

**A replication and conceptual evaluation of commonly
used positive psychology interventions.**

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of Doctor of Philosophy (Clinical Psychology) in the Faculty of
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ABSTRACT

What makes people happy is an increasingly important question for clinical practice and public health. The major line of research and intervention in this area, positive psychology, focuses on furthering knowledge about the factors which improve individuals' levels of happiness and nurture the growth of character strengths. However, despite the growth in positive psychology research over the past decade, replication studies are lacking and the cross-cultural applicability of interventions has not been thoroughly investigated. Three studies are presented in this thesis, all of which relate to the landmark research conducted by Seligman, Steen, Park and Peterson (2005) on positive psychology exercises (PPEs). The purpose of Study 1 was to evaluate the efficacy of three PPEs and a control exercise in an Australian rather than American population. Consistent with the original study, an internet based randomised trial with four groups was used, in which each exercise was completed over a one-week period, with follow up measurements taken up to six months after completing the initial exercise. The findings of the original study were not fully replicated. Specifically, although all groups showed an increase in happiness levels and a decrease in depression levels over time, there was no differential effect between the PPEs and the control exercise. The aim of Study 2 was to examine whether the results from Study 1 might be attributable

to problems in measuring happiness. In Study 1 the Authentic Happiness Inventory (AHI) was used to capture changes in happiness levels as it was designed by Seligman et al. to be sensitive to upward changes in Seligman's (2002) three domains of happiness: *pleasure*, *engagement* and *meaning*. However, supporting literature regarding the psychometric properties of the AHI is lacking. In Study 2 discriminant content validity techniques were used to investigate how well the AHI represents the aforementioned psychological constructs. Study 2 showed that expert judges could not unambiguously allocate the AHI items to the intended constructs, indicating that the AHI demonstrates poor discriminant content validity. The purpose of Study 3 was to investigate the efficacy of the PPEs in an n-of-1 design using a more widely validated measure of subjective well-being, the Positive and Negative Affect Schedule (PANAS). The use of n-of-1 designs has been recommended when the emphasis is on examining within-person changes rather than between-group differences. Over the 9–10 week intervention period, no significant changes in happiness or depression were produced and apart from a small positive interaction between one of the PPEs and positive affect, there was no differential effect between PPEs and the control exercise. These largely non-significant findings raise doubts about the clinical appropriateness of these PPE interventions. Overall the results of this thesis demonstrated poor

support for Seligman et al.'s (2005) study findings, raising questions not only about the interventions and measures promoted by Seligman et al., but also about the underlying theoretical concepts. Although the usefulness of PPEs in clinical settings appears limited, it is possible that there is scope for their use in a public health context. However before a public health use is pursued further, investigation is required into what the 'active' elements of PPE interventions are and whether the effects of these elements might be attributed to more general psychological theories of behaviour change. On this basis, it is recommended that future research efforts focus on addressing the cross-cultural and public health relevance of positive psychology interventions.

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“To be happy is to love, to be happy, then, is to suffer, but suffering makes one unhappy, therefore, to be unhappy one must love, or love to suffer, or suffer from too much happiness — I hope you're getting this down.”

Woody Allen

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CHAPTER I: INTRODUCTION AND LITERATURE REVIEW

An introduction to positive psychology

Happiness or “what makes for the good life” has been the object of intellectual examination since at least the time of Aristotle (Seligman, 2004). Traditionally, psychology had a dual focus, addressing both the positive and negative human experience. However, over the past century there has been an orientation towards pathology and relieving distress (Seligman & Csikszentmihalyi, 2000). Although this has led to great advances in the understanding and treatment of psychological disorders, it has been at the expense of furthering knowledge regarding the factors which improve individuals’ lives and nurture the growth of positive qualities. Psychology may be a profession that is effective at “learning how to bring people up from negative eight to zero, but not as good at understanding how people rise from zero to positive eight” (Gable & Haidt, 2005, p. 103). Positive psychology aims to redirect study back to the equally important positive aspects of human experience. The “average person” is revisited with an interest in discovering “what works, what’s right, and what’s improving...it is an attempt to urge psychologists to adopt a more open and appreciative perspective regarding human potentials, motives, and capacities”

(Sheldon and King, 2001; p. 216).

Martin Seligman is often cited as contributing to this positive redirection (e.g. Wood and Tarrier, 2010; Duckworth, Steen & Seligman, 2005), as it was he who introduced positive psychology as a field of study during his inaugural speech as president of the American Psychological Association in 1998 and then followed this up with a seminal paper in *American Psychologist* (Seligman & Csikszentmihalyi, 2000). The success of positive psychology research has come on a number of fronts, including: numerous books, dedicated journals, conferences, international associations, research and intervention centres, and undergraduate and postgraduate programs at major universities (Friedman, 2009; Yen, 2010). A recent bibliographic analysis of the size, reach, impact, and breadth of positive psychology publications emphasises the growth of this field of study. Specifically, 18,401 documents on positive psychology related topics were identified, 86% of these published after the formal introduction of this field of study in 1998 (Rusk & Waters, 2013).

It is remarkable for a research domain in its relative infancy to make such speedy progress. What it is about positive psychology that has caught global attention? And is this attention deserved, meaning are the empirical findings substantial enough to support the claims of benefit made? Although there currently exists much excitement around

positive psychology and how it may influence the discipline of psychology as a whole, carefully designed studies, investigating whether positive psychology has a strong scientific and replicable foundation, are still relatively lacking. Before progressing further in this examination of the positive psychology research, it is important to define one of the key constructs of positive psychology: happiness.

Understanding happiness

Various terms have been used to refer to the experience of 'happiness', for example: subjective well-being, psychological well-being, positive affect and positive emotional experiences. However, when terms are applied inconsistently or interchangeably, this leads to uncertain conceptual distinctions and confused communications (Ketai, 1975). Therefore, there is a need to clarify the exact nature of the terms used to refer to happiness, their relationship with each other and their relationship with other psychological phenomena.

The hedonic vs. the eudemonic tradition

Definitions and understandings of happiness are closely related to the concepts of eudemonia and hedonism. Veenhoven (2003, p. 437) defines hedonism as "a way of life characterised by openness to pleasurable experiences". Hedonism is typically focused on short-term enjoyment and, according to Deci and Ryan (2008), theoretically should involve a combination of increased positive affect (frequently

experiencing positive emotion and positive overall mood) and decreased negative affect (rarely experiencing negative emotions and negative overall mood). However, subjective well-being has now become intertwined with the hedonistic approach to happiness (Deci & Ryan, 2008) and subjective well-being involves not just 'affect balance' but also cognitive evaluations of satisfaction with life (Sanjuan, 2011).

Veenhoven (2003) asserts that deriving happiness solely through hedonism may incur poor long-term consequences. Hedonism encourages over-consumption at the environmental and societal level, resulting in limited resources being depleted at an unsustainable rate. At the individual level, focus on short-term pleasure requires the individual to continually seek more intense pleasurable sensations, which may contribute to addiction problems, for example substance use. The argument that an exclusive focus on short-term pleasure leads to long-term unhappiness is termed the "paradox of hedonism" (Veenhoven, 2003, p. 2).

On the other hand, eudemonia focuses on broader life processes, specifically the complexity of striving for the 'good life' and the development of one's potential. Eudemonia requires the individual to exert effort by pursuing goal-directed and purposeful activities, the end-point being "to achieve the best that is within us" (Ryff & Singer, 2008, p. 17). Eudemonia is practically represented through psychological well-

being; however within the eudemonic tradition there are different conceptualisations of what this means. Ryff and Singer (2008) view psychological well-being as being comprised of six different dimensions: personal growth, autonomy (evaluation of personal standards), purpose in life, self-acceptance, positive relationships and environmental mastery (acting on and altering one's surroundings through mental and physical activities). Conversely, Waterman, Schwartz, and Conti (2008) view psychological well-being more narrowly, basing it on individuals' own assessments of whether the activities they engage in lead to "feeling alive, fulfilled and expressive of one's true self" (as cited in Deci & Ryan, 2008, p. 5).

Although there is considerable overlap between hedonism and eudemonia, Deci and Ryan (2008) argue that the causal relationship between subjective well-being and psychological well-being does not work both ways. Specifically, if one experiences psychological well-being this will in turn also lead to subjective wellbeing; however, experiencing subjective well-being will not necessarily lead to psychological well-being. An individual's report of experiencing positive affect and being satisfied with their life at that moment (i.e. subjective well-being) does not automatically mean that the individual has achieved their full potential (i.e. psychological well-being). With this in mind, activities can be grouped into three categories: a) those which contribute to both

hedonic and eudemonic enjoyment; b) those which contribute to short-term enjoyment and are purely hedonically motivated; and c) those which produce no hedonic or eudemonic enjoyment. From a eudemonistic philosophical perspective, it is impossible to have a category of activities which gives rise to eudemonic but not hedonic enjoyment (Waterman, Schwartz and Conti, 2008).

In summary, definitions of the term happiness are not consistent and vary between authors depending on the theoretical perspective they take; this also means that the drawing conclusions and comparisons across studies using different terminology is difficult. Leading researcher in the field, Ed Diener, states that most researchers interested in happiness measure it by looking at subjective well-being (Diener, Suh, Lucas, & Smith, 1999). Subjective well-being cannot be calculated simply by adding all the positive aspects of an individual's life and subtracting the negative aspects, but rather consideration of both affective and cognitive components is required. An individual's overall judgment of life satisfaction may be fairly stable but the affective aspect is susceptible to fluctuations on a more frequent basis and therefore, measuring it more regularly gives an indication of whether an individual can achieve an enduring balance in affect; measurement issues will be discussed in more detail later in this dissertation.

Affective phenomena and emotion regulation

If happiness is to be considered from both a cognitive and affective perspective, it is important to clarify what is meant by the term affect and how it relates to emotion and mood. Affect, emotion and mood are commonly referred to as “affective phenomena” (Ekkekakis, 2012, p. 321). Although there is extensive literature in psychology pertaining to affective phenomena, there is also considerable variation in the use of terminology. Ekkekakis (2012) suggests that affective phenomena can be conceptualised best within a hierarchical structure. At the lowest level is affect, more specifically termed ‘core affect’, which is “a neurological state that is consciously accessible as a simple, non-reflective feeling that is an integral blend of hedonic (pleasure vs. displeasure) and arousal (sleepy vs. activated) values” (Russell, 2003, p. 147). Although core affect is always present, its specific nature and intensity varies over time. The next level of the hierarchy is emotion, which involves both affective and cognitive components; it is always “elicited *by* something, a reaction *to* something, or *about* something” (Ekkekakis, 2012, p. 322). As opposed to the simple feelings of core affect, some examples of emotions are anger, fear, love and jealousy, which arise from cognitive appraisal of the meaning and possible implications of the stimulus. At the top of the hierarchy is mood, which refers to a prolonged emotional episode; the reaction has become

temporally remote from its cause. Emotion and mood differ in terms of their influence on actions: emotion gives rise to specific behavioural responses, whereas mood is likely to influence broad action through non-specific changes in cognition.

Affective phenomena, particularly emotion, have particular relevance to happiness when it comes to considering self-regulation. Emotion regulation refers to the process by which individuals influence the emotions they have, when they have them, and how they experience and express these emotions (Gross, 1998). Although 'happy' people can experience both positive and negative emotion, they experience less variability in their emotions and are more likely to stay in the positive 'zone' the majority of the time (Lyubomirsky, King, & Diener, 2005). Good emotional regulation allows one to find an appropriate balance between reason and emotion, allowing appropriate reaction to concerns when needed and avoiding adverse responses when not necessary.

Emotional regulation is central to the area of mental health and clinical psychology in general. If individuals do not have the ability to regulate their emotions, this can disrupt their ability to function socially and to enjoy their life generally. Emotional dysregulation is a core criteria for of many Axis I and Axis II disorders described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, APA, 2000), such as anxiety and mood disorders, substance use and

binge eating. However, outside the spectrum of disorders and within the normal range of functioning, emotional dysregulation is also associated with poorer outcomes in terms of social competence and individuals' satisfaction with life. Thus many therapeutic interventions (e.g. Dialectical Behaviour Therapy; Linehan, 1993) focus on assisting individuals to develop adaptive emotional regulation, not only to overcome distress but also improve their general feelings of well-being and thus happiness levels.

Measuring Happiness

Central to the study of happiness is determining whether an individual is 'happy' or 'unhappy'. As discussed earlier, the lack of consistency in the definition of happiness complicates attempts to measure happiness. There is research examining physiological measures of happiness; for example, facial electromyography (EMG; Cacioppo, Petty, Losch & Kim, 1986) and skin conductance responses (SCR; Morris, Cleary & Still, 2008). However, at present, researchers rely largely on self-report measures, which are sometimes supplemented with non-obtrusive observation of nonverbal expression and with interviews by trained clinicians. However, as happiness is a subjective concept, it is logical to base its measurement largely on subjective self-report measures. Over the past 50 years, several measures have been devised to measure happiness, subjective well-being and other related constructs (Sasson-

Gelman, 2008). A summary of well-known happiness and subjective well-being instruments is presented below:

- *Single-item instruments:* Gurin item (Gurin, Veroff & Feld, 1960), Delighted to Terrible Scale (Andrews and Withey, 1976).
- *Multiple-item measures of affective or emotional state:* Affect Balance Scale (ABS; Bradburn, 1969), Affectometer Instruments (Kammann and Flett, 1983), Happiness Measure (Fordyce, 1988), Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988).
- *Multiple-item measures of cognitive satisfaction:* Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985).
- *Multiple-item measures of overall subjective well-being:* Oxford Happiness Inventory (OHI; Argyle, Martin, & Crossland, 1989); Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999); The Authentic Happiness Inventory (AHI; Seligman et al., 2005).

As the PANAS and AHI are used as the outcome measures for happiness in the studies presented later in this dissertation, more detailed information about these instruments is presented below. Specific attention is paid to the psychometric properties of the instruments.

Positive and Negative Affect Scale (PANAS)

The PANAS is a brief measure of positive and negative affect, which can be administered over a variety of time frames (e.g. daily, weekly, monthly). In terms of psychometric properties, the PANAS shows: acceptably high internal consistency scores, with Cronbach's alpha ranging between 0.86 for PA and 0.87 for NA; good test-retest reliability with $r = 0.79$ for PA and $r = 0.81$ for NA; and appropriate convergent validity with other existing lengthier affect measures of $r = 0.76-0.92$. As such, the PANAS is a reliable, valid and efficient means of measuring the affective component of subjective well-being. However, it should also be noted that research has been conducted into the limitations of the PANAS. For example, Harmon-Jones, Harmon-Jones, Abramson & Petereson (2009) show that an angering situation can in fact increase PA and thus suggest that using the PANAS in isolation can be problematic.

Authentic Happiness Inventory (AHI)

A 2005 review of happiness measures found that the existing measures did not enable fine distinctions to be made in the upper range of levels of happiness (Seligman, Steen, Park & Peterson, 2005). In response to this limitation, the Steen Happiness Index (SHI) was developed (Seligman et al., 2005); this was later renamed the Authentic Happiness Inventory (AHI). The AHI is a 24-item multiple-choice measure. In order to answer an item, respondents must choose from a set of statements pertaining to happiness, the statement that describes them most

*accurately at the present time. Response choices range on a scale from negative (1) to extremely positive (5). The AHI was developed using a self-selected sample recruited from those who registered on an Authentic Happiness website*¹. Seventy two per cent of the sample of 6874 adults was female, 63% was college-educated and most participants lived in the United States (Peterson, Park, Steen & Seligman, 2006, as cited in Sasson-Gelman, 2008, pp. 89–90).

In terms of psychometric properties, the existing pilot work on the reliability and validity of the measure indicates a Cronbach's alpha internal consistency statistic of 0.93 and stability coefficients ranging from 0.77 (over an interval of up to one month) to 0.68 (average over intervals greater than one month; Peterson et al., 2006, as cited in Sasson-Gelman, 2008, pp.89-90). The AHI is reported to converge well with scores on other measures of happiness (Seligman et al., 2005); specifically, $r = 0.79$ with the SHS (Lyubomirsky & Lepper, 1999) and $r = 0.74$ with the Happiness Measure (Fordyce, 1988). It is also reported that changes in AHI scores over a one-week period were sensitive to the self-reported occurrence of positive and negative events (Seligman et al., 2005). However, any further literature regarding the psychometric properties of the AHI is scarce, and the specific article about the reliability and validity of the AHI (i.e. Peterson, Park, Steen & Seligman, 2006) is still an unpublished manuscript. Further information about the AHI will be provided and discussed later in this dissertation.

¹ *Authentic Happiness website:* <http://www.authentichappiness.org>

Perhaps happiness cannot be changed? Adaptation levels

There is some debate in the positive psychology literature about whether or not happiness levels can be changed. Later in this literature review, theories and interventions proposed to increase happiness levels will be discussed; however, before considering these, it is important to discuss the opposing theories which argue happiness to be relatively stable.

Brickman and Campbell (1971) coined the term 'hedonic treadmill' to describe their theory that an individual's level of happiness fluctuates very little throughout life, despite changes in wealth, achievement and life events. This theory proposes that it is not possible to make permanent gains in happiness levels and that individuals adapt to their situation, whether it be good or bad. Although external factors are continually changing, and happiness can be deflected up or down by external events, these deflections are temporary and happiness levels inevitably return to a 'set-point' or default level of happiness. Therefore, Brickman and Campbell (1971) argue that attempts to improve one's level of subjective happiness are futile, as they are determined by the interaction of genetics and random effects.

Diener, Lucas and Scollon (2006) dispute the above claims and argue the majority of studies indicate that humans seem to display a general tendency to experience positive emotions and less frequently

experience unpleasant emotions, making a 'neutral' set-point inaccurate. Rather, they suggest that one's set point is typically at slight to moderate satisfaction. Alternatively, they propose that each individual may have multiple happiness set-points, suggesting that happiness is composed of different well-being variables, such as pleasant emotions, unpleasant emotions, life satisfaction, work satisfaction and home satisfaction. Change in one of these well-being variables does not directly correspond with change in the other well-being variables. In some individuals, long-lasting change in happiness set point/s occurs following significant life events, such as marriage or death of a loved-one, whereas in others adaptation back to the pre-existing level occurs (Lucas, Clark, Georgellis, & Diener, 2003; Fujita & Diener, 2005).

Headey and Wearing's 'dynamic equilibrium model' (1989) addresses some of the concerns raised above by encompassing aspects of Costa and McCrae's personality theory (1980). The dynamic equilibrium model proposes that individuals have a 'normal' or equilibrium pattern of life events and happiness levels, which is dependent on the presence of stable personality traits. If there is deviation from normal events, there is temporary change in happiness levels; however stable personality traits return the individual to their equilibrium pattern. Headey and Wearing's longitudinal study (1989)

took measures of the three aforementioned concepts: happiness levels, life events and personality. Their results showed that stable personality traits (more extraverted and less neurotic traits) predispose people to experience more positive than negative life events, and thus, moderately stable levels of happiness. They also showed that when considering competing influences on happiness levels, the impact of life events is greater than that of personality. This supports the idea that one-dimensional theories of happiness, such as the 'hedonic treadmill', are insufficient, as there is no one single influence which determines happiness levels.

Theories and interventions to change happiness

In contrast to the adaptation theories discussed in the previous section, there exist several opposing theories which propose that lasting change in happiness levels can be achieved through implementation of targeted interventions. Positive psychology research has progressed from considering the factors associated with already ‘happy’ individuals, to an extensive investigation into how ‘unhappy’ or just ‘normal’ individuals achieve a greater degree of happiness. The consequences of achieving higher levels of happiness or well-being are significant, with cross-sectional, prospective and experimental studies demonstrating several positive outcomes, such as: better social integration, improved health and longer life expectancy (Wiest, et al., 2011; Diener, 2012). This section will provide an overview of the theories and cognitive and behavioural elements which have been proposed to change happiness levels.

Replicating the covariates of happiness

Fordyce (1983) was the first to conduct experiments of interventions to increase happiness. He proposed that by replicating the characteristics (e.g. actions, thinking patterns, daily life-styles) of ‘happy’ individuals, ‘average’ individuals might be able to increase their happiness levels. In order to be implemented as interventions, Fordyce noted that the characteristics to be emulated needed to be under one’s short-term

control. Whereas characteristics such as better health, high job satisfaction and high relationship satisfaction may be associated with high levels of happiness, such characteristics cannot be modified in the short-term. With this in mind, Fordyce (1983) identified 14 characteristics which are highly typical of happy individuals and can be emulated by average individuals (as shown in a 1977 pilot program). These characteristics included: keeping busy and being more active; spending more time socializing; being more productive at meaningful work; being better organized and planning things out; controlling worry; lowering expectations and aspirations; developing positive, optimistic thinking habits; becoming present-oriented; working on a healthy personality; developing an outgoing, social personality; being oneself; eliminating negative feelings and problems; making close relationships the primary source of happiness; and making happiness one's most important priority.

Based on the 14 characteristics noted above, Fordyce (1983) developed a happiness intervention program termed the "14 Fundamentals of Happiness". During the course of the program, participants were given a general overview of the psychology of happiness, detailed descriptions of each of the 14 characteristics, and cognitive and behavioural techniques to incorporate these characteristics into their life. Fordyce (1983) conducted six studies

which used this full program or aspects of it. His results showed that participants' happiness levels significantly increased, particularly if the program was run for a longer period of time (6 weeks rather than 2 weeks) and if participants continued with exercises of their own accord without specific instruction. Fordyce (1983) concluded that in addition to the beneficial education effect offered by the "14 Fundamentals of Happiness" program, using the exercises described in the program on a daily basis had a strong effect on participants' awareness of and sensitivity to their own happiness. He also noted that if participants continually reflected on their happiness, they were able to better understand its causes and use the techniques in an individualised manner more suited to their own happiness needs.

