect this type of effect. It is however interesting to note that these relationships did not appear in the current non-clinical population. Ultimately, these findings require replication in order to better clarify these relationships.

### **In Relation to Socioemotional Selectivity Theory**

The current study did not assess thinking about the present or ‘here and now’, but rather three future time periods which spanned the near and more distant future; one week, one year, five to ten years. Older adults displayed a linear decrease in future thoughts generated for each time period, with more thoughts about the next week, or near future, and the least thoughts about the next five to ten years, or distant future. This fits with SST which suggests that older adults are more present or near future focussed because of a greater awareness that time will run out. This leads to a change in priorities as our sense of future becomes foreshortened and we therefore begin to invest time in more present focussed goals, which confers subsequent

advantages for emotion regulation. Therefore, the results of this study can be readily understood within this framework.

Younger adults generated more positive future thoughts about the next five to ten years than older adults did, which suggests that they may be more future focussed than older adults and is in keeping with previous research (e.g. Lang & Carstensen, 2002; Fung & Carstensen, 2006). If the results are to be viewed within the structure of SST, one could expect this pattern of future thinking to result in high levels of well-being for older adults especially. In the current study, there were no correlations between future thinking and well-being generally within the younger adult sample, which perhaps is in keeping with their stable trajectory of future thoughts across the three time periods. However, positive future thoughts about the next week were associated with significantly higher levels of satisfaction with life in younger adults, which is the converse of what one would expect. In older adults, negative future thinking was associated with higher levels of depression and lower levels of satisfaction with life generally. More specifically, this resulted from negative future thoughts about the next one year and five to ten years. This finding fits well within the SST framework and could potentially be understood as thoughts about the future resulting in lower levels of subjective well-being due to the perception that time is limited and coming to an end and therefore thinking about this period confers no advantage.

It is also interesting to view the content of the themes generated in the current study within the context of SST. For example, the fact that younger adults were more concerned about creating new social connections/ relationships and new experiences than older adults fits with the theory that younger adults invest more time in these

activities and novel social partners as they will benefit them in the future. Indeed, thoughts about this category were observed in thinking about the next year and five to ten years, further confirming that they were associated with the more distant future. Interestingly however, older adults did not generate significantly more thoughts about maintaining existing social connections than younger adults, as a preference for familiar social partners in this group would have been predicted by the theory. It is always possible that the themes generated did not adequately capture this information in the same way as previous research. It would however have been expected that a significant difference would have been achieved on this theme particularly.

It must be borne in mind when interpreting the results that the same pattern of future thinking and subsequent relationship to subjective well-being has been found in people with primed endings, such as illness (e.g. Fung & Carstensen, 2002) and therefore is not necessarily as a result of chronological age per se. In addition to this, SST focusses mainly on social aspects of an individual's life and looking at the results through the lens of an alternative theory of lifespan development may lend a different perspective on them. For example, the results could also be understood within the context of the theories of cognitive avoidance and emotion-regulation (Jumentier et al, 2017) which purport that reduced future thinking in older adults, particularly in negative future thinking conditions, arises from an attempt to avoid negative potentials in ones' future. Similarly, they could be understood as the effect of attentional biases, as outlined by Miloyan et al (2016).

### **The Content of Future Thoughts Generated**

Previous researchers have suggested that an examination of the qualitative aspects of future thinking is beneficial (e.g. Edmondson & MacLeod, 2014) and that



this has been a relatively neglected aspect of future thinking research. The majority of previous research has adopted an approach to analysing qualitative data imposing categories drawn from the literature and additionally, limited research has directly looked at the content of future thoughts specifically. The current study therefore addressed a gap in the literature and also looked at the types of thoughts generated by both older and younger adults for particular time periods.

Previous research has found differences between older and younger adults' thinking about different topics. For example, younger adults have more goals around the future and older adults less frequently report goals based around novel experiences of acquiring knowledge, with more focus on generativity and emotion, in line with predictions from SST (Penningroth & Scott, 2012). This is somewhat in keeping with the current study whereby younger adults scored higher than older adults on a category relating to new/ different experiences/ change/ new things.

Studies which have directly compared older and younger adults with regards the content of their future thoughts have shown that older adults' thinking was mostly based around death, retirement, vacation, world problems and entering a nursing home. Younger adults on the other hand mostly generated thoughts around work/ jobs, marriage, schooling, world problems, sex-love life and parenthood (Cameron et al., 1977). Indeed, these were all topics which were generated in the present study, but due to the integration of themes into broader categories were not counted in a comparable way. The current study did however also find that younger adults thought more about employment and education. They also thought more about creating new social connections/ relationships, which included romantic relationships and

parenthood under that umbrella. Therefore, the results of the current study are broadly similar to these findings.