Broaden-and-build theory

The broaden-and-build theory (Fredrickson, 1998) proposes that when individuals experience positive emotions, they build resources which can be drawn upon to improve happiness levels for extended periods of time. More specifically, the broaden-and-build theory states that positive emotions have the ability to *broaden* individuals' awareness and encourage novel, varied, and exploratory thoughts and actions. This broadening in turn contributes to *building* their repertoire of skills and developing physical, intellectual, social and psychological resources. Conversely, negative emotions narrow an individual's awareness and

prompt the engagement of automatic, survival-driven behaviours. Typically, positive emotions do not occur in survival or imminently threatening situations, as they have no immediate value (Fredrickson, 2001). However, experiencing positive emotions more frequently has indirect and long-term adaptive benefits, as this will develop the individual's skills and resources to deal with challenging situations in the future. Although emotional states are relatively momentary and transient, the resources built each time (e.g. resilience) function as reserves. In other words, an individual's thought-action repertoire is widened, resulting in a greater range of possible thoughts and behaviours to select from in future times of stress.

Fredrickson (2008) conducted a longitudinal study to demonstrate the relationship of the broaden-and-build theory with happiness. In brief, participants were instructed to engage in 'loving-kindness meditation', whereby they were to intentionally cultivate warm and caring feelings on a daily basis. The results showed these individuals displayed an increase in positive emotions, which carried over to days on which the individuals did not actively engage in this exercise, suggesting enduring gains in positive emotions. The increases in positive emotions translated to gains in personal resources such as: mindfulness, environmental mastery, positive relations with others, and reduced symptoms of illness. These gains showed subsequent positive

impacts on happiness levels, as well as reductions in depressive symptoms.

The Sustainable Happiness Model

Lyubomirsky (2001) argues that the differences between 'happy' and 'unhappy' individuals are dependent upon their perception and interpretation of the world. She suggests that happy individuals use adaptive strategies to enhance and maintain their happiness levels, such as: their view of themselves and others, making social comparison with others, their decision-making process, and self-reflection.

Lyubomirsky, Sheldon and Schkade (2005) expanded these initial ideas further in their development of the Sustainable Happiness Model. This model proposes that the long-term and enduring levels of happiness are influenced by three factors: an individual's set point (50% of variance in happiness levels), life circumstances (10%), and the intentional activities in which the individual engages (40%).²

Intentional activity is characterised by individuals choosing to engage in committed and effortful acts, which can be behavioural, cognitive or motivational. As opposed to one's set point and life circumstances, intentional activity is more difficult for one to adapt to because it is continuously changing and there is a beginning and end point (i.e. it is episodic). Sheldon and Lyubomirsky (2006) conducted a

² These percentage weightings were developed by Lyubomirsky et al. (2005) on the basis of their review of the literature regarding set points and life circumstances.

study which demonstrates the differences in adaptation time with regard to changes in life circumstances and intentional activities. Their results indicated that positive changes in intentional activities (e.g. starting a new fitness program) predicted levels of happiness over a longer period of time more than positive changes in life circumstances (e.g. moving to a nicer apartment).

Based on these findings and the Sustainable Happiness Model, Lyubomirsky has conducted several studies examining the efficacy of happiness interventions in an experimental setting. The interventions included: committing acts of kindness (Boehm, Lyubomirsky, & Sheldon, 2008, as cited in Boehm & Lyubomirsky, 2009); expressing optimism and gratitude (Lyubomirsky et al., 2005, 2008), visualising best possible selves (Sheldon & Lyubomirsky, 2006) and processing happy life experiences (Lyubomirsky, Sousa & Dickerhoof, 2006). Overall, some positive effects for happiness interventions were achieved but this was also dependent on other factors, such as: frequency of the intervention, the specifics of how it was performed, and self-selection of a particular intervention.

Authentic happiness theory and character strengths

In *Authentic Happiness* (Seligman, 2002), an alternative theory relating to understanding and achieving happiness is introduced. The basis of this theory is a happiness formula:

$$H = S + C + V$$

where H is one's enduring level of happiness, S is one's set range (genetically determined level of happiness), C are the circumstances in one's life and V represents the factors under one's voluntary control. It is claimed that 50 per cent of happiness lies with S , that C plays only a minor role "no more than between 8 and 15 per cent" (Seligman, 2002, p. 61) and that the remainder of effect lies with V .³

Those aspects which are under voluntary control are the focus of Authentic Happiness Theory (AHT; Seligman, 2002), which suggests that there are three constructs involved in eliciting a high V score: positive emotion, positive engagement and positive meaning.

Positive emotion or pleasure: Briefly, this component focuses on the pleasant emotions and sensations derived from the relationships, interests and activities of normal, everyday life. It is about what people feel at an affective or sensory level; for example, "Eating ice-cream makes me feel happy". Historically, this component would have encompassed 'appetitive drives', such as hunger, thirst and taste, and it is associated with the concept of hedonism.

Positive engagement: The second component addresses the benefit derived from being fully immersed in, and focused on, carrying out a

³ No information is provided by Seligman (2002) about how and why these weightings were allocated to the theoretical constructs. There are considerable difficulties in using formulaic theories to explain the factors underlying happiness and well-being; this issue will be further discussed in Chapter 5.

particular activity. Being absorbed in a particular activity in a manner which is characterised by intense concentration is also known as ‘flow’ (Csikszentmihalyi, 1975). During this state, time passes quickly, the sense of self is lost and it is intrinsically rewarding as a peak or optimal experience is achieved. In order to achieve the intensely enjoyable and invigorating feelings associated with this experience, there needs to be a balance between the activity’s difficulty and the individual’s ability levels; in turn, this improves self-efficacy by enhancing the individual’s beliefs in his/her own abilities. Csikszentmihalyi (1975, 1990, 1997) argues that the positive emotions resulting from flow are an after-the-fact judgment by the individual rather than immediate experience at the time of the activity. Furthermore, there is not always a direct relationship between flow producing activities and the meaningfulness of activities. For example, playing a game of Scrabble may be more likely to result in greater feelings of flow than say engaging in volunteer work.

Positive meaning: The third component is related to positive emotions (sense of belonging, purpose and comfort) derived from contributing to a higher cause. The outcomes of this contribution are intended to go beyond individual benefit. This may include involvement in social groups, organisations, political movements, traditions, belief systems. For example, “I enjoy the fact that I have made a significant

contribution to the world”. This component is associated with the concept of eudemonia.

Related to AHT, it is also proposed that character strengths may play in achieving happiness (Peterson & Seligman, 2004). Roughly designed to be positive psychology’s diagnostic intellectual equivalent to the DSM-IV-TR (APA, 2000), the publication *Character Strengths and Virtues: A Handbook of Classification* presents a classification system which looks at personal characteristics in a systematic fashion (Peterson & Seligman, 2004). This handbook describes and classifies six ‘core virtues’, which are made up of twenty-four measurable character strengths known as ‘signature strengths’. Peterson and Seligman suggest that if the individual uses their identified signature strengths, they are likely to experience greater happiness. The six virtues and associated 24 strengths are shown in Table 1.1.

Table 1.1 *Character Strengths and Virtues (Peterson & Seligman, 2004)*

Virtue	Associated Strengths
Wisdom and Knowledge	Creativity, curiosity, open-mindedness, love of learning, perspective
Courage	Authenticity, bravery, persistence, zest
Humanity	Kindness, love, social intelligence
Justice	Fairness, leadership, teamwork
Temperance	Forgiveness, modesty, prudence, self-regulation
Transcendence	Appreciation of beauty and excellence, gratitude, hope, humour, religiousness

In 2005, Seligman et al. conducted a landmark study investigating the efficacy of a number of interventions to increase happiness levels, which they argue to be motivated by AHT (*pleasure, engagement and meaning*) but also employ aspects of the character strengths classification system. An internet-based methodology was used to investigate the efficacy of five positive psychology exercises (PPEs) over a six month period (Seligman et al., 2005). A summary of each intervention is presented below.

- *Gratitude Visit*: Participants were encouraged to build gratitude by writing and delivering, in person, a letter of appreciation to someone who has been very kind to them, but whom they have never really thanked.
- *Three Good Things in Life*: This exercise focused on participants gaining greater awareness about what they find positive in their own lives. Participants were required to write down three good things that happened each day, together with a causal explanation for the occurrence of each of these things.
- *You at Your Best*: In this exercise participants were asked to write about a time when they were “at their best” and then to reflect on the personal strengths displayed at this time. They were asked to review their story once every day for a week, as well as reflect on the identified personal strengths.

- *Identifying Signature Strengths*: After completing the Character Strengths Inventory (Peterson & Seligman, 2004) at the beginning of the program and receiving results outlining their top five 'signature strengths', participants were asked to use these strengths more frequently over the week.
- *Using Signature Strengths in A New Way*: This exercise was an expanded version of *Identifying Signature Strengths*. Instead of just using their top five strengths more frequently, participants were asked to use one of these strengths in a new way for each day of the week.
- *Placebo-Control Exercise, Early Memories*: As a control activity, participants were asked to write about their early memories every night for one week.

Participants' levels of happiness and depression were measured before starting their allocated intervention and then followed up at intervals for the next six months (directly following the intervention week, then one week, one month, three months and six months post the intervention). The results showed that the interventions of *Using Signature Strengths in A New Way* and *Three Good Things in Life* caused increases in happiness and reductions in depression for the next six months. The intervention *Gratitude Visit* showed the most significant positive impact in the short term, but not in the long term. The

remaining interventions and the control exercise showed some temporary positive changes but these dissipated over the course of the study. This 2005 study has been one of the seminal studies in positive psychology research and forms the basis of investigation for the current thesis; the specific research questions will be discussed in subsequent sections of this dissertation.

Well-being theory

The original 2002 AHT has now been revised to well-being theory, and now well-being is considered to be the focus of positive psychology rather than happiness (Seligman, 2011). The reason for this revision was that AHT is one-dimensional and subjective, whereas well-being theory includes both subjective and objective components (Seligman, 2011); this is similar to the definition of subjective well-being which involves both affective and cognitive components (Diener, 1999). Well-being theory is proposed to be a more thorough explanation of why individuals make certain life decisions, by addressing human ‘flourishing’ on the individual level as well as on a broader global level. To date, no published peer-reviewed articles exist in regards well-being theory, however there is already a new book titled *Flourish: A Visionary New Understanding of Happiness and Well-Being* (Seligman, 2011).

As opposed to AHT, which proposes three components to happiness, well-being theory proposes that the construct of well-being

has five measurable components. Three of these are the same as the original theory: *pleasure*, *engagement* and *meaning*; the two additional components are *relationships* and *accomplishments*. Each component of well-being needs to have three properties: contribution to well-being, pursuit for its own sake (not merely to get any of the other components), being defined and measured independently of the other elements (Seligman, 2011). It is proposed that the character strengths and virtues proposed in the *Character Strengths and Virtues: A Handbook of Classification* (Seligman & Peterson, 2004) underpin the five components of well-being theory. Specifically, when an individual's highest strengths are deployed this leads to greater positive engagement, positive emotion, positive meaning, more accomplishments and to better relationships.

The reception of positive psychology

So far, this dissertation has focused largely on the 'positive' aspects of positive psychology; however, this focus is not entirely reflective of the current state of the literature. Positive psychology has been the subject of a substantial amount of criticism. The attention positive psychology has received over the past decade and the growth of this area of psychology suggest that it is a maturing field of study. As noted earlier, a substantial number of articles and books have been published; dedicated journals, conferences and university courses have been

established; and significant research funding has been harnessed (Yen, 2010). However, several authors have argued that positive psychology needs to adopt greater self-reflection (e.g. Held, 2004; Azar, 2011). This section takes a more critical approach to positive psychology and its underlying principles, generalisability and direction.

Lack of acknowledgment of its historical foundations

As noted earlier, during his term as president of the American Psychological Association in 1998, Martin Seligman introduced 'positive psychology' as a new field of study. However, it has been suggested that contemporary positive psychology is closely linked to earlier perspectives such as New Thought ('mind cures'), Mental Hygiene, Humanism and Social Work (Becker & Marecek, 2008). Although positive psychology researchers acknowledge that the original goals of psychology were not just about identifying and repairing human weakness but also making life more fulfilling and identifying human strengths, they tend not to address the crossover between these concepts and the positive focus of earlier fields of study (e.g. Seligman & Csikzentmihalyi, 2000). A brief summary will be provided here regarding the similarities between positive psychology and humanistic psychology. More detailed reviews of the historical antecedents of positive psychology have been presented by Becker and Marecek (2008), Froh (2004) and Taylor (2001).

Humanistic psychology is concerned with the human experience as a whole and can be defined as “...primarily an orientation toward the whole of psychology rather than a distinct area or school... [it is] concerned with topics having little place in existing theories and systems, e.g. love, creativity, growth, self-actualisation, peak experiences, courage, and related topics” (Misiak & Sexton, 1966, p. 454, as cited in Froh, 2004, p. 19). Even this brief definition already shows overlap with the strengths and virtues identified by Peterson and Seligman (2004). Positive psychology researchers may choose to distance themselves from humanistic psychology because of a perception that humanistic psychology lacks scientific rigour (Seligman & Csikzentmihalyi, 2000). However, as detailed in reviews by both Shapiro (2001) and Taylor (2001), it seems not that one field is more or less scientific than the other, but rather that they employ different research traditions.

Social and cultural considerations

Becker and Marecek (2008) raise some important questions regarding the social biases of contemporary positive psychology. Does the flourishing of one group only occur at the expense of another? Is positive psychology only an ‘extra’ for privileged members of society? The positive psychology literature to date does not consider how structural arrangements in society influence the development of

personal strengths/virtues and happiness in general. Furthermore, there is no discussion about the role of power, privilege and social hierarchy in determining who can or cannot attain contemporary positive psychology's conception of the 'good life' (Seligman and Csikzentmihalyi, 2000), or consideration that a vision of the 'good life' for one segment of the population may not be so attractive to another.

From a cultural point of view, in a special edition of *Theory and Psychology*, various authors assert that positive psychology research and concepts are pervaded by Western cultural values and assumptions (e.g. Becker & Marecek, 2008; Christopher & Hickinbottom, 2008; Slife & Richardson, 2008). The character strengths promoted within positive psychology are stated to be "ubiquitous" (Seligman, 2002, p. 139), in that they are displayed across cultures. However, the analysis of ancient philosophical concepts and Eastern societal values, which took place to arrive at such character strengths (Peterson & Seligman, 2004), has been criticised for its decontextualized interpretations (Held, 2004; Yen, 2010). Held (2004) suggests that the ideologies of positive psychology and the vision of the 'good life' are uniquely American. These ideas are explored in greater depth throughout this dissertation, particularly the appropriateness of generalising positive psychology concepts pan-culturally and the role that the American vision of the 'good life' plays in potentially biasing these concepts.

Disadvantages of polarising emotions

The underlying assumption of many of the positive psychology theories (e.g. broaden-and-build theory, sustainable happiness model, authentic happiness theory) is that “positivity is good and good for you, and negativity is bad and bad for you” (Held, 2004, p. 12). The possibility that positive emotions are not invariably “good” requires greater consideration. For example, recent research by Gruber, Kogan, Quoidbach & Mauss (2013) suggests that too much variability in positive emotion can be maladaptive, in that it is associated with poor psychological health. Alternatively, Forgas (2007) demonstrates that negative affect can in fact play a more beneficial role than positive affect in information processing and the production of interpersonal influence strategies.

With this criticism in mind, there seems to be some disadvantage of polarising positive and negative emotions in this ‘black-and-white’ manner. Rather, as noted by Aspinwall and Staudinger (2003, p. 18): “It would be a major mistake to assume that all that is positive is good...Instead, efforts to understand when positive beliefs are linked to good outcomes, when they may not be, and why, will yield a more realistic and balanced view”. These authors caution that there are situations and contexts where attributes or processes that work as strengths in one setting may be liabilities in another, and vice versa.

This line of argument is further supported by research on positive ratios by Fredrickson (2013), who emphasises that whilst increasing levels of positive emotions are beneficial up to a certain level, extremely high levels of positive emotions carry costs that outweigh the benefits.

Rushing from theory to application

A final point of concern regarding contemporary positive psychology research is the rapidity of the move from theory to application; critics are not convinced that the existing research findings are strong enough at present to support this transition (e.g. Azar, 2011; Kashden & Steger, 2011; Tillier, 2012). Further controversy arises from the way positive psychology research has been embraced by the press and the public interpretations which have followed, perhaps contributing to the overblown conclusions about the power of the positive. Snyder and Lopez (2002) warn that the excitement associated with the movement means that it may be tempting for researchers to over-extrapolate, so as to convey a sense of progress that is being made. However, they warn that if researchers make claims that go beyond the data, this damages the credibility of the sound empirical research produced within this field of study. They also emphasise that there are clear guidelines that need to be followed in transitioning interventions from the research setting to therapeutic intervention programs (e.g. National Health and Medical Research Council, NHMRC, 1998). This point about the problems of advancing from theory to application too quickly will be considered in greater depth in the subsequent sections of this dissertation.

Research questions and overview of dissertation studies

The focus of this dissertation centres around the landmark study conducted by Seligman et al. (2005) into the efficacy of positive psychology exercises (PPEs). This 2005 study has not only led to an expansion of applied research in positive psychology, but the findings are used to demonstrate support for Authentic Happiness Theory (2002). Each of the major research questions, as well as an overview of the study focused on addressing the identified issues, is presented here.

Research question 1

- Can the substantial effects for PPEs produced by Seligman et al. (2005) be replicated in a different cultural context?

The purpose of Study 1 was to evaluate the efficacy of PPEs used by Seligman et al. (2005) in an Australian rather than American population. Although Australia and America could both be considered Western cultures and as a result there are many similarities, it is also important to investigate the intra-Western cultural differences, which may be more subtle as they relate to individuals' value systems. These unique differentiating characteristics will be discussed in more detail in subsequent chapters. Aside from the cultural background of the participant sample, the methodology used in the original 2005 study was followed as closely as possible. Specifically, a 4-group random-assignment design was used to test the effectiveness of three PPEs

and one control exercise. In light of inconsistent support existing for the original findings (e.g. Mongrain & Anselmo-Matthews, 2012; Parks-Sheiner, 2009), the aim of this replication study was firstly to evaluate whether PPEs increased happiness and decreased depression levels to a greater extent than did a control exercise. Secondly, by testing the efficacy of interventions in a different cultural demographic, the aim was to offer information about the appropriateness of applying PPEs cross-culturally.

Research question 2

- Does the happiness measure developed and used by Seligman et al. (2005) appropriately operationalise Authentic Happiness Theory (AHT) constructs?

The purpose of Study 2 was to further explore the psychometric properties of the Authentic Happiness Inventory (AHI, Seligman et al., 2005), by evaluating it in terms of its operationalisation of the AHT constructs of *pleasure*, *engagement* and *meaning*. Discriminant content validity techniques were used to assess whether AHI items could be unambiguously allocated to one of these constructs. As PPEs are claimed to be theory-based interventions (Seligman et al., 2005), the aim of this study was to determine whether the AHI is an appropriate measure to evaluate the efficacy of PPEs.

Research question 3

- Do the effects of PPEs shown by Seligman et al. (2005) at the group level extend to the individual level?

The purpose of Study 3 was to determine whether the efficacy Seligman et al. demonstrated for PPEs raising mean levels of happiness between treatment groups, translates into changes within individuals. An n-of-1, counterbalanced design was used to evaluate the efficacy of PPEs in changing individual participants' subjective well-being; the aim being to enable more direct comment about the appropriateness of applying PPEs in the clinical setting. To enhance the understanding about the most effective use of PPEs, this study also attempted to address whether PPEs are more efficacious if applied in combination or in a particular sequence.

CHAPTER II: STUDY 1

Seligman et al.'s (2005) study has been critical in furthering positive psychology research, particularly in terms of developing interventions and measures. However, several authors have expressed concerns (e.g. Azar, 2011; Ehrenreich, 2009; Lambert & Erekson, 2008) that some of these applications are emerging quicker than replication studies are able to verify the efficacy of the original intervention results.

Justification of any psychological interventions as being reflective of “knowledge” rather than just the “specific circumstances” under which the results were originally produced (Schmidt, 2009, p. 1), relies upon the efficacy of the interventions being robust. The current study sought to replicate the 2005 research in an Australian population.

Although Seligman, Rashid, and Parks (2006) produced similar positive results to Seligman et al. in two small face-to-face studies in the U.S., in the two published full-scale replication studies (Mongrain & Anselmo-Matthews, 2012; Parks-Sheiner, 2009), the original results were only partially reproduced and the effect sizes on the happiness and depression measures were far smaller than those produced in the 2005 research. Specifically, Mongrain and Anselmo-Matthews replicated Seligman et al.'s results in regard to a time by condition interaction effect for happiness, but this interaction effect was not produced for depression. Parks-Sheiner on the other hand was unable to produce a positive effect for either happiness or depression beyond

that of the control condition. This inconsistency in findings makes a stronger argument for further replication studies to verify the efficacy of the original claims. Assessing the efficacy of interventions in a different cultural setting may also offer initial information about the appropriateness of applying such interventions cross-culturally.

Positive Psychology Exercises (PPEs)

Positive psychology research currently places an emphasis on interventions that aim to make people lastingly happier as well as to alleviate suffering. Such interventions have been termed positive psychology exercises (PPEs). In their 2005 study, Seligman et al. tested the efficacy of five PPEs in increasing happiness and decreasing depression. The interventions were delivered via the Internet over a 6-month period. As noted in Chapter 1, the most effective exercises over the duration of the study were *Three Good Things in Life* and *Using Signature Strengths in A New Way*; additionally, the *Gratitude Visit* exercise caused large positive changes for one month.