Further research linking goals and well-being in the context of ageing (Lapierre et al., 1993; 1997) found correlations between the content of goals and well-being in older adults, and this specifically applied to goals around ‘altruistic contact’ (helping others) and ‘wishes for others.’ The majority of goals generated related to the self (keeping healthy, autonomy and improving certain characteristics), aspirations of contact and helping people and maintaining existing relationships. Again, these were all topics which were encompassed into the broad themes of the existing research. Although a very limited number of studies have compared the future thoughts generated by older and younger adult groups (e.g. Cameron et al., 1997), none have looked at what thoughts each group have generated in regards to specific periods of future time (such as one week, one year, five to ten years) and additionally, none appear to have examined the content of negative and positive future thoughts specifically, both areas which have been suggested as potentially valuable avenues for future research (Atance & O’Neil, 2001; Penningroth & Scott, 2012). Interestingly, in the current study there were no differences between older adults scoring high vs low on depression and satisfaction with life on thoughts about next year and five to ten years, despite significant correlations being observed here. This was with the exception of higher depression scorers generating significantly more negative future thoughts about health and welfare in the next five to ten years. This finding potentially reflects a valid concern about a realistic possibility around declining health in advancing age for the more distant future. The lack of other significant findings

suggests that it may not be the content of older adults' thoughts per se which contributes to higher depression scores or lower satisfaction with life scores.

It is interesting to note that the categories of thoughts generated the most tends to fit with life changes as we age. For example, the younger adults were more concerned with creating new social connections/ relationships and work and education, which might be expected at this life stage (Erikson, 1950), whereas one may reasonably assume that an older adult is more likely to be settled in terms of a romantic relationship and less concerned with work as they may be retired. Similarly, older adults were more concerned about their health and remaining active, which is potentially due to the difficulties in these areas found with increasing age and something that younger adults perhaps are less likely to experience.

### **Discussion of Results and Implications**

It is important to understand the relationships between positive and negative future thinking and subjective well-being as it helps to clarify the areas on which researchers should focus. The results of the current study suggest that interventions could be developed aimed at improving and/ or maintaining subjective well-being which tap into the mechanism of future thinking. For example, the lack of a relationship between positive future thinking and subjective well-being in older adults in the current study suggests that researchers may want to investigate factors beyond positive future thinking when trying to elucidate the variables which underlie an increase in depression and anxiety in old age. In addition, it was observed that younger adults generated significantly more positive future thoughts about the next five to ten years. This suggests that accessing positive expectancies for this time period may potentially be difficult for older adults and could be a useful area to target

for specific intervention. For instance, working with older adults on interventions which help access positive expectancies for this time. For example, goal setting interventions based in the most distant future, and the planning involved in the realisation of these, may be of help for older adults. In addition, helping older adults to focus on the present may help to increase their subjective wellbeing as if thinking about the more distant future leads to negative subjective wellbeing, a potential avenue for research is to shift their thinking to the present as this was found to lead to better subjective wellbeing, in keeping with SST. Alternatively, if working from a cognitive framework, assisting older adults to reduce avoidance of thoughts about the future in order to help augment their ability to create future representations. Enhancing positive aspects of experience may also help to contribute further to a sense of subjective well-being. This could help clinicians to adopt a role which entails working from a model emphasising and valuing positive aspects of experience and not only focussing on ameliorating the negative aspects, a previously neglected approach (MacLeod, 2012), which appears to be gaining momentum, (e.g. Padesky and Mooney's (2012) strengths based CBT) which aligns more with the family of well-being interventions. Having said that, although further research is required, the current findings suggest however that it is possible that cognitions may be separate entities for depression and anxiety and if positive and negative cognitions regarding the future act as two separate dimensions of experience, it may be worth attending to both separately. For example, looking at decreasing negative expectancies whilst simultaneously increasing positive expectancies, as it cannot be assumed that a change in one would ultimately lead to a change in the other if they are discrete variables. An alternative approach may be to help individuals whose negative future thinking is leading to higher levels of depression, as found in the older adults sample

in the current study, to learn about and practice interventions such as those based on mindfulness in the hope that recognising thoughts as thoughts may help to reduce the impact these thoughts have on subjective well-being. However again, it is not possible to necessarily infer causality from the current results and further research would help to establish whether this is in fact the case.

It is also worth considering the implication of a diminished sense of future time in older adults on their engagement with therapeutic intervention generally, considering the trend for older adults to generate more future thoughts about the next week and the finding that they were at least as capable as younger adults at generating positive future thoughts about the near future but not as capable as the more distant future, which could be worth capitalising upon. It is possible that older adults may see less of a value in a therapy which has its basis in goals for the long term, but may instead prefer to concentrate on what they can achieve in the present/ near future. CBT for example often has a strong focus on the here and now and therefore may be a more acceptable intervention for older adults which may also confer further advantages due to the fact it is very goal focussed and it would be possible therefore to potentially use the things people are looking forward to in order to set meaningful and realistic goals, anticipate obstacles and monitor progress. Differences between older and younger adults in their ability to generate thoughts about what is to come in the future may also have wider implications, e.g. in relation to the general prospective memory abilities of older adults.

Due to an observed lack of preference for emotionally close social partners in older adults which is the converse of what was predicted by SST, there appears on the basis of the current findings that there may be little value in considering this when

discerning ways to improve subjective well-being in older adults. Again however, further research would be needed to consolidate this finding as it is juxtaposed to previous findings. The finding that younger adults do indeed express more interest in forming new relationships and social connections could possibly be of benefit for younger adult age groups. Older adults were found to generate most positive future thoughts about activity and occupation and therefore drawing on this theme may help to boost positive future thinking in older adults with lower subjective well-being or increase it in those who already have high levels. Additionally, it was found that older adults generated most negative future thoughts about health and welfare and this was significant for those obtaining high depression scores over the next five to ten years. This result therefore may be one of the most significant findings regarding the content of future thoughts in the current study. As this is clearly a large concern affecting the subjective well-being of older adults, it may be of benefit to ensure this is indeed considered in formulations of depression with older people, as outlined in Laidlaw's life span formulation (Chellingsworth et al., 2016). The concerns of the older adult group predominately around activity and occupation and health and welfare may be considered to align with age related normative social expectations. In the current study, younger adults tended to prioritise more future focussed themes (e.g. work, education and forming new social connections). It is also interesting to note that the majority of these thoughts were generated in the next five to ten years, the time period in which younger adults generated significantly more positive future thoughts than adults. Within the framework of SST, this could be due to motivational shifts which lead to a reprioritisation of selective goals which maximise emotional benefits. This could help to explain why older and younger adults may react to similar tasks in very different ways. For example, if asking individuals to set a number of short term and