The PPEs used in the 2005 study are stated to be based on Authentic Happiness Theory (AHT; Seligman, 2002), which proposes that individual happiness can be increased by fostering *pleasure*, *meaning*, and *engagement* (Seligman et al., 2005). However, Mongrain and Anselmo-Matthews (2012) found in their replication of Selgiman et al.'s 2005 study, that there was no difference in efficacy of PPEs as compared to a 'positive placebo', which focuses on the participant reflecting on positive information about themselves. This finding suggests that that simply the expectancy of positive change, administered

through a control exercise, is enough to improve functioning and well-being; that is, perhaps no “powerful specific ingredients” (Seligman, p. 420) exist in PPEs.

Cross-cultural issues

For PPEs to be pan-culturally relevant, their efficacy must extend beyond the American culture in which they were founded. Although advocates of positive psychology argue that this field of study is culturally encompassing (e.g. Peterson & Seligman, 2004), its critics contend that the efforts thus far to translate ancient philosophical concepts and Eastern societal values are decontextualized (Held, 2004; Yen, 2010). Christopher & Hickinbottom (2008) suggest that positive psychology theories generalise particularities of the American culture to other societies and cultures, without consideration of social context or the experiences of diverse social groups. Therefore, it is important to consider the ‘Americentric’ (Tillier, 2012) theoretical underpinnings of positive psychology when applying PPEs cross-culturally, and consider the role this plays in the efficacy of interventions.

In the current study, intra-Western cultural differences in the application of PPEs were considered. The sample used in the original 2005 study was derived largely from the US-American population, whereas this study used an Australian sample. Australia and America could both be considered Western cultures and as a result there are many similarities, such as a core language, high standards of living,

and a population mostly of Anglo-European ethnicity. However, Soutphommasane (2011) states that there also exist unique differentiating characteristics between Australia and America. For example, in 1997, Hofstede conducted a significant cross-cultural study looking at various value dimensions. His results showed that although America and Australia are both highly individualistic cultures, Australia may be somewhat more egalitarian and broadminded, and America more religiously oriented and focused on social recognition. These findings are supported by Feather (1973), Snider (2003) and Coombs-Richardson and Tolson (2005).

Research questions

The aim of this study was to determine whether the substantial effects for PPEs achieved in Seligman et al.'s research (2005) could be reproduced in a different cultural background. The motivation for the study was two-fold; firstly, to validate the efficacy of PPEs and secondly, to offer information about the appropriateness of applying PPEs cross-culturally. As the original methodology outlined in the 2005 paper was closely followed in the study described here, and PPEs are argued to be culturally encompassing (Peterson & Seligman, 2004), it was expected that similar results to Seligman et al. would be achieved. Specifically, it was hypothesised that, over the 6-month duration of the study, the effects of the PPEs would exceed those of a control exercise in

increasing happiness levels and reducing depression levels. In the original 2005 study, the control group showed only a one-week boost in mood, most likely attributable to an expectancy effect; i.e. the mere act of doing something assigned by a professional resulting in positive changes. In this study, a temporary positive effect in the control group was also expected, but was not expected to be sustained over the duration of the study.

Method

Design

A 4-group, random-assignment study was used to test the effectiveness of three PPEs and one control exercise. Each exercise was delivered via the Internet and completed over a one-week period, with follow up measurements taken at the end of the first week, and then one week, one month, three months and six months after completing the initial exercise. The study was approved by the Tasmanian Social Sciences Research Ethics Committee.

Procedure

Similar to the 2005 study, a convenience sample was recruited from respondents who visited the website <www.happiness-study.org>, which was specifically created for this study. Information about the website

was made available through a variety of online and offline sources,⁴ following a media release about the study by the University of Tasmania's Media Office (see Appendix A). Upon accessing the study's website, those people interested in participating were directed to read further details about the study, and asked to provide their informed consent to participate. The setup of the online survey was in an "open" format, meaning that it was not a password-protected survey. However, the website was not indexed by search engines and so it is unlikely that participants would have arrived at the survey without prompting through advertisement of the study's website. It should be noted that apart from the website's affiliation with the University of Tasmania, no other contextual information is likely to have biased the sample.⁵ The information sheet emphasised that the intervention participants would receive was not guaranteed to make them happier and they might receive a control exercise. No financial incentive for doing the exercise was offered, although to ensure good follow-up, participant were told

⁴ The various sources which took up the media release between 2011 and 2012 included: newspaper article- *Launceston Examiner*; television news segments- *ABC1 (Hobart)*, *Southern Cross Tasmania (Hobart)*, *WIN Hobart (Hobart)*; radio interview- *ABC local radio*; internet articles- *Tasmanian Examiner* <www.examiner.com.au>, *Campus Daily Australia* <www.campusdaily.com.au>, *ABC Online* <www.abc.net.au/news>, *Get Living* <www.getliving.com.au>, *University of Tasmania website* <www.utas.edu.au>, *Asian Scientist* <www.asianscientist.com>. As a later attempt to attract participants to the study, an advertisement was also placed in the classifieds of the Melbourne based newspaper *The Herald Sun*.

⁵ Appendix A contains the website's greeting page, information sheet and consent form.

that on completion of all follow-up questionnaires, they would be entered into a lottery.⁶

Participants were then asked to provide their email address and complete some basic demographic questions. This section was followed by two longer questionnaires, (a) the Authentic Happiness Inventory (AHI; Seligman et al., 2005) to assess happiness, and (b) the Centre for Epidemiological Studies- Depression Scale (CES-D; Radloff, 1977) to assess depression. The questionnaires were presented using the web-based 'Limesurvey' software (Schmitz, 2012). If participants did not provide their email address or did not fully complete the AHI or CES-D items, they were redirected to complete the entire survey if they wished to continue with this study further. The completion of demographic items was encouraged but was not mandatory. No option was provided within the 'Limesurvey' software to enable participants to review and change their answers. Once all questionnaires had been fully completed, participants were informed that they would soon receive an email with specific instructions about how to incorporate a happiness exercise into their life for one week and what this would involve. In addition, a notice about the enrolment of a new participant was automatically sent to the experimenter.

⁶ The lottery prizes offered by Seligman et al. (2005) were one US\$500 award and one US\$100 award. This study also offered a prize of AUD\$100 voucher for *Amazon.com*. The choice of a voucher rather than a monetary prize reflects other research projects from the University of Tasmania which have used this same incentive to encourage participation.

Following notification of a new participant enrolment, the participant's email address was entered into an automated emailer (Coleman, 2010) and they were randomly allocated to an intervention/control group. The automated emailer was used throughout the study to send instructions of the allocated activities to participants, as well as to send reminders for them to return to the website to complete follow-up questionnaires.⁷ Participants were encouraged to print out, or write down, the instructions for their activity and to keep them accessible for the weeks to come. They also received a reminder email in the middle of the week assigned for the intervention activity, which repeated the instructions for the assigned activity. Three of the five PPEs detailed in Seligman et al.'s 2005 study were used, as well as the original control exercise. Note that all five exercises were not used as Seligman et al. had already shown two to be ineffective. Due to the already small sample size, it was deemed necessary to only include in this study the three PPE already suggested to demonstrate efficacy. These are described briefly below.

Gratitude Visit: Participants were asked to write and deliver in person a letter of appreciation to someone who had been kind to them, but whom they had never properly thanked. Note that that this PPE is a single action rather than an activity that is completed throughout the week; however, it requires more time and planning than the other PPEs.

Three Good Things in Life: Participants were instructed to write down three good things that happened each day, together with a causal explanation for each of these things.

⁷ The specific instructions received by participants can be seen in Appendix A.

Using Signature Strengths in A New Way: After completing the Inventory of Character Strengths (Peterson, Park, & Seligman, 2005) at the beginning of the program and receiving results outlining their top five signature strengths, participants were asked to use one of these five signature strengths over the week, in a new way for each day of the week.

Control exercise- early memories: This exercise involved participants writing about their early memories every night for one week.

At the end of the intervention week, participants received an email reminding them to return to the website for follow-up questionnaires (AHI and CES-D). Additionally, they were asked to answer a ‘manipulation-check’ question (scored ‘yes’ or ‘no’) to assess whether they had in fact completed the activity as instructed during the relevant time period. Participants were then sent further reminder emails at the required follow-up intervals of one week, one month, three months and six months, instructing them to return to the website to complete further follow-up questionnaires. Figure 2.1 shows a flow diagram of participants’ progress through the six stages of this study (potential participants, enrolment, allocation, procedure, follow-up and analysis). The diagram has been created in line with the CONSORT (Consolidated Standards of Reporting Trials) Statement (Schulz, Altman, Moher, & CONSORT Group, 2010).

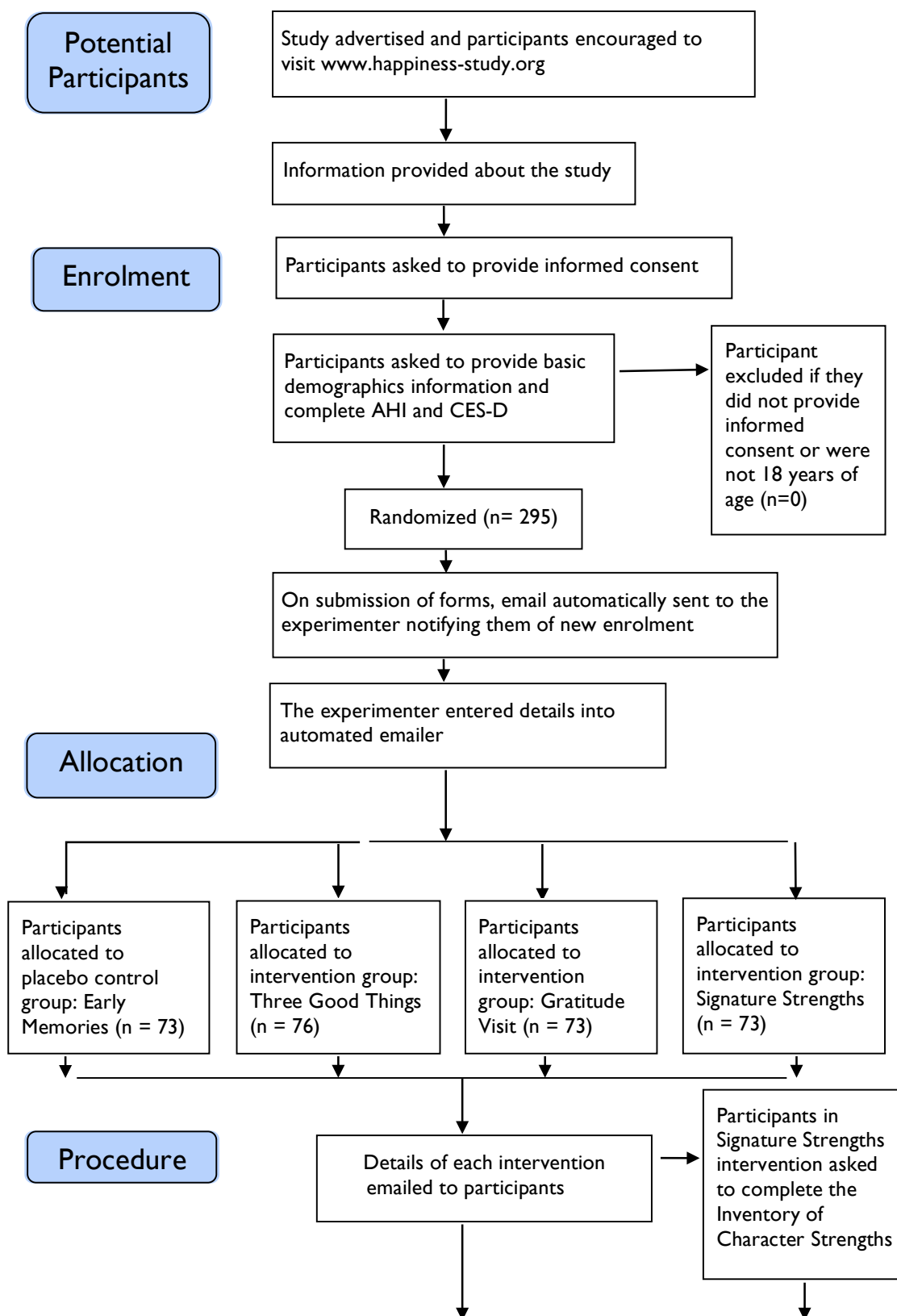


Figure 2.1 Participant flow through Study I (continued next page)

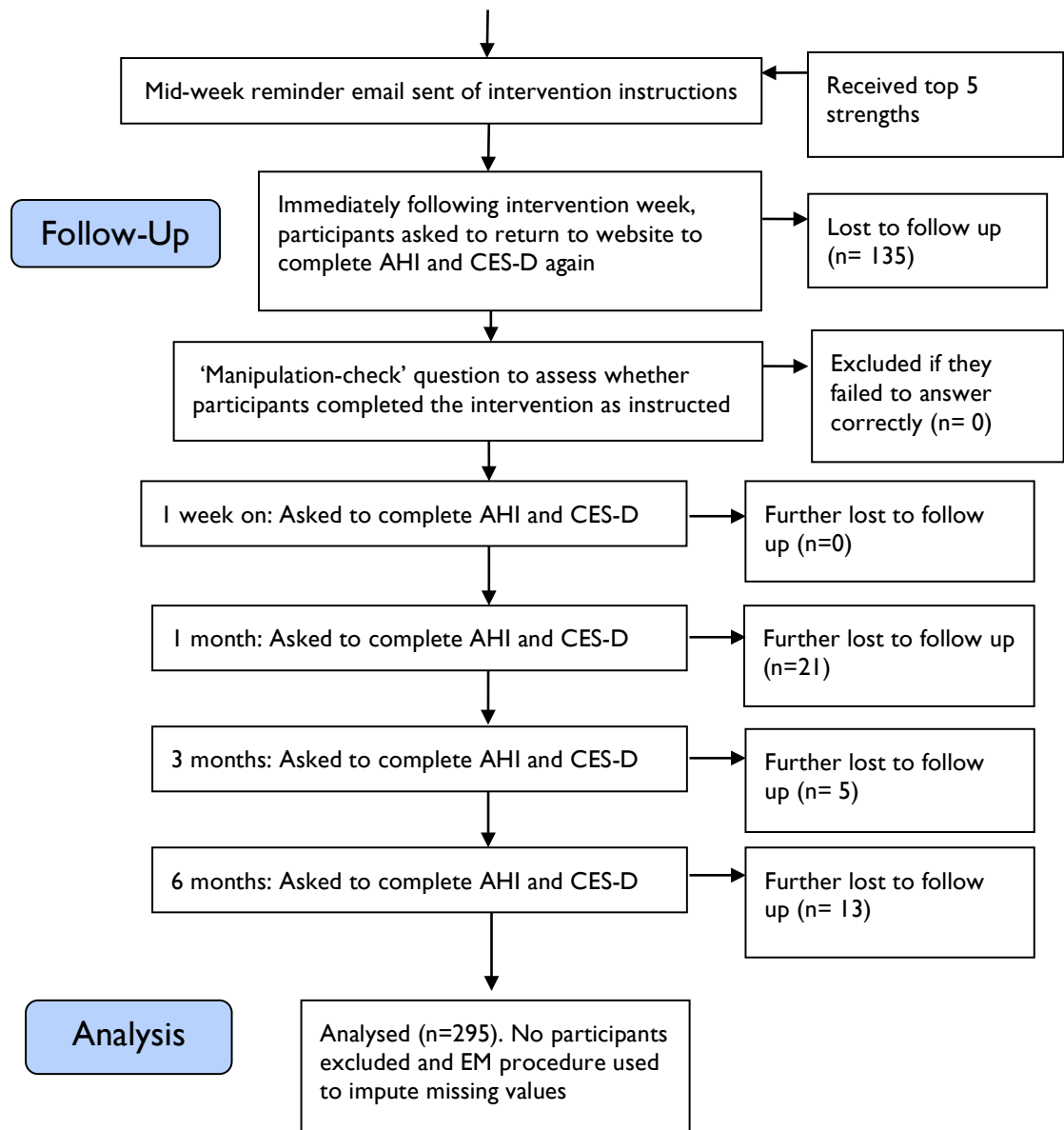


Figure 2.1 Participant flow through Study I (continued)

Participants

In total, 295 participants enrolled in the study, of whom 85% were female. Participants were aged from 18–83 years (mean 43 years). In terms of education, 75% of participants had a tertiary qualification (Bachelor or Post-graduate) and only 5% indicated that they had not

completed year 12 or engaged in vocational training. Seventy six per cent of participants classified their income as ‘average or above’. This demographic information is similar to that reported in Seligman et al.’s (2005) study. In regards to motivation, 32% of participants enrolled with the desire to become happier and 57% enrolled because of interest in participating in new research; no comparable data regarding motivation for participation was reported in the original study. The ‘Limesurvey’ software (Schmitz, 2012) automatically recorded the IP address of the computer used by an enrolling participant and a review of these addresses indicated that there were no duplicates. That, together with the uniqueness of participants email addresses, suggests that each participant had enrolled only once in the study. It should also be noted that all data originated from Australia, which is supported by the fact that advertising of the study only took place in Australia.

Measures

Authentic Happiness Inventory

To measure levels of happiness, the AHI, otherwise known as the Steen Happiness Index (SHI; Seligman et al., 2005), was used. This measure was developed in response to the authors believing that existing measures of happiness did not provide good discrimination within the higher range of happiness scores. The AHI is a 24-item multiple-choice measure. Each item requires respondents to pick from amongst five

statements pertaining to happiness, the statement which describes them most accurately at the present time. Response choices range on 5-point scale, from 1 (negative) to 5 (extreme positive). The psychometric properties of this measure are discussed in Chapter 1 of this dissertation.

Centre for Epidemiological Studies- Depression Scale (CES-D)

To measure levels of depression, the CES-D was used. This is a 20-item measure designed to measure the incidence of depressive symptomatology over the prior week. Each symptom is rated in terms of frequency on a 5-point Likert scale, ranging from 'not at all' to 'most or all of the time'. The CES-D has been shown to have good psychometric properties, particularly test-retest repeatability and internal consistency, with a Cronbach's alpha of 0.84 (Radloff, 1977).

Results

Attrition rate

A total of 295 participants enrolled in the study and were assigned to either a PPE or the control condition. Of the participants, 121 (41%) completed all follow-up assessments. Independent sample t-tests revealed no significant differences (or trends towards difference) between participants who dropped out of the study and those who completed all follow-up assessments in terms of: demographic qualities

(gender, education, income), reason for participating, intervention group, or initial happiness and depression scores.

Missing values

Missing data is frequently encountered in clinical research and is often exacerbated in Internet-based research, which requires participants to return to complete multiple assessments (Parks-Sheiner, 2009). Several options exist for dealing with missing data in analyses. A commonly used approach is listwise deletion, whereby participants are deleted from analyses if any data point for the participant is missing. Listwise deletion was employed by Seligman et al. (2005), their justification for using this method being that complete data sets existed for 71% of participants, participants who dropped out of the study did not differ from those who remained on their baseline happiness or depression scores, and there was no differential dropout from the various conditions. However, listwise deletion is inappropriate in the present study both due to the much larger dropout rate (59%) and to the possibility that data is not missing at random (Musil, Warner, Yobas, & Jones, 2002); although non-completers might not differ from completers on an observed demographic variable, they may differ on an unobserved variable. Consequently, excluding participants through listwise deletion is likely to lead to inaccurate conclusions.

Alternatively various imputation methods exist, enabling missing data to be substituted with predicted values. Regression Imputation involves a regression model being fitted, with the variable with missing observations serving as a dependent variable and other relevant variable being used to predict the missing values (Musil et al., 2002).

Expectation Maximization Imputation (EM) is a two-part iterative procedure that involves calculating and imputing a value for each missing variable based on all complete data points and then recomputing new expected values (Little & Rubin, 2002).

However, when the missing values from the current data set were imputed using each method (i.e. regression imputation and EM) and the results compared to each other, as well as with no substitution of missing values at all, there was little difference in the overall findings, apart from the overly biased method of listwise deletion. This is demonstrated graphically in Figures 2.2 and 2.3. Munsil et al. (2002) considers that the EM process is considered superior to the other substitution methods, as it is assumed to produce the least biased estimates for missing data. Thus with little difference in various methods of dealing with the data, it was deemed most appropriate to use the EM process. The results which follow are based on analyses that include all participants who enrolled in the study, with any missing values imputed through the EM process.

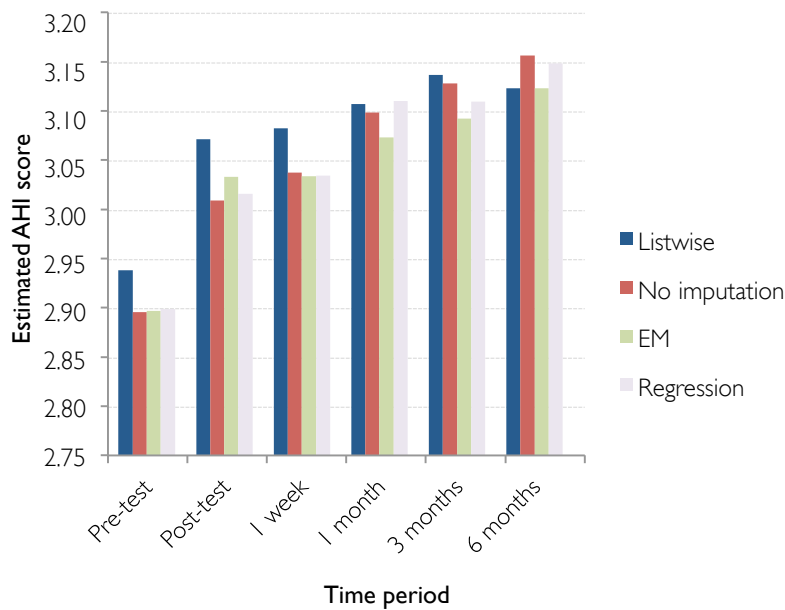


Figure 2.2 AHI scores compared by method of dealing with missing data. The bars indicate no consistent differences between the results from different imputation methods, but indicate that listwise deletion results in a general bias towards higher AHI scores.