long term goals at the outset of a therapeutic intervention, an older and younger adult may respond according to the emotional benefits that their choice confers as relative to their age. Similar to goal intervention programs (Lapierre et al., 2001), having an understanding of the types of things people look forward to can help services facilitate their expression and achievement of these things, in an effort to achieve positive subjective well-being, in a realistic way. This also highlights the role of agency in how an individual may choose to spend their time and focus their energy on. Understanding the processes underlying this could aid clinicians in helping individuals to focus on anticipated events and goals which may potentially maximise their subjective well-being.

With regards ‘successful ageing’, it appears that older adults in the current study are ageing well. They had equal levels of well-being to their age matched general population counterparts and were clearly keen to ensure they remain as active, independent and healthy as possible as time goes by. Targeting the key areas highlighted here (e.g. attending to health related concerns in the distant future, focussing on the present) could help to ensure this is achieved.

### **Strengths**

One of the strengths of the study was the sample size recruited. It was large enough to reach power for the main analyses, but not so large as to pick up trivial effects. A large sample also helps to reduce variance from errors of sampling and measurement and more accurately measure variance associated with the effects of interest. In addition to this, the two groups were well matched on demographic variables, which meant that any differences found could more likely be attributed to the variable of interest, age, rather than undue influence being exerted by potentially

confounding variables within the sample such as ethnicity of level of education attainment.

Furthermore, the study yielded idiographic data about the content of participants' future thoughts. The content of future thoughts were considered an under-researched issue in the field of future thinking and well-being research (Edmondson & MacLeod, 2014) and previous research which has looked more generally into themes of content generated by older adults have tended to impose pre-conceived themes drawn from literature onto the data generated by participants (e.g. Penningroth & Scott, 2012). The format adopted in the current study consisting of an inductive approach to develop a coding scheme based on content analysis allowed for a data driven method for analysing the data which arose. However, it is of note that the researcher may have been influenced somewhat by knowledge of research and theory underpinning future thinking, although this may have been beneficial with regards the overarching themes which were developing fitting with existing literature around this area.

In addition to this, the statistics employed were sufficient to adequately answer the research questions and therefore yield clinically significant data. There were a number of questions remaining in the literature regarding the way in which one thinks about the future, how this changes as we age, and what effect this has on our well-being. The results here go some way to addressing those gaps within the current body of literature and provide avenues for further potentially useful research.



## **Limitations**

### **Sample and Recruitment**

There were limitations in the sample included and the way in which participants were recruited. Firstly, the sample was slightly underpowered for the correlations in the younger adult sample. Additionally, recruitment for older adults consisted of a purposive sampling method of approaching/ targeting people in activity centres run for older adults. It's quite possible that the sample therefore represented a group of people who were functioning particularly well, and subsequently may have been more able to complete the task than older adults from different populations. Furthermore, daily life participation and satisfaction with participation have been found to be predictive of well-being in late adulthood (Warr, Butcher & Robertson, 2004), so this therefore could have acted as a confound. However, this may have conferred advantages for matching them to the younger adult sample on important variables such as a health and level of daily activity. Naturally there may also have been differences in those who chose to participate as opposed to those who declined. The group therefore may not be representative of older adults at large which in turn may have led to unique differences in the way in which this group thought about their future and the themes generated in their discourse. For example, it largely excludes older adults living in accommodation such as nursing homes or who find it difficult to access the community, who may think about the future in different ways. However, t-tests comparing the means of older adults in the current sample to their age counterparts in the general population on the ONS (2016) well-being questions demonstrated that there were no significant differences, therefore they were representative on a subjective well-being level. Similarly, for younger adults the

sample recruited was a convenience sample through the same organisations that the older adult group were recruited through and also the researcher's own networks. Unlike the older adult sample, it was found that in comparison to their age counterparts in the general population, younger adults in the current study felt less satisfied with life, less happy and more anxious, based on the four ONS (2016) well-being questions. In addition to this, the sample was somewhat homogenous as regards ethnicity, with the vast majority of participants being White British. Also, the range of ethnicities with the younger adult sample is very narrow. This may have reflected the area in which the sample were recruited. These factors again led to a biased sample and reduced generalisability of the findings. Therefore, external validity is somewhat reduced. Additionally, the sample in the current study are a non-clinical sample and therefore the findings cannot be applied to clinical populations, however they still aid a general understanding of the processes around future thinking and well-being.

Older adults are also a largely heterogeneous population and this is the longest time of life which spans a number of decades. Subsequently, intra-group differences have been found in previous research (e.g. Ferring & Fillipp, 1995). As the current study analysed the data of all those aged 60+ as one 'older adult' category, it is possible that there are subtle differences between the generations that were not detected. It is also possible that certain age ranges within the group as a whole account for the majority of the variance observed. It is worth also considering the impact of age more generally on engagement with the task and interpretation of results. The average life expectancy of a 65 year old in the UK is 18.5 years for men and 20.9 years for women, which drops to 5.8 years and 6.8 years for men and women respectively, aged 85 (Office for National Statistics, 2016b). The most common age

of death is 85 for men and 89 for women (Office for National Statistics, 2016b). As the Future Thinking Task asks participants to generate future thoughts about the next five to ten years, this may have been particularly difficult for someone with such a limited, or potentially non-existent future ahead of them, which is most pertinent for the older participants in the current study, the ages of which ranged to 89 years. Indeed, Barber et al (2016) comment in their study of the positivity of older and younger adults' recall that reflecting on the possibility of having only months to live could induce a negative mood state which in turn, may affect participants' positivity. This could also have led to reduced future thoughts about this time period and therefore possibly contributes to the result found that younger adults generated significantly more positive future thoughts about the next five to ten years.

### **Materials**

The verbal fluency task was utilised as part of the study. One potential issue with this is that verbal fluency can be particularly vulnerable to decline with age. Although verbal abilities are often one of the most age resistant skills, a verbal fluency test involves other skills vulnerable to decline, such as processing speed. Some research has suggested that phonemic fluency does not decline with age (e.g., Steiner, Mansur, Brucki., & Nitrini, 2008) although a number of studies have found that older adults score lower than younger adults on these tests (Zimmerman, de Mattos Pimenta Parente, Joannette & Fonseca, 2014), and that performance declines with advancing age (Bajaj, Deepa, Bhatm D'Souza & Sheth, 2014; St-Hilaire et al, 2016) with verbal knowledge unable to compensate for age related cognitive decline (Bryan, Luszcz & Crawford, 1997). Although in the current study the measure was mainly used to prime participants for the rest of the future thinking task and the data

was not used for the main analyses, it was used to match participants. An independent samples t-test demonstrated that there was no differences in FAS scores between the groups, however based on the research outlined above, there may indeed have therefore been undetected differences between the groups based solely on cognition. Therefore, this may not represent an accurate match between participants on cognition based on this test. In addition to this, it is possible that the measures used to capture subjective well-being (HADS and SWL Scale) may have had some level of shared variance which therefore leads to difficulty in interpreting the results in a 'pure' sense and internal reliability for depression was somewhat low.

### **Procedure**

The method of writing down verbatim what participants said meant that a limited amount of data could be captured. Indeed, during the second pilot it was noted that participants spoke at length and the instructions were therefore modified to ask for 'one or two brief sentences.' Employing the use of a dictaphone could have allowed for capture of more in depth, richer information from participants. However, this could have resulted in a large burden when analysing the data.

### **Analysis**

A lot of existing research states that relationships between future thinking and well-being can be mediated by factors such as loneliness and function (e.g. Lapierre et al., 1993) but this was not controlled for in this study and therefore could have acted as a confounding variable. There are also a number of other confounds relevant to the older adult sample which were not considered, such as health status. For example, 1 in 14 adults over the age of 65 is estimated to have a dementia (Dementia UK, 2015).

Therefore, it is quite feasible that older adults participating in this study may have had dementia, which could have subsequent impacts on their ability to generate future thoughts, particularly within a given time limit. For example, individuals with Alzheimer's disease have been found to generate fewer responses in fluency tasks than healthy adults (St-Hilaire et al, 2016). In addition to this, systemic diseases which commonly occur with aging such as diabetes and hypertension, along with degenerative and cerebrovascular brain diseases, can result in reduced cognitive abilities (Lezak et al, 2012). The health status of older adults, particularly given that physical health tends to decline with increasing age, could also have had an impact on their subjective wellbeing. For example, perceived health has been found to be positively related to subjective wellbeing in older adults, with medication negatively related (Humbolt, Leal & Pimenta, 2015).

Furthermore, other factors such as cohort effects may have had an impact on the responses which older adults gave, in comparison to younger adults. The differences that each generation have encountered can impact upon their attitudes and values (Laidlaw, Kishita & Chellingsworth, 2016). For example, a proportion of those who make up older adults within our society today lived through events such as world war II, or are from the baby boomer generation and have witnessed large degrees of social change. The impact of generational beliefs developed in different cohorts (both within the older adult sample and between the older and younger adult samples) may have had a bearing on the types of future thoughts they generated, and also therefore the themes which emerged.

Additionally, it is worth considering the influence of life scripts. Life scripts refer to culturally shared expectations around the timing and order of life events over

the lifespan, with the majority of socially significant, positive events (e.g., marriage, children) occurring in young adulthood (Tekcan, Kaya-Kiziloz & Odaman, 2012). Research has shown that as a result of this, there is a major effect of age on life scripts generated (Tekcan et al, 2012), with the life scripts of older adults containing more negative events in comparison to younger adults (Bohn, 2010). Therefore, it could be assumed that due to the fact that the majority of positive, significant events have already occurred, older adults may be more likely to generate different themes in their future thinking, as found in the current study. Additionally, it is possible that the future thoughts generated may have more bearing on negative events, however in the current study older adults did not generate more negative future thoughts overall. Thus, it is possible that the results were due to factors with are commonly associated with ageing, rather than an intrinsic part of ageing in itself.