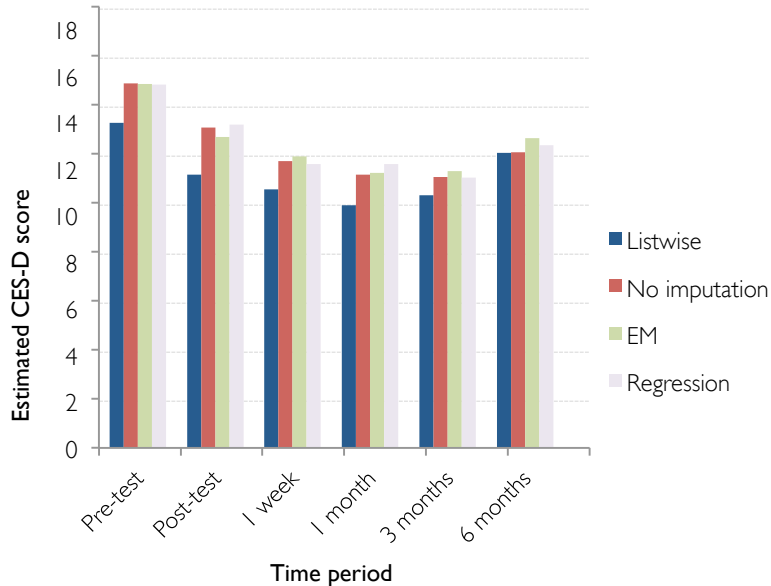


Figure 2.3 CES-D scores compared by method of dealing with missing data. The bars indicate no consistent differences between the results from different imputation methods, but indicate that listwise deletion results in a general bias towards lower CED-D scores.

Initial analyses

The demographic characteristics of this sample were discussed early. In addition, this sample on average did not meet the criterion for clinically significant levels of depression ($M = 15.65$, $SD = 10.52$); Radloff (1977) considers that only scores of at least 16 on the CES-D should be treated as significant. In terms of happiness scores, although there is no cut-off for happiness/unhappiness, this sample on average scored in the mid-range on the 5-point scale ($M = 2.90$, $SD = 0.54$). Although Seligman et al. (2005) do not specifically report the mean CES-D score in their sample, visual inspection of the figures presented suggests it also to be close to the cut-off score. However, Seligman et al. have changed the scoring of the AHI over recent years, making it difficult to the current AHI mean score with the original one.

Replication analyses

The purpose of this study was to replicate the design used by Seligman et al. (2005) and compare results. The data was analysed using a mixed-design with a within-subjects factor of time (6 measurement periods) and a between subjects factor of intervention (early memories, gratitude visit, signature strengths, three good things). In regards to the AHI data, Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2(14) = 306.47$, $p < .001$), therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.72$).

A significant main effect for time for AHI scores $F(3.58, 1042.51) = 55.79, p < .001, \eta^2 = .161$, but not for the time \times intervention interaction, $F(10.75, 1042.51) = .45, p = .93$. In regards to the CES-D data, Mauchly's test again indicated that the assumption of sphericity had been violated ($\chi^2(14) = 158.88, p < .001$), therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.81$). A significant main effect existed for time for CES-D scores $F(4.21, 1198.22) = 29.05, p < 0.001, \eta^2 = .091$, but not for the time \times intervention interaction $F(12.35, 1198.22) = .43, p = .96$. Table 2.1 shows the descriptive results for AHI and CES-D scores across time. The lack of differential impact was further investigated through planned contrasts comparing happiness and depression scores at each follow-up to baseline scores within each group. Table 2.2 shows the effect sizes for comparisons made between mean pre-test scores and follow-up periods.

Figures 2.4 and 2.5 show average AHI and CES-D scores, respectively, for all interventions over the 6-month duration of the study. The AHI data shows an immediate increase in happiness scores one week after completing the assigned exercise. Although a positive gradient is maintained over the remaining 6 months of the study, the increases at each measurement interval are much smaller. Conversely, the CES-D data shows a quadratic trend, whereby there is a decrease in depression scores up to between 1 and 3 months, however following this depression scores begin to increase again.

Table 2.1 Means for AHI and CES-D Scores Across Interventions and Time

	Pre-test		Post-test		1 week		1 month		3 months		6 months	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Happiness (AHI)												
Control (n = 73)	2.99	0.51	3.13	0.45	3.13	0.45	3.17	0.52	3.18	0.48	3.25	0.42
T (n= 76)	2.84	0.54	2.98	0.52	2.99	0.53	3.02	0.55	3.06	0.59	3.12	0.56
S (n = 71)	2.84	0.58	2.99	0.56	2.98	0.59	3.06	0.58	3.09	0.60	3.14	0.51
G (n = 73)	2.92	0.55	3.04	0.54	3.05	0.57	3.11	0.57	3.01	0.55	3.16	0.47
Depression (CES-D)												
Control (n = 73)	13.31	9.01	10.55	7.25	10.14	8.32	9.51	8.13	9.55	6.34	10.69	8.16
T (n= 76)	17.23	10.17	15.22	10.09	13.51	10.70	12.79	9.14	13.13	9.65	14.51	11.20
S (n = 71)	15.89	11.42	14.09	11.39	12.88	12.40	11.85	11.30	11.70	9.01	13.08	10.71
G (n = 73)	16.15	11.17	14.39	10.39	13.78	12.01	12.31	10.34	12.92	10.56	13.04	9.98

Note. Control = Early memories, T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit

Table 2.2⁸ *Effect Sizes between Pre-test and Follow-up Scores*

	Pre-test vs. Post-test	Pre-test vs. 1 week	Pre-test vs. 1 month	Pre-test vs. 3 months	Pre-test vs. 6 months
AHI					
Control	d = 0.29*	d = 0.29*	d = 0.35*	d = 0.38*	d = 0.55**
T	d = 0.26*	d = 0.28*	d = 0.33*	d = 0.39*	d = 0.50**
S	d = 0.26*	d = 0.26*	d = 0.38*	d = 0.42*	d = 0.55**
G	d = 0.22*	d = 0.23*	d = 0.34*	d = 0.16	d = 0.47*
CES-D					
Control	d = 0.38*	d = 0.37*	d = 0.44*	d = 0.48*	d = 0.30*
T	d = 0.20*	d = 0.25*	d = 0.46*	d = 0.41*	d = 0.25*
S	d = 0.16	d = 0.20*	d = 0.36*	d = 0.40*	d = 0.25*
G	d = 0.16	d = 0.36*	d = 0.36*	d = 0.30*	d = 0.29*

Note. Control = Early memories, T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit; for Cohen's d effect size, * = small effect size, ** = medium effect size, *** = large effect size (Cohen, 1988)

⁸ Seligman et al. (2005) provide very little detailed information in their results section, which makes it hard to directly compare the effect sizes shown in Table 2 with those obtained by Seligman et al. In personal communication with N. Park (20th December, 2012) and M. Seligman (January 19th, 2013) no further detail was provided about the limited information they publish about effect sizes in their 2005 article. In their paper, lambda-squared is frequently reported as a measure of effect size, but we are unable to find supporting literature for use of lambda-squared in this context, making comparisons to the more common measures of effect size (e.g. Cohen's d) impossible. N. Park directed us to conduct a "Google search" and M. Seligman replied "I don't know".

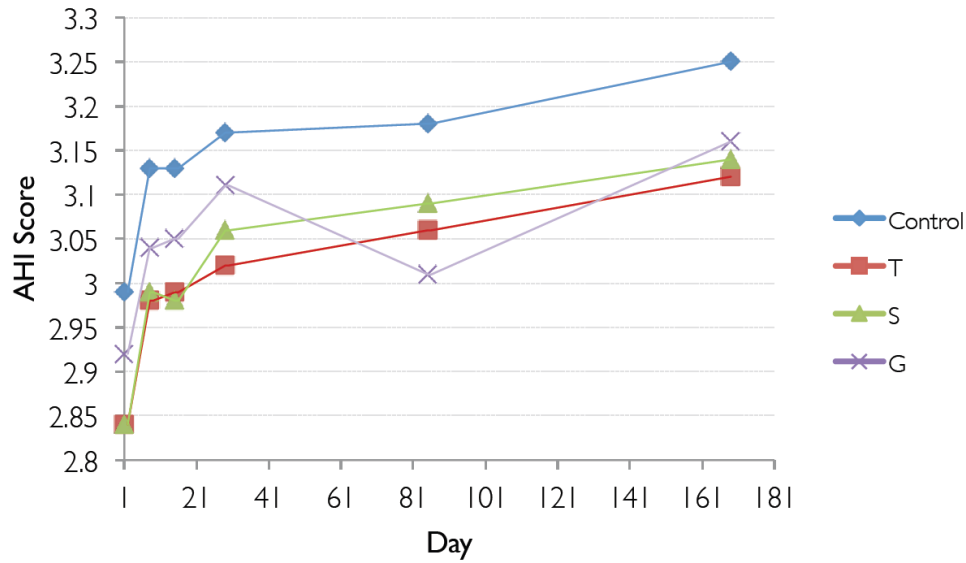


Figure 2.4 Average AHI scores for all interventions over 6 months.⁹ Note that 1 week = day 8, 1 fortnight = day 15, 1 month = day 29, 3 months = day 85 and 6 months = day 169.

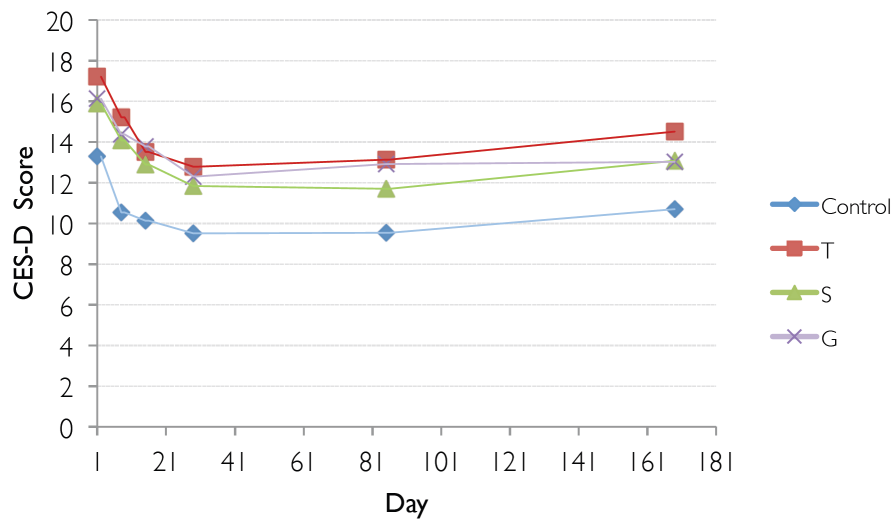


Figure 2.5 Average CES-D Scores for all interventions over 6 months. Note that 1 week = day 8, 1 fortnight = day 15, 1 month = day 29, 3 months = day 85 and 6 months = day 169.

⁹ Visually it appears that the control group is more effective than each of the PPEs in increasing happiness scores and reducing depression scores. Yet, this is likely to be more reflective of the slightly inflated pre-test scores of the control group, rather than anything specifically attributable to the exercise itself.

Discussion

This study aimed to replicate Seligman et al.'s (2005) study on PPEs in an Australian population. Apart from the participant sample, all other aspects of the methodology were followed as closely as possible to that described by Seligman et al. Direct replication studies, such as the present one, allow results to be attributed to the interventions and methodology used rather than the specific circumstances under which the results were initially produced. Consistent with the original 2005 study, all groups showed a significant increase in happiness levels and decrease in depression levels over time. This implies that if participants engaged in an activity (PPE or control) over time their happiness levels increased and depression levels decreased. However, inconsistent with the original study, the type of exercise that participants engaged in had no differential effect on happiness or depression levels; that is, there is no difference between engaging in PPEs or the control exercise.

Lack of replication

Although there may be several reasons why later research fails to replicate earlier results, in the case of this study, the most relevant reasons include the possible demand characteristics in Seligman et al.'s (2005) study and the differences between the two samples' demographics, i.e. nationality. Rosenthal and Rosnow (1969) explain that demand characteristics help to define the role of a 'good participant' and that their responses are a function of that role. Participants' recognition of such demand characteristics can

significantly influence the results of the experiment, if they modify their behaviour accordingly. The sample used in the 2005 study was recruited through the self-help book *Authentic Happiness* (Seligman, 2002). This sample is described as being: well-educated, financially comfortable, mildly depressed, motivated to become happier, most likely derived from a US population and possibly view the researchers' website as a "plausible authority" (Seligman, 2005, p. 10–11). Participants who enrolled in the 2005 study may have had a particular interest in positive psychology research, changing the demand characteristics of the experiment. Therefore, a subject-expectancy effect should be considered as contributing to the strength of effect of the interventions in the original study and the lack of differential effect in this study. This explanation is supported further by Mongrain and Anselmo-Matthews (2012), who also suggest the sample recruited by in the 2005 study may have higher levels of motivation, greater interest and believed in the positive psychology exercises. The variation in attrition rate exemplifies this difference; specifically, the attrition rate for participants in Seligman et al. (2005) was 29% compared with Mongrain and Anselmo-Matthew's 76% and the current study's 59%.

It is important for the effects of PPEs to replicate cross-culturally, as positive psychology theory and interventions are currently promoted as culturally encompassing (Peterson & Seligman, 2004). As discussed in Chapter 1, various critics of positive psychology research have argued the theories and intervention emerging from this field of study

are culturally specific to America (e.g. Christopher & Hickinbottom, 2008; Yen, 2010). The current study's results indicate that when PPEs are tested in an Australian participant sample, the same differential effect is not achieved as in the US-American participant sample used by Seligman et al.'s (2005). This difference in results indicates that a cross-cultural effect may be at play and further explanation is required.

Consider the PPE *Using Signature Strengths in a New Way*, which is based on Peterson and Seligman's (2004) classification of character strengths. As these strengths have been developed from an American perspective, there is the possibility that they may be understood very differently in an Australian context. For example, Peterson and Seligman (2004) describe the strength of 'open-mindedness' as an ability to think things through and critically examine them from all sides. Open-mindedness is also identified as being important to Australians but in Australia it is related to the concept of 'mateship', which encompasses egalitarianism and tolerance attributes (Coombs-Richardson & Tolson, 2005; Feather, 1973). This subtle difference in interpretation may contribute to the PPE being performed differently by Australian participants and thus impact its efficacy. A similar issue arises when considering the PPE *Gratitude Visit*, which focuses on providing social recognition to another person. Feather (1973) found that Americans value this character strength more highly than Australians, which again suggests that this PPE may not show the same

degree of efficacy in an Australian sample as compared to an American one.

Limitations

The current study saw a high attrition rate (59%), and as noted earlier, attrition is a frequent problem in longitudinal research, particularly when it is Internet-based. An appropriate imputation method was used to manage the missing data, but the fact remains that a large number of participants chose to discontinue with the interventions over time. Although non-completers (59%) do not differ from completers (41%) on an observed demographic variable (age, gender, education, income), or in terms of their motivation for participation, the high attrition rate suggests they are likely to differ on an unobserved variable. A limitation of this study is that further information was not collected regarding what factors may be contributing towards this unobserved variable. Although this information may be difficult to obtain, as participants may lack clear insight into why exactly they dropped out, it is still a question that issue which requires consideration in future research. It is also important to consider that in clinical trials, attrition rates are often attributed to the interventions not being tolerated well or even to them producing a detrimental effect. It is unlikely that this is the case for non-clinical studies, such as the present one, and more probable that the interventions themselves are not attractive or beneficial enough to motivate participants to remain in the study. The implications of

interventions not being ‘sticky’ enough and possible future research directions are considered further in Chapter 5.

Implications

The current study’s overall failure to replicate Seligman et al.’s (2005) significant results need to be considered together with the outcomes of other replication studies. As previously noted, Parks-Sheiner (2009) also failed to reproduce the original results, and Mongrain and Anselmo-Matthews’ study (2012) showed only partial replication, with far more modest effect sizes of positive results. Although all studies, including this one, showed a significant effect for raising happiness levels and decreasing depression levels over time, the follow-up replication studies have struggled to demonstrate a differential effect for PPEs. Mongrain and Anselmo-Matthews (2012) draw attention to the research which suggests that most efficacy of psychological interventions is attributable to shared elements, and only a small amount related to specific therapeutic techniques. Building on the finding that there is a lack of difference between the intervention and control groups, it may be important to consider these findings in terms of well-known social psychology principles such as the ‘Hawthorne Effect’ (Franke & Kaul, 1978) and ‘Mere-Measurement Effect’ (Morwitz, Johnson, & Schmittlein, 1993), which suggest that participants inadvertently alter their responses in a positive direction, based purely on the fact they are in an experiment or that their responses are being measured. Further discussion around the limitations of the control exercise developed by Seligman et al. are discussed at length in Chapter 5.

Although positive psychology research is expanding rapidly and there is pressure for practical applications to be developed, it is paramount that interventions such as PPEs are submitted to the same rigorous testing processes as any other evidence-based psychological intervention. Careful replication of the original methodology is a first step in this validation process. Furthermore, the quintessential American ideologies which underlie positive psychology theories and interventions need to be considered as contributing factors to the efficacy, or lack of it, of PPEs applied cross-culturally. Overall the results of this first study suggest that Seligman et al.'s (2005) results need to be interpreted with caution, and they also indicate that more careful review of the methodology is required.

CHAPTER III: STUDY 2

Neither Parks-Sheiner (2009) nor Study 1 found differential effects on happiness or depression of the positive psychology exercises over the control exercise. Furthermore, Mongrain and Anselmo-Matthews (2012) only succeeded in partially replicating the results of Seligman et al. (2005) and produced more modest effect sizes than were reported in the original paper. The explanations offered so far in this dissertation for these discrepancies relate to participant factors such as cultural differences and demand characteristics. However, it is also worth considering whether the problem lies in the instrument used to measure happiness. Specifically, if the instrument employed is not effective in measuring happiness, then this may offer some explanation for the lack of significant or differential results.

In Chapter 1 the lack of consistency in the definition of happiness was examined and the resulting difficulty in measuring happiness was discussed. The Organisation for Economic Co-operation and Development's (OECD, 2013) guidelines on measuring subjective well-being note that it is necessary to have good measures of happiness when attempting to verify the efficacy of happiness interventions and recommend that each item on a scale should have clear theoretical ties to the construct or theory of happiness being employed. The current study analysed the measure of happiness used in Study 1, the Authentic Happiness Inventory (AHI), to determine whether it can assess happiness as defined in Authentic Happiness Theory (AHT, 2002) with sufficient content validity.

Authentic happiness theory: three components to happiness

As discussed in Chapter 1, AHT was introduced as an explanation for understanding and achieving happiness. AHT proposes that there are three psychological constructs that contribute to achieving happiness and which are under voluntary control: *pleasure*, *engagement* and *meaning* (Seligman, 2002).

- *Pleasure*: Briefly, this component focuses on the pleasant emotions and sensations derived from one's relationships, interests and activities of normal, everyday life. It is about what people feel at an affective or sensory level; for example, "Eating ice-cream makes me feel happy".
- *Engagement*: The second component addresses the benefit derived from one being fully immersed in and focused on carrying out a particular activity. The absorption in a particular activity, which is characterised by intense concentration, is also known as 'flow'. For example, "I often spend hours losing myself in a favourite book."
- *Meaning*: The third component is related to the positive emotions, such as a sense of belonging, purpose and comfort, which are derived from contributing to a higher cause and the outcomes are intended to go beyond individual benefit. This may include involvement in social groups, organisations, political movements,

traditions, or belief systems. For example, “I enjoy the fact that I have made a significant contribution to the world”.

The Authentic Happiness Inventory¹⁰

In 2005, Seligman et al. conducted a review of happiness measures and were unable to identify an existing psychometric instrument that concurrently examined the three components of AHT. Additionally, the review found that measures that existed at the time did not enable finer distinctions to be made in upper range of happiness levels. In response to these limitations, the 24-item Steen Happiness Index (SHI) was developed; this was later renamed the Authentic Happiness Inventory (AHI; Schiffrin & Nelson, 2010). The AHI was developed using a self-selected sample recruited from those who registered on an *Authentic Happiness* website¹¹. When completing the AHI, respondents must choose, from a set of statements pertaining to happiness, the statement that describes them most accurately at the present time. Response choices range on a scale from negative (1) to extremely positive (5). For example:

1. I am usually in a bad mood.
2. I am usually in a neutral mood.
3. I am usually in a good mood.
4. I am usually in a great mood.
5. I am usually in an unbelievably great mood.

¹⁰ See Appendix A for copy of the AHI.

¹¹ *Authentic Happiness* website: <http://www.authentichappiness.org>

Peterson, Park, Steen and Seligman (2006) state that the existing pilot work on the reliability and validity of the AHI indicated a Cronbach's alpha of .93 and stability coefficients ranging from .77 (over an interval of up to one month) to .68 (average over intervals greater than one month). Sensitivity to change could not be measured because data on intervening life events was not collected. The mean happiness score on a scale of 1 to 5 was 2.98, with a standard deviation of 0.71; this result suggested that fewer than 5% of respondents scored above 4.4 and fewer than 5% scored below 1.6, representing good control of floor and ceiling effects. Seligman et al. (2005) stated that the AHI converges well with scores on other measures of happiness; specifically, $r = .79$ with Lyubomirsky and Lepper's (1999) Subjective Happiness Scale, and $r = .74$ with Fordyce's (1977) 11-point Happiness Measure. They also reported that changes in AHI scores over a one-week period were sensitive to the self-reported occurrence of positive and negative events, even when prior scores were controlled. Unfortunately, there are no other studies regarding the psychometric properties of the AHI and the specific article about the reliability and validity of the AHI is still an unpublished manuscript (Peterson et al., 2006).