In addition, there was a risk of achieving a type I error with multiple testing, which may have been ameliorated with the use of a post-hoc procedures such as Bonferroni corrections for t-tests. Additionally, modifying the alpha level for the correlational analysis may have helped to control for this. Therefore, it is possible that the study has detected false positive results, and therefore does not reflect the true nature of the associations found. However this was balanced against the probability of achieving a type II error. The use of correlational and cross-sectional data also means causality cannot be inferred from the results and means that findings could also potentially be influenced by cohort effects, as aforementioned.

### **Future Research**

The current study was carried out on what was assumed to be a relatively healthy, high functioning population. Further research looking at how the relationship

between future thinking and well-being differs in a population of older and younger individuals with poor mental health may prove illuminating to better understand the mechanisms underlying how the way in which one thinks about the future can affect well-being as we age. In addition, the sample in the current study was also somewhat limited in terms of cultural diversity and therefore a more representative population may yield more externally valid results. Exploration of future thinking and the types of future thoughts individuals have in different ethnic groups may show how this differs between (or within) cultures. For example, it may be interesting to study this in cultures where old age is considered to confer great advantage over young adulthood, such as cultures which promote the use of village elders.

Additionally, some of the findings in the younger adult sample demonstrated a trend but did not reach significance. It is possible that with a larger sample significant differences may have been observed. Therefore, it may prove beneficial to repeat the study with a larger sample size to determine whether this is in fact the case.

As outlined in the literature and discussed above, there are differences within the older cohort in how they think about the future (e.g. Kotter-Gruhn & Smith, 2011) and levels of well-being more generally, for example that negative affect is experienced more frequently in the 'old old' (age 75-92 years) than the 'young old' (age 65-75 years) (Ferring & Fillipp, 1995). As the current study did not separate age groups within the older adult sample, it may be an interesting avenue for future research to look at generational differences. For example, does the way in which a 65 year old think about the future and the relationship of this to their well-being differ from that of an 85 year old? Similarly, this study failed to address the 'middle age' of life. Questioning this age group may result in entirely different responses and

thoughts about the future altogether and would prove a useful way of bridging the ‘gap’ between the two samples utilised in the current study. Considering the question in a broader life span perspective may aid better understanding of how future directed thinking truly changes with age and how this relates to well-being. Similarly, this could be achieved by employing a longitudinal design to follow participants across the life span which would allow for causal inferences to be made. This could potentially lead to the development of interventions aimed not only at older adults, but also younger and middle aged adults who may be experiencing poor mental health, and to sustain positive subjective well-being across all ages and as one develops.

### **Summary and Conclusions**

How we think about our future is likely to impact upon the way we feel, much in the same way as how we think about our past does. It is reasonable to assume that as we age, the way in which we think about our future may change, as this future becomes foreshortened and we have less time left to live. The field of future-directed thinking and its links to subjective well-being has garnered interest, with the majority of the research focussed on how this operates in working age adults (e.g., MacLeod et al., 1997). Theoretical understandings of ageing (e.g., Sociemotional Selectivity Theory, Carstensen et al., 1999) and existing literature suggest that in order to enhance or maintain subjective well-being as we age, future-directed thinking is a useful avenue for research. The results of the present study indicate that the way in which older and younger adults think about their future and the relationship between this and their subjective well-being is indeed different, and therefore this may change as we age. It also contributes to the literature supporting the distinct nature of positive and negative future thinking.



In summary, there is clear scope for the consideration of positive and negative future thinking in psychological models of subjective well-being and ageing and subsequent interventions, particularly as one approaches older adulthood. This increased understanding will hopefully confer advantages to the future study of future-directed thinking. Additionally it may help aid the development of interventions aimed at maintaining positive subjective well-being as we age, promoting the subjective well-being of older adults who are functioning well and helping those at risk of experiencing low subjective well-being, and the subsequent economic and social benefits this would entail.

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## Appendix 1 Ethical Approval

Ethics Application System <ethics@rhul.ac.uk>

Tue 05/07/2016, 12:48

Corlett, Holly (2014);

Macleod, A;

ethics@rhul.ac.uk

PI: Andy MacLeod

Project title: Future-directed thinking and its relationship to subjective well-being in older and younger adults

REC ProjectID: 112

Your application has been approved by the Research Ethics Committee.

Please report any subsequent changes that affect the ethics of the project to the University Research Ethics Committee ethics@rhul.ac.uk

## Appendix 2 Verbal Fluency Task and Future Thinking Task

Participant ID:

### **Future-thinking Task**

#### **Administration**

Because the task elicits subjects' spontaneous thoughts it is important that it is given as early as possible in any session before such thoughts might have been prompted or primed by questionnaires or interviewing.

#### **Control task (FAS)**

The FTT is preceded by the standard verbal fluency task (FAS). This task assesses general levels of cognitive fluency and also gets subjects into the right mental set for doing the FTT (i.e., generating as many responses as they can think of within a set time).

Instructions for FAS:

*"First I'd like you to think of as many words as you can beginning with a certain letter of the alphabet. I will ask you to do this for 3 different letters. You will have a minute in each case to think of as many words as you can beginning with that letter. Please say the words aloud and I will write them down. The words can be anything that comes to mind except that they shouldn't be proper names, that is names of people or places, or numbers or sequences involving the same basic word, for example, run, runner, running, and so on. I want you to give me as many words as you can beginning with the letter F".*

(subjects are asked to do this for the letters F, A and S in that fixed order and given one minute to think of words for each of the letters). The Researcher writes down the words, or if the participant is going too fast to do this, just indicates on the scoring sheet that a valid response was given.