AHT asserts that *pleasure*, *engagement* and *meaning* are independent aspects of happiness. If the AHI is to accurately reflect AHT it needs to be able assess these components of happiness in separate subscales. However, the existing literature regarding the AHI provides only scarce information on this issue, which limits our ability to

determine whether these three subscales are really independent and have sufficient content validity. If there are distinguishable components of happiness, as suggested by AHT, then it follows that interventions to increase happiness might influence these components in different ways. For example, participation in the *Gratitude Visit* intervention, in which the individual is required to thank someone they have never properly thanked, may influence the *meaning* and *engagement* components of happiness, whereas eating chocolate may only alter the *pleasure* component. Not adequately measuring each component might result in failure to detect benefit or harm that is caused by an intervention. Alternatively, certain outcomes may be missed or exaggerated if the outcome measure is contaminated.

An extensive review of the literature indicates that, apart from the AHI, no other instruments are described as specific measures of the constructs of AHT. Although the original authors of the AHI have not continued to recommend the use of the AHI,¹² the results of the landmark study on PPEs (Seligman et al., 2005) are based on the AHI and therefore replication attempts need to take this instrument into account. Furthermore, whilst Peterson (2012) and Park (2013) do not recommend the continued use of the AHI in scientific fields, the AHI still exists on the *Authentic Happiness* website as a global measure of

¹² In personal correspondence with Christopher Peterson (2012) about the psychometric properties of the AHI, Peterson commented that it was under review and “not for widespread use”. He advocated for the use of more established measures such as the Satisfaction With Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985). Similarly, Nansook Park (2013) said “The scale never has been published”.

happiness and has been used by other researchers (e.g. Schiffrin & Nelson, 2010; Park, Park & Peterson, 2010).

Validity issues

In the face of a lack of validation studies of the AHI, it is difficult to ascertain whether the instrument is able to measure the changes to the particular aspects of happiness brought about by the interventions developed by Seligman et al. (2005). The validity of the AHI needs to be examined in order to be able to interpret findings based on the use of this instrument.

Content validity

Content validity is achieved when the content of a scale accurately and exhaustively reflects the construct it intends to address (Lawshe, 1975). According to Kerlinger (1986, p. 418), “Content validation consists essentially in *judgment*. Alone or with others, one judges the representativeness of item”. In the process of operationalising a psychological variable (e.g. *pleasure*), the central aspects of the construct (e.g. seeking pleasant sensations) should be considered and items should be formulated on the basis of addressing the construct. Pollard, Johnston and Dieppe (2006) explain that a major problem in content validation is the construction and selection of items which are consistent with the definition of the variable. One strategy to investigate the quality and representativeness of potential items in the construction process is to ask experts (persons who are experienced with the psychological variables) to rate how well the item matches the definition

of the construct (e.g. Blacha, 1977; Mezo, 2005); discriminant content validation (DCV) uses this approach.

Discriminant content validation

The aim of content validation is to ensure that the items that are used in an instrument sufficiently measure the intended psychological variable. According to Pollard et al. (2006) discriminant content validation (DCV) goes one step further than simple content validation and investigates whether items targeting one construct are sufficiently able to be discriminated from items measuring other constructs.

Kerlinger (1986, p. 421) explains that “*Discriminability* means that one can empirically differentiate the construct from other constructs that may be similar, and that one can point out what is *unrelated* to the construct”. The process of establishing DCV is based on the frequency of item assignment to a construct; that is, the percentage of expert judges who decide that a particular item is related to a particular construct (Pollard et al., 2006; Dixon, Pollard and Johnston, 2007). If 80% or more of judges agree in their pairing of an item with a single construct then this item is deemed to show full DCV; if 60–80% of judges agree in their pairing of an item with a single construct then this item is deemed to show limited DCV (adapted from Fisseni, 2004).

Judges’ confidence in making their item-construct pairing is also part of the DCV process (Pollard et al., 2006; Dixon et al., 2007).

Although confidence ratings are not an explicit criterion, they are used to support the other findings. Only a mean confidence rating of 6 or

more (on an 11-point rating scale) was considered to be representative of judges having had satisfactory confidence in their item-construct pairing¹³. Therefore, if 80% or more of judges agree in their decision that a single item can be paired with a particular construct and the judges also meet the threshold for confidence ratings in their decisions, then the item is deemed to be satisfactory for inclusion in the measure. Alternatively, if judges do not meet the threshold for confidence ratings in their item-construct pairing, then the item is deemed to be an unsatisfactory for inclusion in measure in its current form (Pollard et al., 2006).

Research questions

The aim of the present study was to examine whether *pleasure*, *engagement* and *meaning* were well operationalised by the AHI, as shown by establishing the DCV of the AHI items. Each item should ideally clearly target one construct and avoid the content of other constructs. The primary research question was whether each of the AHI items can be unambiguously paired with one of the psychological constructs of *pleasure*, *engagement* and *meaning* in terms of the criteria for DCV outlined above. The results of this study may have implications for understanding whether the absence of intervention effects in Study 1 may be partially attributable to the AHI not adequately measuring each of the three constructs.

¹³ A confidence rating threshold of 6 or more was used to be consistent with the DCV threshold of 60% of judges agreeing in their item-construct pairing.

Method

Design

In order to assess the DCV of the AHI items, participants (expert judges) paired each item with one or more of the AHT constructs (*pleasure*, *engagement* and *meaning*) and rated their confidence in each of their pairings. These pairings and the associated confidence ratings were then analysed to identify which construct(s) each item of the AHI assessed. This study was approved by the Tasmanian Social Sciences Research Ethics Committee.

Participants

A convenience sample of 30 expert judges was recruited through the University of Tasmania (UTas), the Tasmanian Government Department of Justice (DoJ) and the Tasmanian Government Department of Health and Human Services (DHHS). To be considered an expert judge for this type of validation, participants were required to have, or be undertaking, post-graduate qualifications in psychology. All the judges were either health professionals, researchers or post-graduate students. Of the 30 judges, 29 provided background information about themselves. In terms of education, 12 were completing a postgraduate qualification in psychology, 8 had an Honours degree, 7 had a Master's degree and 2 had a Doctorate. In terms of employment, 8 worked for DoJ, 4 for DHHS and 17 studied full-time at UTas. All judges identified their nationality as Australian.

Procedure and materials

Judges were posted the task materials, which included: (a) a consent form and information sheet; (b) the definitions of *pleasure*, *engagement*, and *meaning* published by Seligman et al. (2005); and (c) the AHI questionnaire, the layout of which had been modified to provide a space in which the judge could show their item-construct pairings.¹⁴ Detailed information is provided earlier in this chapter about the construction and psychometric properties of the AHI. On completion of the task, judges were asked to post their completed materials back to the researcher.

In regard to the specific task requirements, judges were asked consider each of the items from the AHI and to pair each item with one or more of the constructs (*pleasure*, *engagement*, *meaning*). They were also asked to rate their confidence in each of their pairings using an 11-point scale with rating that ranged from 0 (*not at all confident*), 10 (*extremely confident*). For example, a judge could pair an item with both *pleasure* and *engagement*, but might express different degrees of confidence with respect to each pairing.

Figure 3.1 depicts the three stages of the study, namely participant enrolment, data collection and data analysis. The diagram conforms with the CONSORT (Consolidated Standards of Reporting Trials) Statement (Schulz et al., 2010).

¹⁴ See Appendix B for the information sheet, consent form, specific task instructions and descriptions of *pleasure*, *engagement* and *meaning* used in Study 2.

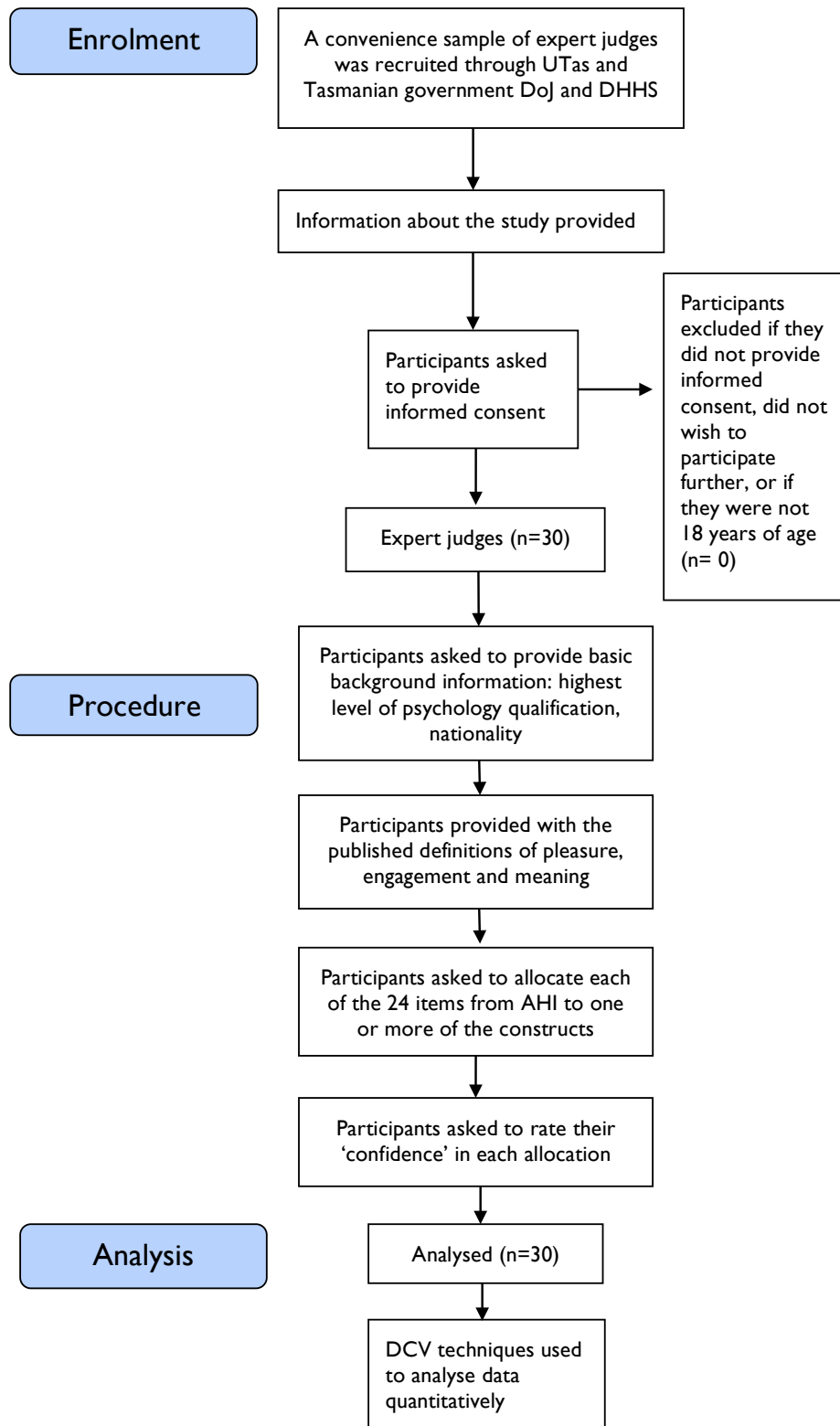


Figure 3.1 Participant flow through Study 2

Analysis

As explained earlier, the DCV procedure used was based closely on that described by Pollard et al. (2006) and Dixon, Pollard and Johnston (2007). The primary indicator of the DCV of an item is the extent and pattern of agreement amongst judges in their pairing of the item with each of the three psychological constructs (pleasure, engagement, meaning). The full decision tree of how DCV is established is shown in Figure 3.2. Briefly, items were determined to show “full DCV” only when at least 80% of judges paired the item with same single construct and fewer than 60% of judges paired the item with either of the remaining two constructs.

Judges’ confidence in their pairing of items with constructs was also considered. As noted in the methodology section, a 0–10 rating scale was used to assess confidence. The mean confidence rating of those judges who paired a particular item with a particular construct was calculated. An item was deemed satisfactory for inclusion in the measure if the aforementioned criteria were met and the mean confidence rating among judges was 6 or more. Conversely, if the mean confidence rating among judges was less than 6, the item was deemed unsatisfactory for inclusion in the measure if the.

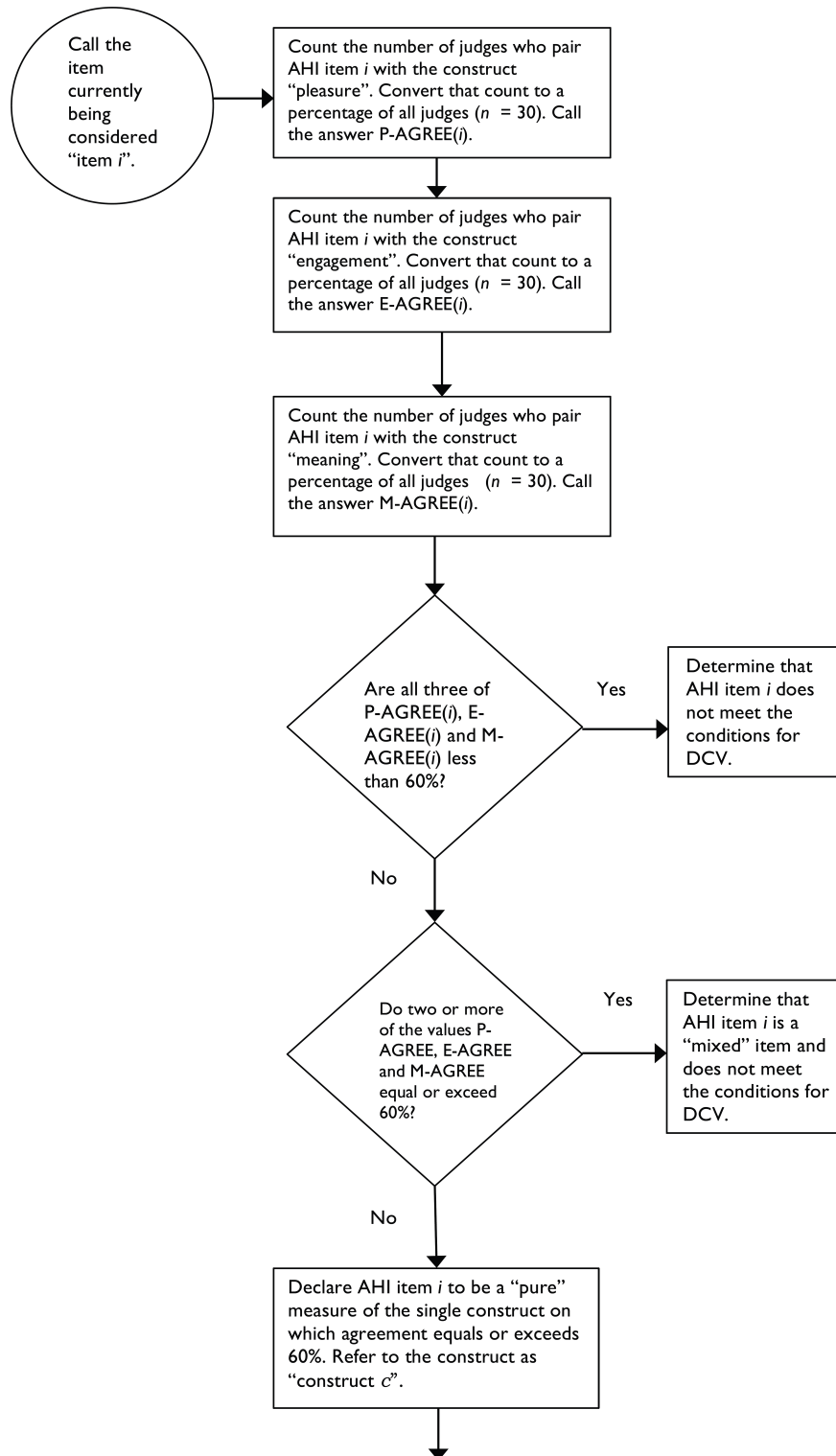


Figure 3.2 Decision making tree depicting how DCV is established (continued next page)

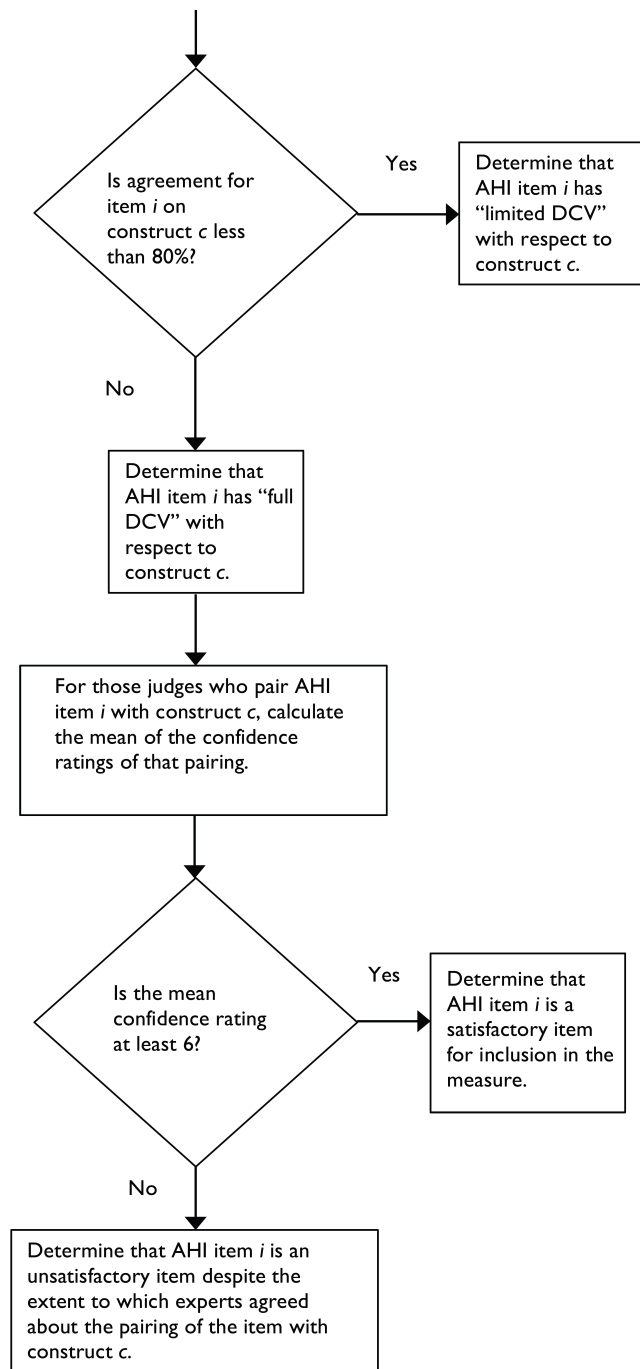


Figure 3.2 Decision making tree depicting how DCV is established (continued)

Results

Descriptive results for item-construct pairings and confidence ratings

Table 3.1 shows data relevant to each of the 72 (24 items x 3 constructs) possible item-construct pairings. For each item-construct pair, the table shows the percentage of judges who made that pairing. The table also shows the mean confidence rating for each item-construct pairing calculated on the confidence ratings of the judges who made that pairing. Shading is used to indicate item-construct pairings that reached agreement at the level of 60% or higher. The classification of items as being “pure” or “mixed” can be understood by referring to the shading. First, note that there is shading in at least one construct-column on every line, indicating that for each item there is at least one construct that more than 60% of judges paired with that item. When the shading for a particular item appears in association with only a single construct, that item is referred to as a “pure” measure of the construct. When the shading for a particular item appears in association with more than one construct, the item is referred to as “mixed”.

The “pure” items were then examined further for “full” or “limited” DCV; by definition, “mixed” items do not meet the conditions for DCV. If 80% or more of judges agree in their pairing of an item with a particular construct then it is deemed that this item meets criteria for full DCV; if 60–80% of judges agree in their pairing of an item with a particular

construct it is deemed that this item meets criteria for limited DCV.

Finally, items meeting criteria for full DCV were examined in regard to confidence rating. If the mean confidence rating was at least 6, the item was deemed satisfactory for inclusion in the measure. If the mean confidence rating was less than 6, the item was deemed to be unsatisfactory for inclusion in the measure. Refer to the decision tree in Figure 3.2 for more lengthy description of the DCV process.

Table 3.1 *Percentage of Judges in Agreement and the Mean Confidence Ratings for Each Construct for AHL Items*

Item	Pleasure %	P (mean)	Engagement %	E (mean)	Meaning %	M (mean)	Item Classification (Pure / Mixed)	Level of DCV (Full / Limited)	Confidence rating (Satisfactory / Unsatisfactory)
1	23.4	1.43	20	1.17	96.7	7.63	Pure	Full	Satisfactory
2	96.7	7.83	20	1.03	13.3	0.73	Pure	Full	Satisfactory
3	6.6	0.30	93.3	8.87	30	1.50	Pure	Full	Satisfactory
4	16.6	0.77	20	1.00	96.7	9.47	Pure	Full	Satisfactory
5	83.3	5.73	16.6	0.67	36.6	2.10	Pure	Full	Unsatisfactory
6	90	7.73	6.6	0.47	46.6	2.60	Pure	Full	Satisfactory
7	36.6	2.40	96.7	8.17	26.6	1.60	Pure	Full	Satisfactory
8	60	3.53	56.6	3.27	66.7	4.60	Mixed	–	–
9	23.3	1.17	26.6	1.47	73.3	4.53	Pure	Limited	–
10	66.7	4.90	10	0.53	73.3	4.20	Mixed	–	–
11	16.6	1.00	96.7	8.97	16.6	0.93	Pure	Full	Satisfactory
12	13.3	0.70	13.3	0.63	96.7	8.80	Pure	Full	Satisfactory
13	60	3.17	60	3.83	43.3	3.00	Mixed	–	–
14	66.7	4.60	76.7	4.87	26.6	1.47	Mixed	–	–
15	53.3	3.50	90	6.47	60	4.13	Mixed	–	–
16	43.3	2.67	16.6	1.10	83.3	5.47	Pure	Full	Unsatisfactory
17	20	1.13	36.6	2.50	93.3	7.37	Pure	Full	Satisfactory
18	86.7	5.70	13.3	0.67	50	2.80	Pure	Full	Unsatisfactory

19	16.6	0.80	86.7	5.47	36.6	2.20	Pure	Full	Unsatisfactory
20	20	1.17	56.6	4.03	76.7	5.67	Pure	Limited	–
21	20	1.00	16.6	0.87	93.3	6.70	Pure	Full	Satisfactory
22	93.3	8.57	10	0.60	16.6	0.70	Pure	Full	Satisfactory
23	63.3	4.50	83.3	5.93	40	2.77	Mixed	–	–
24	76.7	5.47	30	1.80	83.3	5.83	Mixed	–	–

Note. P = pleasure, E = engagement, M = meaning. For each construct, the percentage of judges in agreement (%) is presented first, followed by the mean confidence rating for this item-construct pairing. Shading indicates that an item has been paired with the relevant construct by at least 60% of judges. Note that “mixed” items cannot be classified as full or limited DCV; similarly, limited DCV items cannot be classified as satisfactory or unsatisfactory in regard to their confidence rating. Refer to Figure 3.2 for full explanation of the decision making process.

The results presented in Table 3.1 show that when there was higher percentage agreement amongst judges in their item-construct pairing, there was also a higher mean confidence rating. Conversely, when there was lower agreement amongst judges in their item-construct pairing, there was also a lower mean confidence rating.

In regard to the specific DCV criteria, 17 of the 24 AHI items were found to be “pure” items, that is, for each item there was a single, specific, construct to which more than 60% of judges allocated the item. Fifteen of these 17 items met the criteria for full DCV, that is, 80% or more of the judges agreed in their single item-construct pairing (items 1, 2, 3, 4, 5, 6, 7, 11, 12, 16, 17, 18, 19, 21 and 22); 2 met the criteria for limited DCV, that is, 60–80% of judges agreed in their single item-construct pairing (items 9 and 20). The remaining 7 of the 24 AHI items were each paired with multiple constructs by over 60% of judges, that is, they had a “mixed” allocation (items 8, 10, 13, 14, 15, 23, 24).

For only 12 of the 24 AHI items did the judges hold a mean confidence rating greater than 6. Eleven of these items were pure items; one of these 12 items was a “mixed” item and so did not map onto a single construct. This means that 54% of AHI items (13 items) were found to be unsatisfactory in their representation of the AHT constructs. Of the 11 items identified as being pure items with full DCV and sufficiently high mean confidence, 5 were associated with *meaning*, 3 with *pleasure*, and 3 with *engagement*.

Distribution of items

The overall distribution of items per construct within the AHI was not equal. Item-construct pairings which reached 60% agreement were more frequently made with *meaning* (12 items), followed by *pleasure* (11 items) and then *engagement* (8 items). This shows that more items were identified as targeting *meaning* and *pleasure* than were identified as targeting *engagement*. Note that the number of items reported here does not total to 24 (i.e. number of items in AHI). This is because several items were identified as being “mixed” and so were paired with more than one construct.

Discussion

The purpose of this study was to evaluate the Authentic Happiness Inventory (AHI) in terms of its discriminant content validity (DCV) with regard to the constructs in Authentic Happiness Theory (AHT). Firstly, each item from these measures was analysed to assess its DCV and the confidence ratings in item-construct pairings; secondly, the percentage distribution of items according to AHT construct was examined. Some AHI items did meet the DCV criteria, indicating that they satisfactorily operationalised one of the constructs of *pleasure*, *engagement* and *meaning*. However, several AHI items were unsatisfactory. They were either rated as indicating two or more constructs, i.e. “mixed” items, or the confidence ratings associated with making judgements were unsatisfactorily low. Furthermore, the distribution of items to

constructs indicates that the constructs were captured by unequal numbers of items.

Discriminant content validity (DCV)

Validation of a measure depends not only on general content validity (i.e. the content is sufficiently specific to the construct the item seeks to address) but also on the DCV of the measure (i.e. the measure should assess the targeted content but additionally should avoid the content of other constructs; Pollard et al., 2006). Thus, DCV provides information about the specificity with which an item targets the intended construct. Earlier in this chapter, the criteria for DCV were stated being that at least 60% of judges, preferably 80%, agreed in pairing a particular item with a *single* construct. The confidence that judges expressed in their item-construct pairings was used to support the decision. In summary, if 80% of judges agreed in pairing an item with a single construct and the judges are considerably confident in their item-construct pairing, then it was determined that the item clearly meets criteria for full DCV and is satisfactory for inclusion in the measure.

Seventeen of the 24 AHI items were deemed “pure”, meaning that at least 60% of judges paired a single construct with the; 7 items were deemed “mixed”, meaning that at least 60% of judges paired two constructs with the item. Therefore, the current study suggests that 17 of the 24 items target a single construct and are distinguishable from other constructs; of these 15 met full DCV, that is, they met the criterion of 80% or more judges agree and 2 met limited DCV as only

60–80% of judges agree in their item-construct pairing. However judges were only sufficiently confident in their item-construct pairings to single constructs for 11 of the 15 items. This indicates that 54% of all AHI items (i.e., 13 items) have been rated as unsatisfactory in their representation of AHT.

On closer examination of the content of the items identified as being unsatisfactory, it becomes clearer why judges had such difficulty in making item-construct pairings with high confidence. For example, item 8 was identified as being “mixed” but the actual content of the item shows it to have some poorly worded response choices.

1. I feel cut off from other people.
2. I feel neither close to nor cut off from other people.
3. I feel close to friends and family members.
4. I feel close to most people, even if I do not know them well.
5. I feel close to everyone in the world.

Specifically, responses 4 or 5 are meant to indicate high levels of happiness; however, it could also be argued that these response choices are reflective of a delusional, or at least unrealistic, thought process.

It was expected that each of the 24 items of the AHI would clearly display full DCV, by representing one of the three constructs of *pleasure*, *engagement* and *meaning*. This predicted outcome was based on the fact that the developers of the AHI stated that it was specifically developed to operationalise AHT (Seligman et al., 2005). However, the results of the current study do not support this claim; it appears that the AHI contains a mixture of “pure” and “mixed” items with both full

and limited DCV. Furthermore, judges' confidence ratings indicate that they were sufficiently certain in their item-construct pairings for only 12 items, one of which was a mixed item, leading to 54% of items being unsatisfactory. The results of this study suggest that the AHI overall has only low DCV as a measure of the AHT conceptualisation of happiness.

Reliability of measurement

Most psychometric instruments operationalize constructs with multiple indicators. In most cases, instruments aim at a similar number of indicators per construct. Unfortunately, the original publication of the AHI (Seligman et al., 2005) does not provide exact allocations of AHI items to the constructs of AHT; this issue is critically examined further in Chapter 5. Furthermore, AHT gives little guidance about the relative importance of each of the three constructs (Seligman, 2002) and there is no specification as to whether each of these three elements exert main or interaction effects on happiness.

The results of this study show that most of the AHI items are related to the constructs of *meaning* and *pleasure*. As the literature on AHT does not explain why greater weighting should be given the constructs of *meaning* and *pleasure*, the current results suggest that there is an inconsistent operationalisation of AHT in the AHI.

This relative inconsistency of the operationalisation of the AHT elements makes it difficult to interpret the outcomes of studies examining the effects of positive psychology exercises, including those

reported in Seligman et al. (2005), as it is not clear whether elements of the theory that were targeted in the intervention could be measured satisfactorily by the AHI.

Future directions

As noted earlier, Peterson et al.'s (2006) article about the reliability and validity of the AHI is still an unpublished manuscript and there are no other studies regarding the psychometric properties of the AHI. The current study has only considered the discriminant content validity of the AHI. If the AHI is to be considered for future use, following significant revisions being made, it is recommended that different types of validity be considered, such as content and criterion-related validity, as well as further investigation into the reliability of the measure.

Implications for Study 1

The results of this study suggest that the AHI might not adequately capture the elements of AHT. This needs to be taken into account when interpreting the results of Study 1. As discussed, measuring and interpreting change as the result of an intervention is dependent on the reliability and validity of the outcome measure; a measure that has limitations in content validity with regard to the theory on which interventions are based, cannot adequately assess the efficacy of an intervention designed on the basis of that theory. As explained by Michie and Abraham (2004) in their recommendations about the importance of evidence-based interventions, it is necessary to theoretically specify intervention techniques (including the outcome measure used), so as to fully understand how and why the intervention

works. Without a clear link between theory, measurement and intervention, successful replication of intervention effects is likely to be a slow and unclear process. Lack of intervention effects in Study 1 have so far been attributed largely to participant and intervention characteristics; however, insufficient validity and reliability of the AHI in measuring change further confounds the problem.

AHT may be a valid explanation of how happiness is achieved, and may be an appropriate basis for the development of interventions to increase happiness levels. However, part of accurately capturing changes in happiness levels is dependent on the DCV of the measure. If change in the outcome measure is the sole indicator as to whether an intervention is efficacious, it follows that a measure demonstrating poor DCV may inaccurately represent the effect of an intervention. The results of the current study indicate that the AHI items poorly operationalise AHT. The absence of intervention effects in Study 1 might be at least partially explained by the poor DCV of the AHI. Further replication studies are required to investigate the efficacy of PPEs using more established measures of happiness.

CHAPTER IV: STUDY 3

Previous research on the efficacy of positive psychology exercises (PPEs) has only examined effects on differences between experimental and control groups. Furthermore, the current evidence base for the effects of PPEs is mixed, with effect sizes on positive affect and depression ranging from substantial (Seligman et al., 2005) to negligible (Study 1; Parks-Sheiner, 2009; Mongrain & Anselmo-Mathews, 2012). However, as such exercises are becoming increasingly popular in both the clinical and counselling fields (Sin & Lyubomirsky, 2009), it is important to provide robust evidence for their effectiveness both at the group level and within individuals by examining individual change over time. In this final study, a longitudinal evaluation of *individual-level effects* of the PPEs outlined in Seligman et al., (2005) is provided as the aforementioned previous studies have focused on only the *between-groups differences* of PPEs.

Between-groups subjective well-being and individual well-being

Group level studies on the efficacy of PPEs focus on whether the mean scores of people in groups allocated to specific interventions differ as a function of being administered a specific intervention. For example, Seligman et al. (2005) found that, compared to a control group, participants completing the *Three Good Things* exercise had significantly higher levels of happiness and significantly lower levels of depression over time. However, it has been claimed that even if between-groups

tests of intervention effects seem to support a specific intervention over a control condition or another intervention, there may be substantial differences in the extent to which individuals within groups respond and profit from the interventions (Ottenbacher, 1990, 1992). Basically, this means that conclusions drawn from between-group comparisons might not be transferable to the individual, as the accumulation of individual data in between-group comparisons can mask individual changes following an intervention (Molenaar & Campbell, 2009). A specific advantage of n-of-1-designs over between-group designs is that the internal validity of the study is improved. This is because as within-subject extraneous variables, which are presumed to change more slowly than experimental variables, are controlled for, as each subject acts as their own control (Avins, Bent, & Neuhaus, 2005).

N-of-1 designs have been used in several areas of psychological research; for example, special education (Horner et al., 2005), communication disorders (McReynolds & Kearns, 1983), psychotherapy (Jones, 1993), neuropsychology (Crawford & Garthwaite, 2002) and personality disorders (Davidson & Tyrer, 1996). In the domain of subjective well-being, it has also been proposed that research needs to focus on the determinants of individual change and thus n-of-1 studies are needed (Eid and Diener, 1999). The current study represents an attempt at examining whether the effects of the PPEs outlined in Seligman et al. (2005) can be reproduced using a controlled n-of-1 or single case experimental design.

Changing subjective well-being: Positive Psychology Exercises

Seligman et al.'s 2005 study has served as a landmark for the benefits of PPEs. As discussed earlier in this dissertation, Seligman et al. tested the efficacy of five PPEs in increasing happiness and decreasing depression. The interventions were delivered via the Internet over a six-month period. The most effective exercises were *Three Good Things*, and *Using Signature Strengths in A New Way*. Additionally, *Gratitude Visit* caused substantial positive changes for one month, but the changes were not maintained. Similar results were reported by Seligman, Rashid and Parks (2006) in two smaller face-to-face studies. However, more rigorous and larger-scale replication studies (Study 1; Parks-Sheiner, 2009; Mongrain & Anselmo-Mathews, 2012) could not find similar effect sizes. These inconsistencies suggest further research is required, particularly if PPEs are to be recommended for practical use in 'positive psychotherapy' (Seligman, Rashid, & Parks, 2006; Rashid & Seligman, in press). In the present study, the efficacy of PPEs at the individual level is examined, which in turn can provide initial information about the clinical applicability of such interventions.

In the concluding sections of their 2005 paper, Seligman et al. suggest future directions for the PPEs developed in their initial study. Among the specific questions raised was "whether more is better when it comes to happiness interventions [...] and if so, is there an optimal sequence" (p. 11). Query around the combined efficacy of PPEs may stem from research which has looked at the efficacy of single PPEs (e.g. Emmons & McCullough, 2003). In line with the positive results that Emmons & McCullough found in their experimental investigation of

expressing gratitude, as well as Seliman et al.'s *Gratitude Visit* PPE showing an immediate positive impact, it is further suggested to test whether delivering the *Gratitude Visit* PPE would further increase the overall effects of the other PPEs in the sequence. To address these issues and thus enhance the understanding of the most effective use of PPEs, the current study also examined the combined effect of the PPEs and whether a particular order in their administration produced a more effective result.

Measuring subjective well-being on a daily basis

The primary outcome of this study is the affective aspect of subjective well-being (SWB) measured with the Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988). SWB is a key component of measuring happiness (Linley, Maltby, Wood, Osborne, & Hurling, 2009), and often the terms are used interchangeably (Diener, 2000). Although Seligman et al. (2005) used the AHI and CES-D to measure happiness and depression, respectively, both the AHI and the CES-D assess more stable characteristics that makes their repeated daily application difficult. Conversely, the PANAS is sensitive to short-term fluctuations in the affective component of SWB (e.g., Steptoe, Leigh Gibson, Hamer, & Wardle, 2007) and is thus more suited to the daily measurement.

Although the outcome measure in this study was restricted to the affective component of SWB, it should be noted that many authors argue that a predominance of positive affect in itself is an important component of happiness (Diener, Sandvik & Pavot, 1991). For example, Lyubomirsky, King and Diener (2005, p. 3) assert that happiness

consists of a long-term propensity to frequently experience positive emotions.

Alternating treatment designs

A major limitation of n-of-1 designs is that biases are incurred through sequencing and the effect of one intervention carrying over to the next intervention (Tervo, Estrem, Bryson-Brockmann, & Symons, 2003). As such biases are the result of the influence of one treatment on another treatment, various procedures have been proposed to address these problems. In the case of the current study, a counterbalanced, alternating treatments design (Tervo, et. al, 2003) was used. Alternating treatment designs involve implementing interventions repeatedly in an alternating fashion, to evaluate the most effective intervention as well as demonstrate treatment effectiveness through comparison to baseline (no intervention) scores. The more pronounced the difference, the more confident the experimenter can be that one treatment is superior to the other. Counterbalancing of the intervention sequence further minimises of the influence of carryover effects (Barlow & Hersen, 1984; Gliner, Morgan & Leech, 2009). In a counterbalanced alternating treatment design, as used in this study, the first participant receives treatment one and then treatment two, whereas the second participant receives treatment two and then treatment one; this sequence is then reversed in the second half of the study (Participant 1: ABAB-BABA and participant 2: BABA-ABAB). In order for such a design to be applied effectively, interventions must produce an immediate rather than slow

effect in the outcome measure, otherwise any change cannot be isolated to the intervention applied at that point in time (Tervo et al., 2003).

It should be emphasised that the *Gratitude Visit* PPE was only used in one half of the sequence. The intention of interspersing *Gratitude Visit* was to observe whether including it at the start of the sequence would further increase the overall beneficial effects of the other PPEs in the sequence. As such, it was used only once in either the first or second half of the sequence, enabling the two sequences to be compared on the basis of the presence of this PPE.

Research Questions

The primary aim of the current study was to determine whether the effects of the PPEs proposed by Seligman et al. (2005) could be replicated within individuals, i.e., to examine whether interventions that had previously been shown to result in differences in happiness between treatment groups would translate into consistent changes of subjective well-being (SWB) on the individual level, where clinically relevant effects are better recognised. As a previous replication study (Mongrain & Anselmo-Matthews, 2012) supported the general pattern of effects of Seligman et al.'s (2005) PPEs, small to moderate effects of the interventions on the individual level are expected in this study.

Secondary research questions relate to the combined use and sequencing of the interventions. Specifically, it was expected that when participants in this study received not just one intervention in isolation, but several over an extended period, an upward trend in happiness

levels will be observed. In terms of an ‘optimal’ sequence of intervention, the aim here was to explore whether any trends existed within the data, rather than confirm or disprove any particular hypothesis. However, as the *Gratitude Visit* intervention previously was found to result in short-term increases in happiness rather than a sustained impact over time, it was expected that including this PPE at one point in the sequence would increase any beneficial effects of the other interventions.

Method

Design

In order to examine within-person effects of the different PPEs, a counterbalanced n-of-1 design was used. A power analysis following Raudenbush and Liu’s (2000) procedures for cluster-randomized trials and adapting them to the n-of-1 setting using Optimal Design (Spybrook et al., 2011), suggested that 12 clusters (persons) would suffice to detect medium-sized effects ($\delta = .5$; based on Seligman et al., 2005) of the interventions on individual (daily) measures with sufficient power (.8) in clusters (persons) with an average of 80 measurements. Counterbalancing was achieved by having participants complete a predetermined sequence of interventions in the first half of the study and then completing the reverse sequence of the same interventions in the second half of the study (Tervo, Estrem, Bryson-Brockmann, & Symons, 2003). The series of n-of-1 designs and the particular ordering of interventions used in this study are shown in Table 4.1. Participants

were randomly allocated to one of the six counterbalanced patterns of interventions. The primary outcome of the study was daily SWB levels measured with the PANAS.

Table 4.1 *Specific Sequencing of Interventions*

Intervention pattern		Sequence									
1	B		T	TS	S	B		S	TS	T	B
2	B	G	T	TS	S	B		S	TS	T	B
3	B		T	TS	S	B	G	S	TS	T	B
4	B		S	TS	T	B		T	TS	S	B
5	B	G	S	TS	T	B		T	TS	S	B
6	B		S	TS	T	B	G	T	TS	S	B

Note. B = Baseline/Control (PANAS assessment only), T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit, TS = Three Good Things in Life together with Using Signature Strengths in A New Way

Participants and procedure

Participants were recruited through a newspaper advertisement, which requested participants for a ‘happiness training program’ requiring a commitment of 9–10 weeks; as noted previously, whether the program lasted 9 or 10 weeks was dependent on whether the PPE *Gratitude Visit* was included in their intervention sequence. Control/baseline weeks, where no intervention was used, were at the start (week 1), mid-point (week 5 or 6) and end of the sequence (week 9 or 10). Fifteen participants in total completed the study, with a minimum of 2 participants following each sequence.

Each participant was asked to provide basic demographic information, as well as to complete a 60-minute semi-structured interview for baseline assessment. The interviewer scored the presence/absence of depressive symptoms using the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960). Inclusion criteria for the study were that the participant was over 18 years of age and was not depressed; participants with a score above 7 on the HRSD were excluded (Hamilton, 1960; Cusin, Yang, Yeung & Fava, 2009).

After providing informed consent, participants were allocated to one of the six counterbalanced patterns of interventions. Participants were sent one diary per week, according to the intervention in their schedule. Diaries contained instructions as to what the intervention would involve and how to implement it. At the end of each day, participants were required to complete the PANAS.

Three of the six PPEs from Seligman et al.'s study (2005) were used. In addition there was a condition which combined two of these interventions. Participants also completed a baseline/control condition (B) at the first, middle and last week of the study, during which time there was no intervention to complete and only a PANAS assessment was taken. These are described below.

Gratitude Visit (G): Participants were asked to write and deliver in person a letter of appreciation to someone who had been kind to them, but whom they had never properly thanked.

Three Good Things in Life (T): Participants were instructed to write down three good things that happened each day, together with a causal explanation for each thing.

Using Signature Strengths in A New Way (S): After completing the Inventory of Character Strengths (Peterson, Park, & Seligman, 2005) at the beginning of the program and receiving results outlining their top five signature strengths, participants were asked to use one of these five signature strengths over the week, in a new way for each day of the week. Participants were provided with some example ideas and exercises which could be used as guidance in implementing their signature strengths in new ways. For example, for the signature strength of ‘fairness’ participants were offered the suggestion of watching a film or a documentary that exemplified fairness, social justice, and equity.

Using Signature Strengths in A New Way and Three Good Things in Life (TS): Participants were required to complete both these exercises during the same week. The use of a combined intervention was motivated by Seligman et al.’s 2005 paper, wherein further investigation was proposed to determine “whether more is better when it comes to happiness interventions” (p. 11). These two exercises were chosen to be combined because when administered individually, Seligman et al. (2005) showed them to produce the most positive long term changes in happiness and depression from a selection of PPEs.