F	A	S

### Future-thinking Task (FTT)

#### Instructions for FTT:

The order of presentation of negative and positive conditions should be counterbalanced across subjects, although within each condition the time periods are always presented in the same order (week, year, five to ten years).

If subject says during the thinking time that they can't think of anything or, for example, that there is nothing that they are looking forward to over the next week, say "*that's OK, but just keep trying to think until I tell you to stop*".

*"Now I'd like to ask you to think about things that might happen to you in the future. I will give you 3 different time periods in the future, one at a time, and I'd like you to try to think of things that might happen to you in those time periods. Like before, I will give you a minute to try to think of as many things as you can. It doesn't matter whether the things are trivial or important, just say what comes to mind. But, they should be things that you think will definitely happen or are at least quite likely to happen. If you can't think of anything or if you can't think of many things, that's fine, but just keep trying until the time limit is up. You may have more to say about them, but we'll come back to them afterwards.*

*"First of all, I'd like you to think of things that you're worried about or not looking forward to, in other words, things that you would rather not be the case or rather not happen. So, I want you to give me as many things as you can that you're worried about or not looking forward to over the next week including today".*

(R gives one minute and writes down as close to verbatim as time allows what subject says)

**For each follow up query, remember to ask for one or two brief sentences**

What is it about

that you're not looking forward to?

*"Now I want you to give me as many things as you can that you're worried about or not looking forward to over the next year"*

(R does same as for previous)

What is it about

that you're not looking forward to?

*Finally, I want you to give me as many things as you can that you're worried about or not looking forward to over the next five to ten years"*

(R does same as for previous)

What is it about

that you're not looking forward to?

*Now I'm going to ask you to think of positive things in the future. So, I'd like you to try to think of things that you are looking forward to, in other words, things that you will enjoy. So, I want you to give me as many things as you can that you're looking forward to over the next week including today".*

(R does same as for previous)

What is about

that you're looking forward to?



*Now, I'd like you to do the same but this time I want you to give me things that you're looking forward to over the next year.*

(R does same as for one year)

What is it about

that you're looking forward to?

*Now, I'd like you to do the same but this time I want you to give me things that you're looking forward to over the next five to ten years.*

(R does same as for previous)

What is it about

that you're looking forward to?

## Appendix 3 The Hospital Anxiety and Depression Scale

### Hospital Anxiety and Depression Scale (HADS)

**Instructions:** This questionnaire is designed to help your doctor know how you feel. Read each item and circle the reply which comes closest to how you have been feeling in the past week. Don't take too long over your replies: your immediate reaction to each item will probably be more accurate than a long thought out response.

<b>I feel tense or 'wound up':</b>	<b>A</b>	<b>I feel as if I am slowed down:</b>	<b>D</b>
Most of the time	3	Nearly all of the time	3
A lot of the time	2	Very often	2
Time to time, occasionally	1	Sometimes	1
Not at all	0	Not at all	0

<b>I still enjoy the things I used to enjoy:</b>	<b>D</b>	<b>I get a sort of frightened feeling like 'butterflies in the stomach':</b>	<b>A</b>
Definitely as much	0	Not at all	0
Not quite so much	1	Occasionally	1
Only a little	2	Quite often	2
Not at all	3	Very often	3

<b>I get a sort of frightened feeling like something awful is about to happen:</b>	<b>A</b>	<b>I have lost interest in my appearance:</b>	<b>D</b>
Very definitely and quite badly	3	Definitely	3
Yes, but not too badly	2	I don't take as much care as I should	2
A little, but it doesn't worry me	1	I may not take quite as much care	1
Not at all	0	I take just as much care as ever	0

<b>I can laugh and see the funny side of things:</b>	<b>D</b>	<b>I feel restless as if I have to be on the move:</b>	<b>A</b>
As much as I always could	0	Very much indeed	3
Not quite so much now	1	Quite a lot	2
Definitely not so much now	2	Not very much	1
Not at all	3	Not at all	0

<b>Worrying thoughts go through my mind:</b>	<b>A</b>
A great deal of the time	3
A lot of the time	2
From time to time but not too often	1
Only occasionally	0

<b>I look forward with enjoyment to things:</b>	<b>D</b>
A much as I ever did	0
Rather less than I used to	1
Definitely less than I used to	3
Hardly at all	2

<b>I feel cheerful:</b>	<b>D</b>
Not at all	3
Not often	2
Sometimes	1
Most of the time	0

<b>I get sudden feelings of panic:</b>	<b>A</b>
Very often indeed	3
Quite often	2
Not very often	1
Not at all	0

<b>I can sit at ease and feel relaxed:</b>	<b>A</b>
Definitely	0
Usually	1
Not often	2
Not at all	3

<b>I can enjoy a good book or radio or TV programme:</b>	<b>D</b>
Often	0
Sometimes	1
Not often	2
Very seldom	3

#### Appendix 4 The Satisfaction with Life Scale

### SATISFACTION WITH LIFE SCALE

**Scale: Instructions:** Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

\_\_\_\_\_ 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.