Figure 4.1 shows a flow diagram of the passage of participants through the five stages of this study (potential participants, enrolment, allocation, procedure, and analysis), enabling readers to more fully understand the study's design. The diagram has been created in line with the CONSORT (Consolidated Standards of Reporting Trials) Statement, which is recommended for use in reporting randomised controlled trials (Schulz et al., 2010).

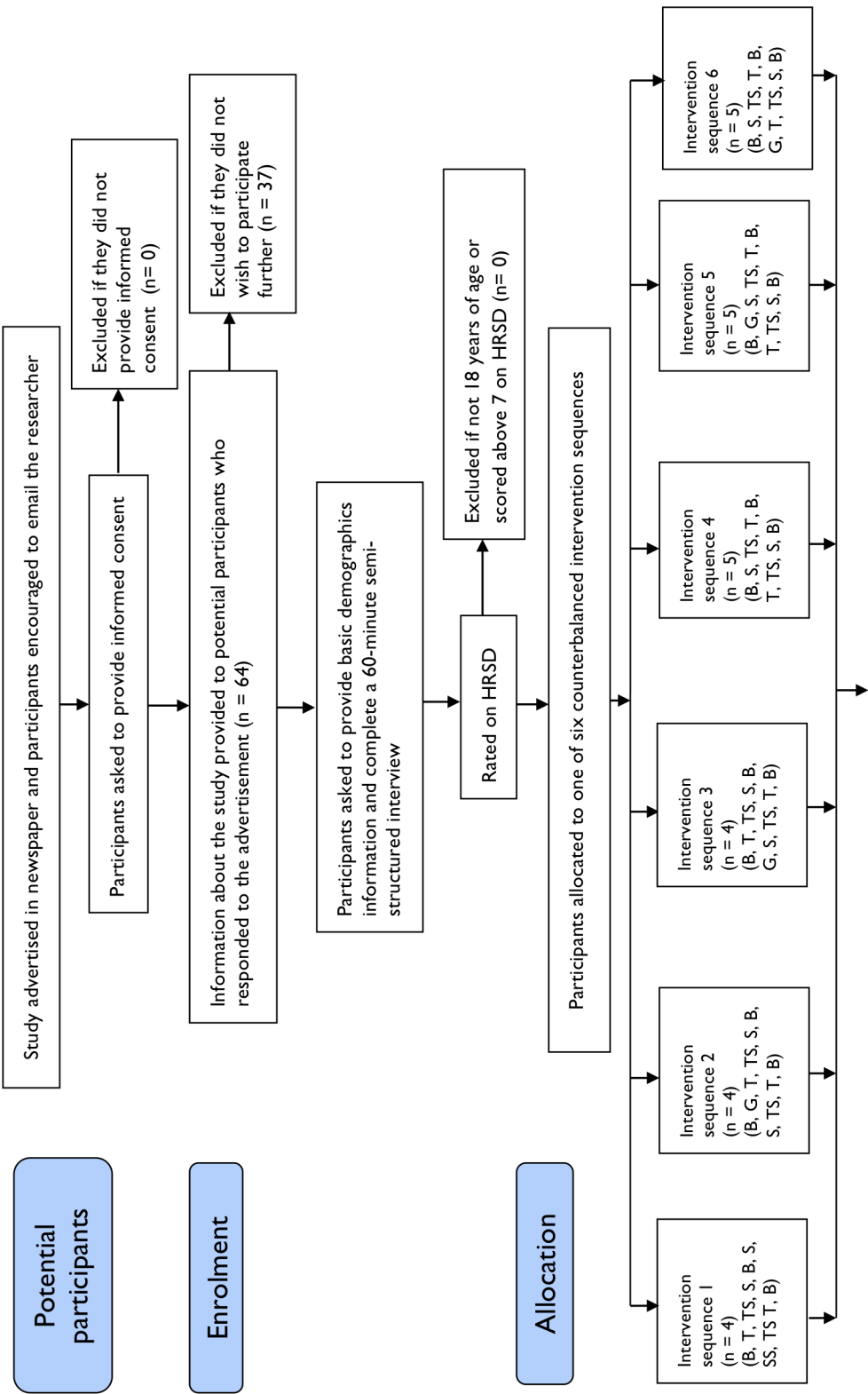


Figure 4.1 Participant flow through Study 3 (continued on next page).

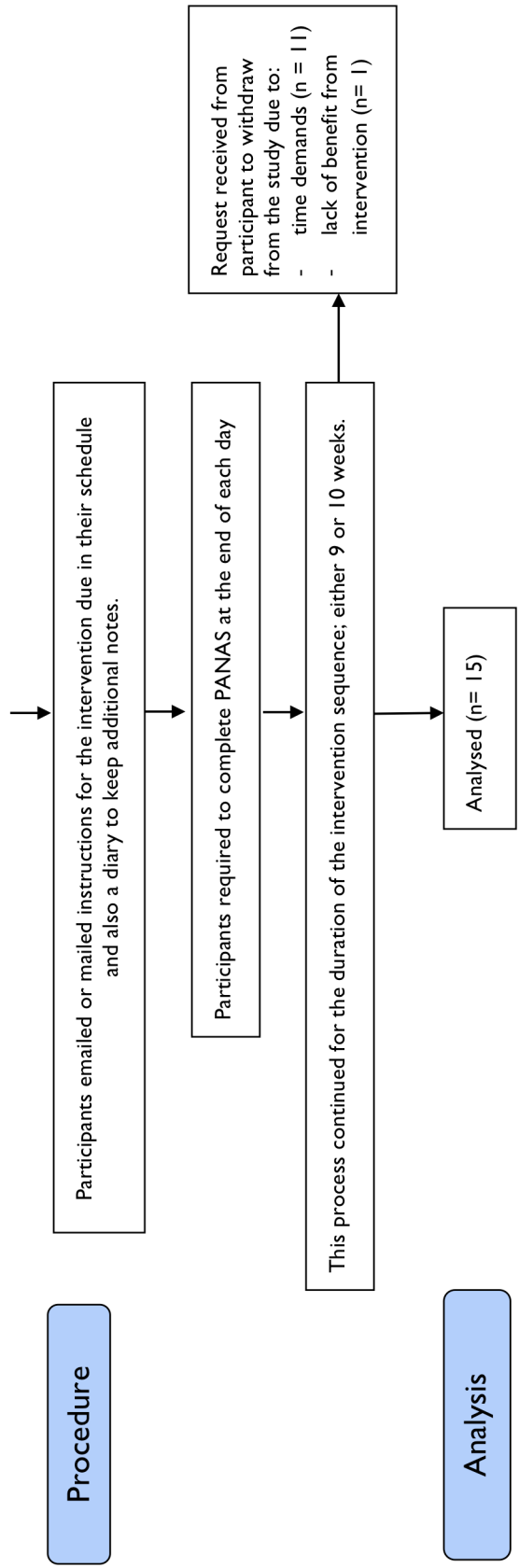


Figure 4.1 Participant flow through Study 3 (continued)

Measures

*Positive and Negative Affect Scale (PANAS)*¹⁵: The PANAS was used as the indicator of the primary outcome variable, subjective well-being (SWB). Participants rated the extent to which they had experienced various feelings and emotions, described by adjectives such as “scared”, “hostile”, “inspired” and “hostile”. Although the PANAS can be used over a variety of time frames (e.g. daily, weekly, monthly; Watson, Clark & Tellegen, 1988), in this study, it was completed daily. Participants were required to rate on a 5-point scale, ranging from “very slightly or not at all” to “extremely”, each adjective according to the extent they felt that way during the day. Three scores were computed according to Watson et al. (1988a): A positive affect (PA) score, which is the mean score of the 10 positive-emotion adjectives, a negative affect (NA) score, which is the mean score of the remaining 10 negative-emotion adjectives, and a total PANAS score, which was calculated by subtracting the negative from the positive affect scores. There is evidence that PA and NA are relatively independent dimensions and that it is more appropriate for PA and NA scores to be considered separately rather than as a merged total PANAS score (Crawford & Henry, 2004; Tellegen, Watson, & Clark, 1999).

¹⁵ Refer to Chapter 1 for detailed information about the psychometric properties of the PANAS.

Analytical approach

Both visual and statistical analyses are often used in assessing the efficacy of interventions in n-of-1 designs. Visual analysis of graphed data is the most common method of analysis (Tervo et al., 2003) and the approach taken here is to use box plots. Statistical analyses are also used in this study to complement the visual analyses and provide information about the reliability of results. These additional analyses are particularly important when the graphically displayed data shows excessive variability or limited evidence of change in terms of trend or slope.

Results

This section presents results from three different perspectives. Firstly, basic demographic data are presented, followed by visual analyses using boxplots and then more complex multi-level modelling statistical analyses.

Demographic details

Participants' mean age was 45.8 years ($SD = 11.77$) and ranged from 23 to 62 years. The majority of participants (73.3%) were women. All participants identified their nationality as Australian. Table 4.2 shows more sample details.

Table 4.2 Participant Characteristics and Individual PANAS Scores on Intervention and Control Days

Participant	Age	Sex	Total PANAS Score (SD)				Positive Affect (SD)				Negative Affect (SD)						
			B	S	T	G	TS	B	S	T	G	TS	B	S	T	G	TS
1	36	F	3.85 (.20)	3.73 (.18)	3.73 (.11)		3.84 (.35)	2.79 (.43)	2.60 (.25)	2.59 (.19)		2.81 (.49)	1.08 (.10)	1.14 (.19)	1.13 (.13)		1.14 (.24)
2	56	F	3.23 (.39)	3.17 (.54)	3.50 (.37)		3.25 (.50)	2.01 (.58)	2.25 (.62)	2.48 (.62)		2.19 (.48)	1.55 (.53)	1.91 (.69)	1.47 (.25)		1.69 (.72)
3	51	M	4.30 (.24)	3.93 (.71)	4.26 (.30)	4.35 (.09)	4.23 (.33)	3.80 (.27)	3.43 (.72)	3.60 (.58)	3.74 (.13)	3.73 (.38)	1.20 (.24)	1.57 (.74)	1.07 (.13)		1.27 (.48)
4	48	F	3.78 (.46)	3.95 (.28)	4.08 (.28)	3.66 (.36)	3.92 (.28)	2.86 (.76)	3.15 (.41)	3.36 (.45)	2.83 (.46)	3.05 (.42)	1.31 (.25)	1.25 (.27)	1.19 (.19)	1.51 (.37)	1.21 (.23)
5	23	F	3.56 (.31)	3.39 (.23)	3.03 (.14)	3.43 (.36)	3.45 (.24)	2.18 (.57)	1.89 (.45)	1.23 (.15)	1.92 (.66)	1.97 (.46)	1.06 (.13)	1.11 (.12)	1.17 (.16)	1.05 (.08)	1.07 (.07)
6	28	M	3.32 (.24)	3.30 (.18)	3.28 (.23)		3.44 (.26)	1.91 (.38)	1.90 (.28)	1.90 (.34)		2.05 (.47)	1.26 (.12)	1.30 (.16)	1.34 (.20)		1.16 (.12)
7	46	F	3.41 (.82)	3.90 (.65)	3.50 (.76)	3.26 (.65)	3.23 (.62)	3.21 (1.05)	3.61 (.95)	3.44 (.94)	3.41 (.87)	3.09 (.80)	2.39 (.89)	1.81 (.63)	2.44 (.82)	2.89 (.81)	2.62 (.92)
8	37	F	3.24 (.22)	3.11 (.12)	3.15 (.18)	3.33 (.14)	3.28 (.14)	1.54 (.44)	1.32 (.31)	1.41 (.29)	1.65 (.27)	1.59 (.26)	1.07 (.11)	1.09 (.14)	1.12 (.17)	1.00 (.00)	1.03 (.07)
9	46	M	3.76 (.60)	3.92 (.48)	3.80 (.38)	3.91 (.45)	3.64 (.46)	3.03 (.81)	3.12 (.85)	2.80 (.76)	3.14 (.56)	2.80 (.65)	1.50 (.46)	1.29 (.29)	1.19 (.25)	1.32 (.44)	1.52 (.39)
10	54	F	3.61 (.43)	3.39 (.49)	3.28 (.49)	3.36 (.46)	3.54 (.48)	2.73 (.76)	2.39 (.79)	2.36 (.67)	2.29 (.67)	2.59 (.73)	1.51 (.35)	1.61 (.33)	1.79 (.58)	1.56 (.36)	1.51 (.33)

11	55	M	3.99 (.13)	4.01 (.06)	4.02 (.08)	3.92 (.14)	3.98 (.11)	3.02 (.23)	3.03 (.10)	3.05 (.15)	2.97 (.21)	2.99 (.18)	1.03 (.10)	1.01 (.05)	1.01 (.03)	1.13 (.12)	1.03 (.07)
12	34	F	3.75 (.35)	3.98 (.33)	3.99 (.24)		3.69 (.40)	2.79 (.56)	3.15 (.55)	3.19 (.43)		2.65 (.55)	1.29 (.34)	1.18 (.23)	1.20 (.26)		1.28 (.32)
13	60	F	3.36 (.75)	3.70 (.45)	3.65 (.42)		3.69 (.57)	2.44 (.95)	2.75 (1.01)	2.56 (.93)		2.53 (1.07)	1.67 (.73)	1.36 (.37)	1.26 (.25)		1.14 (.21)
14	62	M	4.13 (.16)	4.09 (.11)	3.99 (.14)		4.08 (.08)	3.33 (.32)	3.24 (.16)	3.16 (.17)		3.19 (.16)	1.06 (.09)	1.06 (.14)	1.18 (.20)		1.04 (.05)
15	52	M	3.88 (.52)	4.06 (.46)	3.94 (.43)	4.18 (.56)	3.93 (.28)	3.37 (.70)	3.45 (.61)	3.21 (.59)	3.76 (.79)	2.94 (.52)	1.60 (.48)	1.32 (.33)	1.33 (.40)	1.39 (.36)	1.06 (.11)

Note. B = Baseline/Control (PANAS assessment only), T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit, TS = Three Good Things in Life together with Using Signature Strengths in A New Way; M = male, F = female.

Visual analyses

The visual analyses employed here consider change in the level, slope or trend in the outcome variable according to interventions used (Tervo et al., 2003). In the current study, box plots (McGill, Tukey & Larsen, 1978) were used to examine the influence of time, intervention and the cumulative effect of particular types of interventions. As explained by Pink (2011), boxplots are a method of presenting distributions. They present the median, upper (75th percentile) and lower quartiles (25th percentile), and range of the distribution. Values outside the upper and lower quartiles are considered outliers.

Firstly, PANAS scores were analysed in terms of change over time, regardless of the specific intervention pattern followed. This information helps to identify whether the PPEs had an overall positive impact and if there were any trends over time. To address this, the first series of box plots shows PANAS scores organised in terms of time; they do not account for participants doing different patterns of intervention. Figure 4.2 presents PANAS scores, Figure 4.3 only PA scores and Figure 4.4 only NA score. If the program had an overall positive impact over time, regardless of the intervention sequence, there would be: i) an overall upwards trend in the PANAS and PA scores and an overall downwards trend in NA scores (i.e. improvement in affect); ii) the size of the box plots and whiskers would become smaller over time (i.e. decrease in emotional variability). Conversely, if the program had an overall negative impact over time, there would be: i) an overall downwards

trend in the PANAS and PA scores and an overall upwards trend in NA scores (i.e. deterioration in affect); ii) the size of the box plots and whiskers would become larger over time (i.e. increase in emotional variability). Additionally, if particular weeks of the happiness program were significantly different to other weeks, there would be minimal overlap of each box plot, indicating significant differences across time periods. Conversely, if all weeks showed similar results, there would be large overlap of each box plot, indicating non-significant differences across time periods.

Visual inspection of Figures 4.2, 4.3 and 4.4 shows no clear pattern of increase or decrease in scores and instead indicates that scores remain relatively stable over time. Furthermore, the size of the box plots and their whiskers does not appear to change, indicating that the degree of emotional variability also remains fairly stable over time. The overlap of boxes suggests significant differences across time periods to be unlikely.

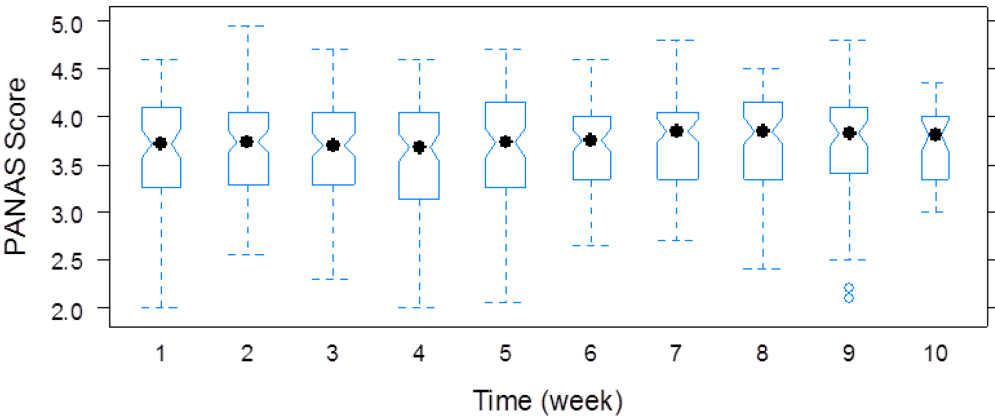


Figure 4.2 *PANAS Scores Over Duration of Happiness Program. Box-and-whisker plots showing the median (dark circle), 25th percentile (limits of the box), 75th percentile (dotted limits or whiskers) and outliers (small open circles) of PANAS scores for all participants by week of the Happiness Program.*

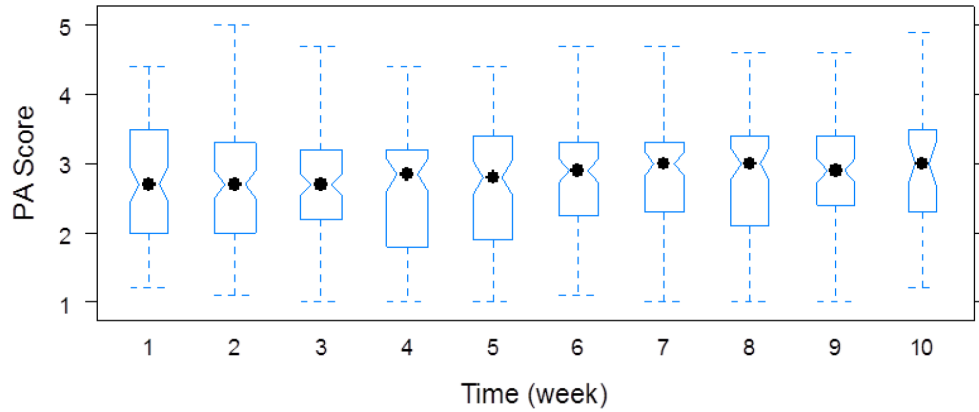


Figure 4.3 *PA Scores Over Duration of Happiness Program.*

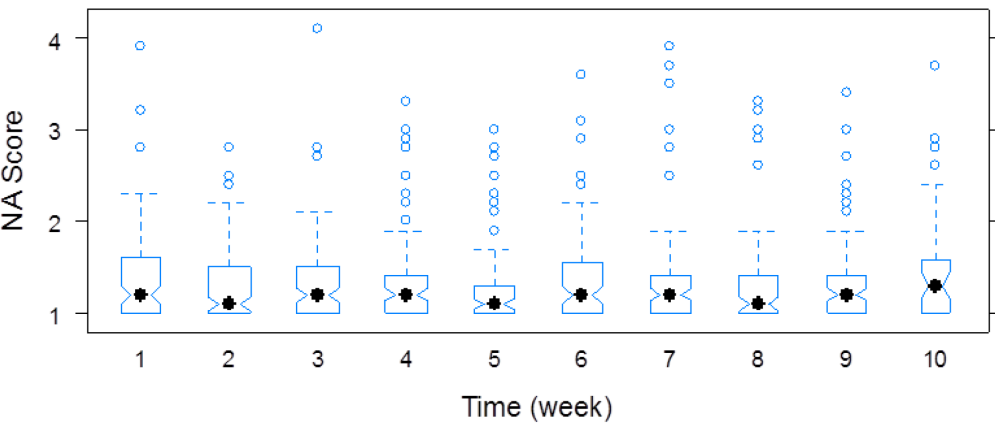


Figure 4.4 *NA Scores Over Duration of Happiness Program.*

Next, the impact of intervention on PANAS scores over time is considered. This assists in determining whether there was a differential impact of interventions. To address this, the following series of box plots is organised in terms of intervention. Figure 4.5 presents PANAS scores, Figure 4.6 only PA scores and Figure 4.7 only NA scores. If the interventions had differing impacts, there would be minimal overlap of each box plot, indicating significant differences between the interventions. Conversely, if the interventions had similar impacts, there would be large overlap of each box plot, indicating non-significant differences between the interventions. Visual inspection of Figures 4.5, 4.6 and 4.7 shows overlap of all box plots, suggesting significant differences across intervention type to be unlikely.