#### Scoring:

## Appendix 5 Office of National Statistics Well-being Questions

Next I would like to ask you four questions about your feelings on aspects of your life. There are no right or wrong answers. For each of these questions I'd like you to give an answer on a scale of nought to 10, where nought is 'not at all' and 10 is 'completely'

**Overall, how satisfied are you with your life nowadays?**

where nought is 'not at all satisfied' and 10 is 'completely satisfied'

0 1 2 3 4 5 6 7 8 9 10

**Overall, to what extent do you feel that the things you do in your life are worthwhile?**

where nought is 'not at all worthwhile' and 10 is 'completely worthwhile'

0 1 2 3 4 5 6 7 8 9 10

**Overall, how happy did you feel yesterday?**

where nought is 'not at all happy' and 10 is 'completely happy'

0 1 2 3 4 5 6 7 8 9 10

**On a scale where nought is 'not at all anxious' and 10 is 'completely anxious', overall, how anxious did you feel yesterday?**

0 1 2 3 4 5 6 7 8 9 10

Thank you, that is the end of this section of questions.

### Appendix 6 Pilot Study 1 Feed Back

Measure/ Idea	Comments
Satisfaction with Life Questionnaire	<ul style="list-style-type: none"> <li>• Very clear</li> <li>• Fine</li> <li>• Read it out to people and take the scoring off</li> </ul>
Hospital Anxiety and Depression Scale	<ul style="list-style-type: none"> <li>• Needs bigger writing</li> <li>• Questions are very honest</li> <li>• Change ‘physician’ to ‘GP’ or take it out</li> <li>• Talk through it as well as give it to someone</li> </ul>
Well-being Questions	<ul style="list-style-type: none"> <li>• Read them out</li> <li>• Fine</li> <li>• Take out the bold bits (notes for researcher)</li> <li>• Talk through it and have brief notes</li> <li>• Its OK</li> </ul>
Administration Ideas	<ul style="list-style-type: none"> <li>• Prefer to do it in the centre</li> <li>• Happy to do it in the centre</li> <li>• Doesn’t matter where it’s done</li> <li>• Finding a quiet space in the centre to do it best</li> <li>• Ask each person what they would prefer</li> <li>• 30 minutes reasonable for this – might take longer if people want to chat. Other people don’t like to talk so much</li> </ul>

	<ul style="list-style-type: none"> <li>• Nobody would mind doing it – could perhaps bribe them with coffee and cake though</li> <li>• Not good at being grabbed to do things like this, so personally I would like to have an appointment time and would like the questions in advance</li> <li>• People would feel comfortable at home but that’s limiting for you</li> <li>• Good to have a room with coffee/tea/cake, ask a couple of people at a time</li> </ul>
Dissemination Ideas	<ul style="list-style-type: none"> <li>• I would prefer to hear it from you rather than read about it – gives people a chance to ask questions</li> </ul>

### Appendix 7 Pilot Study 2 Feed Back

Measure/ Idea	Comments
Future Thinking Task and Verbal Fluency Task	<ul style="list-style-type: none"> <li>• It was alright</li> <li>• People might blank</li> <li>• The numbers fly out of my head</li> </ul>
Questionnaires	<ul style="list-style-type: none"> <li>• It's hard to define what your feelings are on questionnaires</li> <li>• Sometimes the questions feel a bit confining. It would be good to write comments but don't know how else you could word it</li> </ul>
Administration Ideas	<ul style="list-style-type: none"> <li>• It's important that its done somewhere quiet</li> <li>• Happy to do it in the centre</li> <li>• You couldn't be interrupted, you need to concentrate as best you can</li> <li>• Some people would love to be visited at home</li> </ul>
General Comments	<ul style="list-style-type: none"> <li>• It's quite emotional but not that bad</li> <li>• I didn't mind doing it</li> </ul>



## Appendix 8 Information Sheet



Participant Information Sheet. Version 1. 11/2/2016

### Future-directed thinking and its relationship to subjective well-being in older and younger adults.

You are invited to participate in a study looking at how thinking about the future changes across the lifespan and how those changes might relate to people's sense of well-being. This study is being completed by Holly Corlett, Trainee Clinical Psychologist under the supervision of Professor Andy MacLeod, as part of the Doctorate in Clinical Psychology. The study has been reviewed by Royal Holloway University of London.

#### Background to the study

With people living longer it is important to understand age-related changes in factors that might link to well-being. How people think about their own future is known to be related to well-being, but we understand very little about how changes to future-thinking might take place in aging, and any effects that might have on well-being. Understanding age-related changes in future-thinking might contribute to helping people to age well and maintain levels of well-being. It may also help utilise what works for older adults to help younger adults to think about the future in a way that maximises their well-being. The proposed study will look at how older and younger adults think about the future and what effect that has on their well-being.

#### What would taking part involve?

You will be asked to think about things that you anticipate in the future, from the short term (things happening to you over the next week) through to the longer term (five to ten years). You will then be asked some questions about the responses you give. Finally, you will be asked to complete some short questionnaires about your mood. Participation is expected to last between 20 and 40 minutes.

#### What are the benefits of taking part?

Your participation in this study may help to contribute to our wider understanding of aging and subsequently develop interventions (treatments or initiatives) to foster aging well or maximise well-being in younger adults. The study is not designed to benefit participants directly, but it is possible that people might find it interesting and insightful.

What are the costs of taking part?

Participation in this study involves thinking about your future. The measures have been used many times before without any negative effects, but it is possible that, for some people, thinking about the future could cause upsetting thoughts and feelings. If so, you will be given information on services which can support you with this following the study.

What will happen if I don't want to carry on with the study?

You can stop participating at any point during the study. You can also withdraw your data at any point during or after participating in the study.

How will my information be kept confidential?

The forms on which the answers you provide are recorded be given a unique code so that they cannot be linked to yourself. These will then be kept in a secure location where they cannot be accessed by others. A document linking participants' names to their codes will be kept on an encrypted, password protected memory stick. The data from all participants will be grouped together and at no point during the write up of the study will participants be identified.

What will happen to the results of this study?

The results will be written up and submitted as a thesis project for the Doctorate of Clinical Psychology at Royal Holloway, University of London. They may also be written up and submitted to an academic journal for publication. Upon completion of the study, we will also prepare a summary to send to any participants who would like to receive it.

**If you have any further queries, please contact Holly Corlett, Trainee Clinical Psychologist on 01784 414 012. Please clearly state that your message is for Holly Corlett.**

## Appendix 9 Consent Form



Study Number:

Participant Identification Number:

### CONSENT FORM

Title of Study: Future-directed thinking and its relationship to subjective well-being in older and younger adults.

Name of Researcher: Holly Corlett

Please tick box

1. I confirm that I have read the information sheet dated..... (version.....) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.
3. I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers.
4. I agree to take part in the above study.

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

## Appendix 10 Debrief Sheet



### Debrief Sheet

Thank you for your participation in the study looking at future-directed thinking and its relationship to subjective well-being in older and younger adults. Your participation will hopefully contribute to a greater understanding of how people can age well psychologically.

Sometimes, taking part in research studies can raise difficult thoughts and feelings. If you have experienced this, the following organisations may be able to support you:

- 1) **Your GP.** If you are struggling with difficult thoughts or feelings, please contact your GP who is well placed to support you with this.
- 2) **The Samaritans.** A charity which provides telephone support for those who want to talk.  
Tel: 116 123  
Email: [jo@samaritans.org](mailto:jo@samaritans.org)  
Post: Freepost RSRB-KKBY-CYJK, PO Box 9090, STIRLING, FK8 2SA
- 3) **MIND.** A charity which provides support to those experiencing mental health difficulties.  
Tel: 0300 123 3393  
Text: 86463  
Email: [info@mind.org.uk](mailto:info@mind.org.uk)
- 4) If you are experiencing thoughts of harming yourself or taking your life and don't feel you are able to keep yourself safe, please dial **999** for an ambulance or visit your local **A&E department**.

Thankyou!

**Appendix 11 Means and standard deviations for t-tests comparing high and low depression scorers on themes**

	<b>Low depression scorers</b>	<b>High depression scorers</b>	<b>Low SWL scorers</b>	<b>High SWL scorers</b>
<b>Theme 1 one year M</b>	2.00	0.18	0.36	0.07
<b>(SD)</b>	(0.56)	(0.40)	(0.67)	(0.23)
<b>Theme 2 one year M</b>	0.73	1.18	0.64	1.13
<b>(SD)</b>	(0.96)	(1.25)	(1.12)	(1.06)
<b>Theme 3 one year M</b>	4.00	0.09	0.18	0.33
<b>(SD)</b>	(0.74)	(0.30)	(0.40)	(0.72)
<b>Theme 4 one year M</b>	1.20	1.09	1.36	1.00
<b>(SD)</b>	(0.94)	(1.04)	(0.81)	(1.07)
<b>Theme 5 one year M</b>	0.33	0.36	0.45	0.27
<b>(SD)</b>	(0.62)	(0.50)	(0.52)	(0.59)
<b>Theme 6 one year M</b>	0.00	0.18	0.09	0.07
<b>(SD)</b>	(0.00)	(0.40)	(0.30)	(0.26)
<b>Theme 7 one year M</b>	0.87	0.64	0.45	1.00
<b>(SD)</b>	(0.92)	(0.67)	(0.69)	(0.85)
<b>Theme 8 one year M</b>	0.53	1.55	1.45	0.60
<b>(SD)</b>	(2.07)	(3.20)	(3.24)	(2.06)
<b>Theme 1 five to ten years M</b>	0.73	0.55	0.82	0.53
<b>(SD)</b>	(0.70)	(0.69)	(0.75)	(0.64)

<b>Theme 2 five to ten</b>	0.80	1.27	0.91	1.01
<b>years M (SD)</b>	(0.77)	(0.90)	(1.04)	(0.70)
<b>Theme 3 five to ten</b>	0.00	0.09	0.00	0.07
<b>years M (SD)</b>	(0.00)	(0.30)	(0.00)	(0.23)
<b>Theme 4 five to ten</b>	0.60	0.27	0.55	0.40
<b>years M (SD)</b>	(0.63)	(0.47)	(0.52)	(0.63)
<b>Theme 5 five to ten</b>	0.13	1.00	0.82	0.27
<b>years M (SD)</b>	(0.35)	(0.89)	(0.87)	(0.59)
<b>Theme 6 five to ten</b>	0.20	0.09	0.18	0.13
<b>years M (SD)</b>	(0.56)	(0.30)	(0.60)	(0.35)
<b>Theme 7 five to ten</b>	1.00	0.55	0.64	0.93
<b>years M (SD)</b>	(1.00)	(0.93)	(0.92)	(1.03)
<b>Theme 8 five to ten</b>	0.00	0.45	0.45	0.00
<b>years M (SD)</b>	(0.00)	(1.51)	(1.51)	(0.00)

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