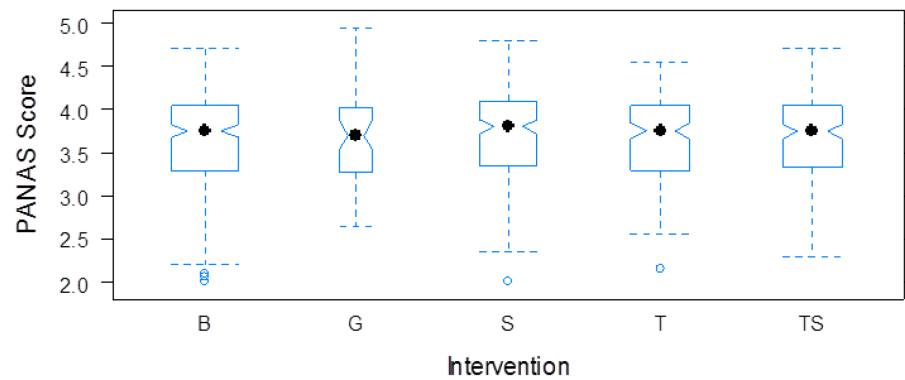


Figure 4.5 *PANAS Scores by Intervention. Box-and-whisker plots showing the median (dark circle), 25th percentile (limits of the box), 75th percentile (dotted limits or whiskers) and outliers (small open circles) of PANAS scores for all participants by week of the Happiness Program. B = Baseline/Control, T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit, TS = Three Good Things in Life together with Using Signature Strengths in A New Way.*

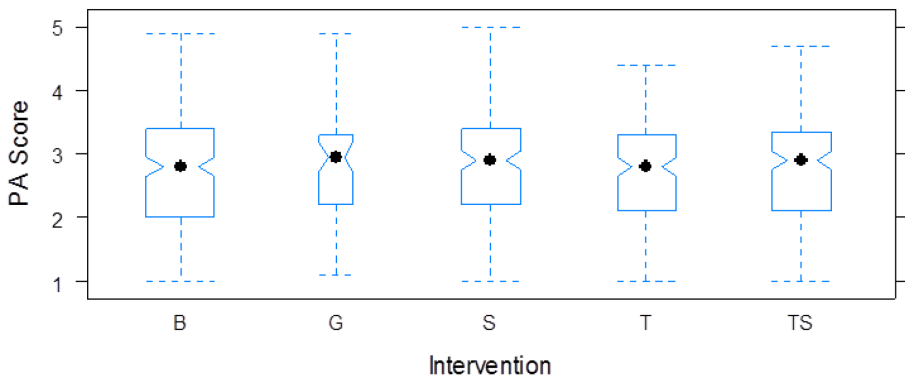


Figure 4.6 *PA Scores by Intervention*

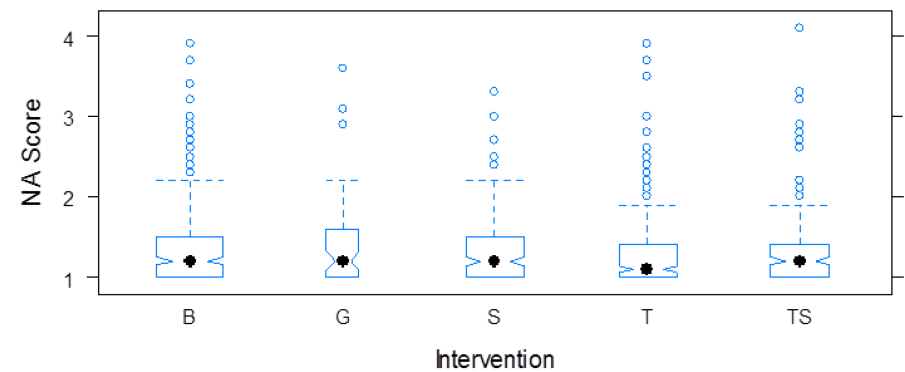


Figure 4.7 *NA Scores by Intervention.*

Finally, change which occurs as a function of the particular intervention being used by the participants is examined. This information helps in identifying whether particular interventions showed superior efficacy. In order to address this, the final series of box plots presents the data in terms of intervention 'blocks'. The data presented here does not follow the particular sequencing of interventions which participants received (see Table 4.1). Rather, intervention blocks have been ordered by time within the same intervention, i.e. within the 'B' interventions, B1 was administered before B2 and then B3. Given this arrangement of the data, one would expect to see trends within each set of interventions, i.e. 'B' interventions, 'S' interventions, 'T' interventions and 'TS' interventions. If each block of interventions had a positive effect on happiness levels, there would be: i) an overall upwards trend in the PANAS and PA scores and an overall downwards trend in NA scores (i.e. improvement in affect), ii) the size of the box plots and whiskers would become smaller over the course of the particular intervention block (i.e. decrease in emotional variability). Conversely, if each block of interventions had a negative effect on happiness levels, there would be: i) an overall downwards trend in the PANAS and PA scores and an overall upwards trend in NA scores (i.e. deterioration in affect), ii) the size of the box plots and whiskers would become larger over the course of the particular intervention block (i.e. increase in emotional variability). Furthermore, if the interventions had differing impacts, there would be

minimal overlap of each box plot, indicating significant differences between the interventions. Conversely, if the interventions had similar impacts, there would be large overlap of each box plot, indicating non-significant differences between the interventions.

Visual inspection of Figures 4.8, 4.9 and 4.10 shows no clear pattern of increase or decrease in scores over the course of each intervention block. Instead these box plots indicate that scores remain relatively stable over time, within and across each intervention block. Furthermore the size of the box plots and their whiskers does not appear to vary in size, indicating that the degree of emotional variability also remains fairly stable over the course of each intervention block. The overlap of boxes suggests significant differences across intervention blocks to be unlikely.

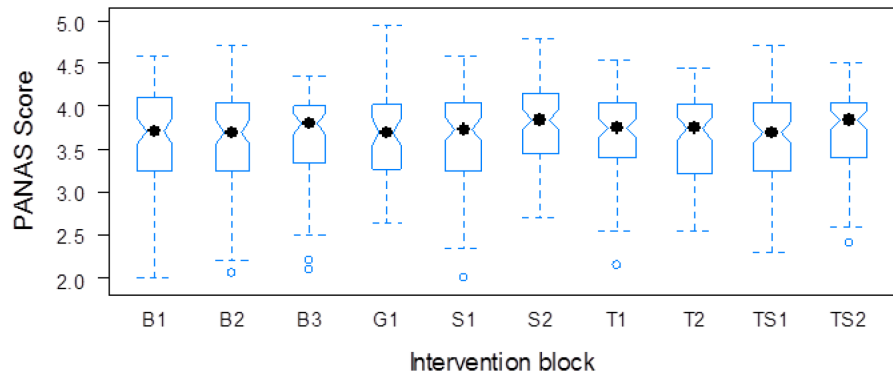


Figure 4.8. *PANAS Scores by Intervention Block. Box-and-whisker plots showing the median (dark circle), 25th percentile (limits of the box), 75th percentile (dotted limits or whiskers) and outliers (small open circles) of PANAS scores for all participants by week of the Happiness Program. B = Baseline/Control, T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit, TS = Three Good Things in Life together with Using Signature Strengths in A New Way.*

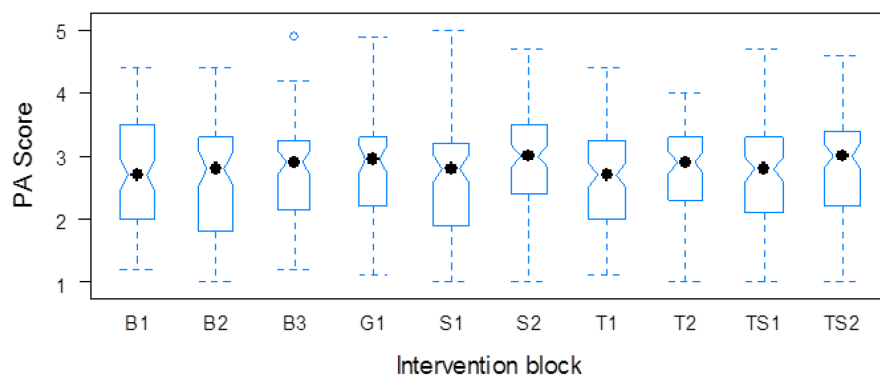


Figure 4.9. *PA Scores by Intervention Block.*

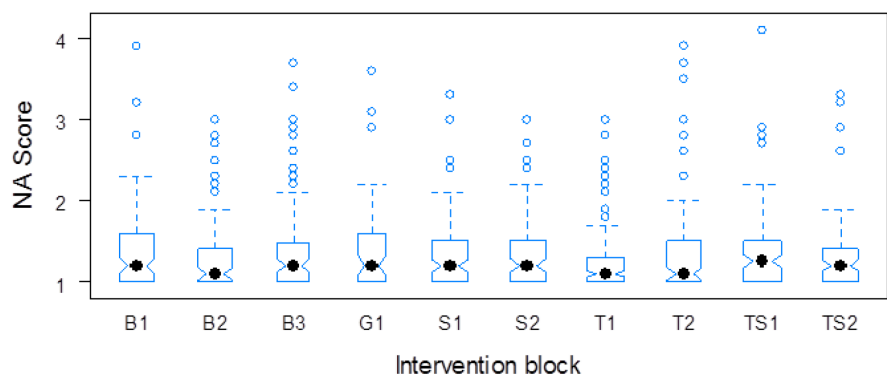


Figure 4.10. *NA Scores by Intervention Block.*

Overall this series of box plots (Figures 4.2 – 4.10) shows no clear trends in the data in terms of: (a) PANAS, PA or NA scores over time; (b) PANAS, PA or NA scores in terms of intervention; or (c) PANAS, PA or NA scores as ordered by intervention ‘blocks’. Although these are only preliminary visual analyses, initial results provide a lack of support for the hypothesis that an upward trend in happiness levels would be observed. Rather, there exists limited evidence of change in terms of trend or slope, indicating that further statistical analyses are required to clarify the situation.

Statistical analyses¹⁶

Overview of multilevel procedure

The hierarchical structure of the data (daily measurement occasions as level-1-units nested within individuals as level-2-units) allows for decomposing the variance of the dependent variables (PANAS total scores, PA score, and NA score) into within- and between-person variance. The two levels of data can be represented mathematically as:

Level 1 (measurement occasion):

$$Y_{ti} = \pi_{0i} + \pi_{1i}(\text{Time})_{ti} + e_{ti} \quad (\text{Equation 1})$$

Level 2 (participant):

$$\pi_{0i} = \beta_{00} + r_{00i} \quad (\text{Equation 2})$$

$$\pi_{1i} = \beta_{10} + r_{10i} \quad (\text{Equation 3})$$

¹⁶ The statistical analyses were prepared for the article, titled “Happy Days? N-of-1 trial of changes in positive and negative affect following positive psychology exercises” (in submission). The analyses are a combined effort together with the co-authors, B. Schüz, M. Diamond and A. O’Brien-Malone.

where t indexes time and i indexes participants. Equation 1 indicates that at level-1, the outcome variable for a given participant at a given time point is modelled by an intercept (π_{0i}) and slope (π_{1i}) for that participant and a residual error term (e_{ti}) that describes the variability of the data points around that line. Equations 2 and 3 show the collection of individual participant intercepts and slopes as being modelled by an average intercept (β_{00}) and slope (β_{10}). This captures the initial outcome score of the participant and the overall, linear change of each participant over the course of the program. The model also shows the variability of the individual participant intercepts (r_{00i}) and slopes (r_{10i}) around the average intercept and slope.

By substituting the level 2 equations into the level 1 equation, the outcome score can be represented accordingly:

$$\begin{aligned}
 Y_{ti} &= \pi_{0i} + \pi_{1i}(\text{Time})_{ti} + e_{ti} && \text{(Equation 4)} \\
 &= \beta_{00} + r_{00i} + (\beta_{10} + r_{10i}) (\text{Time})_{ti} + e_{ti} \\
 &= \beta_{00} + r_{00i} + \beta_{10} (\text{Time})_{ti} + r_{10i} (\text{Time})_{ti} + e_{ti} \\
 &= \beta_{00} + \beta_{10} (\text{Time})_{ti} + r_{00i} + r_{10i} (\text{Time})_{ti} + e_{ti}
 \end{aligned}$$

with all the error terms, including an error term that is dependent on one of the predictor variables (Time), collected at the right-hand end of the equation.

However, the design of the current study is more complicated than this equation suggests, and further discussion is required.

Specifically, there are three level-1-predictors (time, intervention, time \times intervention). This is represented mathematically as:

$$Y_{ti} = \pi_{0i} + \pi_{1i}(\text{Time})_{ti} + \pi_{2i}(\text{Intervention})_{ti} + \pi_{3i}(\text{Time} \times \text{Intervention})_{ti} + e_{ti}$$

As with the example in Equations 1–4, on, both the intercept and the regression coefficients for participants (level-1) can be decomposed at level-2 into mean levels and individual differences from those means. Specifically, the mean intercept π_{0i} (across all participants) can be decomposed into a mean intercept, β_{00} , at level-2 and individual differences, r_{00i} , from this mean. Similarly, each of the regression coefficients π_{1i} , π_{2i} and π_{3i} (alternatively $\pi_{ni} : 1 \leq n \leq 3$) can be decomposed into a mean coefficient, β_{n0} , and individual differences from that mean, r_{n0i} , to account for individual differences between participants. This is represented as:

$$\pi_{0i} = \beta_{00} + r_{00i} \text{ and } \pi_{ni} = \beta_{n0} + r_{n0i}, (1 \leq n \leq 3)$$

In regards to the specific analytic process followed in the current study, firstly the level-1-predictors (time, intervention, interaction time \times intervention) were group-mean-centred. Then a null model containing the intercept only was analysed to test for substantial intraclass correlation coefficient (ICC) of the primary outcome variables (PANAS total score, PA score, and NA score). The ICC represents the proportion of total variance in the outcome variables that is attributable to between-person (level-2) differences. Substantial ICCs (rule of thumb

~.05 and larger) indicate that the data is structured in multiple levels (Hox, 2002), smaller ICCs suggest that most of the variance can be attributed to variation at level 1 (measurement occasion).

Second, a model with all level-1 predictors, ignoring the multilevel structure, was fitted to obtain a baseline model fit. Thirdly, a model with random intercepts examined whether there were differences in the intercepts of the level-1 outcome variables according to the level-2 units; in the case of this study, basically whether there were between-individuals differences in the within-individual means of the outcome variables according to time, intervention, or the interaction of time and intervention.

Next, the effects of whether the interventions differed between persons in a random slopes model was examined, in which the slopes of the intervention in predicting the outcomes were allowed to vary between persons. The difference in fit between model 2 (ignoring the multilevel structure), random intercepts and random slopes models was tested using the -2Log-likelihood (-2LL) deviance test, which tests the difference in -2LL between two nested models for significance (Snijders & Bosker, 1999). The current study was not powered to detect cross-level interactions. This process of analysis was analogously repeated for all primary outcome variables (PANAS total score, PA score, and NA score). In this study, multilevel analyses were performed using the R package lme4 (Bates & Maechler, 2009) via the web-based interface yeroon.net/lme4 (Ooms, 2009).

Multilevel results

The intraclass correlation coefficients of all outcomes, PANAS total score ICC ($\rho = .36$), PA ICC ($\rho = .50$), NA ICC ($\rho = .42$), suggested that a substantial part of the variance in level-1 dependent variables may be attributed to level-1 and level-2 predictor units, and that the multilevel structure of the data cannot be ignored (Hox, 2002).

The first set of analyses examined the total PANAS scores as the level-1 dependent variable (see Table 4.3). Model 2 found no significant effects of time, intervention or the interaction of time \times intervention on the total PANAS score, indicating no significant change in the total PANAS score over time, no significant difference in the total PANAS score between interventions, and no differential change of the PANAS total score over time by intervention. Although the -2LL test suggested a significantly better fit for the random intercepts model (Model 3), ($\Delta_{-2LL} = 287.67$, $df = 1$, $p < .01$), indicating that the random intercepts model fitted the data significantly better than the model ignoring the multilevel structure, this pattern of results did not change. The -2LL test suggested a significantly better fit of the random slopes model where the slopes of the intervention were allowed to vary between participants (Model 4; $\Delta_{-2LL} = 6.48$, $df = 1$, $p < .05$). The residual variance of the slopes however only approached significance.

Table 4.3 Fixed Effects Estimates (Top) and Random Effects Estimates (Bottom) for Total PANAS Score

Parameter	Model 1	Model 2	Model 3	Model 4
Intercept	3.69(.08)	3.65 (.05)	3.68 (.09)	3.68 (.09)
Level -1 (measurement occasion)				
Time (study day)		.0002 (.001)	-.0002 (.001)	-.0002 (.001)
S		-.07(.10)	-.07 (.08)	-.07 (.09)
G		.03 (.15)	-.04 (.13)	-.04 (.15)
T		-.05 (.10)	-.06 (.09)	-.07 (.09)
TS		-.002 (.10)	-.01 (.08)	-.02 (.09)
S × time		.004 (.002)	.003 (.002)	.004 (.002) [†]
G × time		.0002 (.005)	.002 (.004)	.002 (.005)
T × time		.002 (.003)	.003 (.002)	.003 (.002)
TS × time		.001 (.003)	.001 (.002)	.001 (.002)
Intercept (σ^2)	.096**		.096**	.094*
Slope Intervention (σ^2)				.01 [†]
-2LL (df)		1315.02 _a (11)	1027.35 _b (12)	1020.87 _c (13)

Note. ** $p < .01$, * $p < .05$, [†] $p < .1$. -2LL: -2 Log-likelihood. Values with different subscripts differ at $p < .01$; T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit, TS = Three Good Things in Life together with Using Signature Strengths in A New Way

The second set of analyses examined the positive affect (PA) subscale of the PANAS as the level-1 dependent variable (see Table 4.4). Model 2 found no significant effects of time, or intervention on PA, indicating no significant change in PA over time and no significant difference in PA between interventions, and no differential change of the PANAS total score over time by intervention. However, a significant interaction of time*signature strength was revealed. The $-2LL$ test suggested a significantly better fit for the random intercepts model (Model 3), ($\Delta_{-2LL} = 459.74$, $df = 1$, $p < .01$), indicating that the random intercepts model fitted the data significantly better than the model ignoring the multilevel structure. Allowing for random intercepts, the interaction effect of time \times signature strength was significant at $B = .01$, $p < .05$. See Figure 4.11 for the differential changes between interventions over time.

Table 4.4 Fixed Effects Estimates (Top) and Random Effects Estimates (Bottom) for PANAS Positive Affect Score

Parameter	Model 1	Model 2	Model 3	Model 4
Intercept	2.72(.16)	2.68 (.09)	2.74 (.17)	2.74 (.17)
Time (study day)		Level -1 (measurement occasion)		
S		.001 (.002)	-.001 (.002)	-.001 (.002)
G		-.20(.16)	-.20 (.12)	-.21 (.13) [†]
T		-.01 (.24)	-.07 (.19)	-.07 (.20)
TS		-.07 (.17)	-.09 (.13)	-.10 (.13)
S × time		-.11 (.16)	-.13 (.12)	-.14 (.13)
G × time		.01 (.004) [†]	.01 (.003)*	.01 (.003)*
T × time		.01 (.01)	.005 (.006)	.005 (.007)
TS × time		.003 (.005)	.003 (.003)	.003 (.003)
		.003 (.004)	.002 (.003)	.002 (.003)
Intercept (σ^2)	.37*		.37*	.37*
Slope Intervention (σ^2)				.01
-2LL (df)		2149.06 _a (11)	1689.32 _b (12)	1688.14 _b (13)

Note. ** $p < .01$, * $p < .05$, [†] $p < .1$. -2LL: -2 Log-likelihood. Values with different subscripts differ at $p < .01$; T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit, TS = Three Good Things in Life together with Using Signature Strengths in A New Way

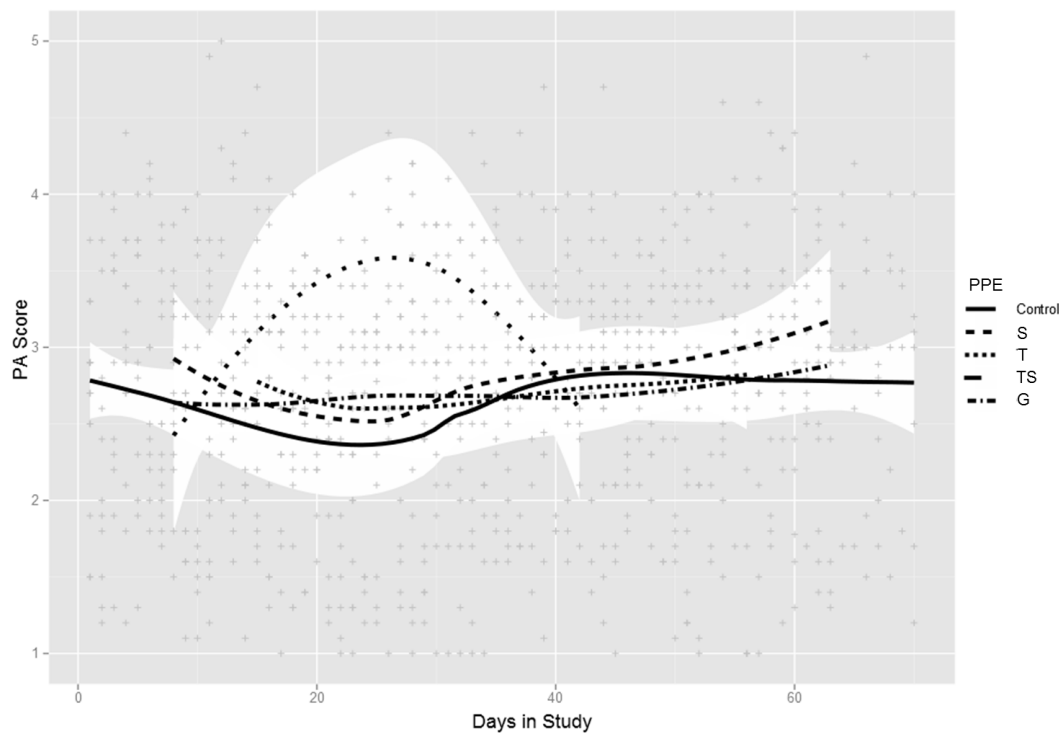


Figure 4.11 Individual Data Points and Smoothed¹⁷ Means Plot of Positive Affect by Day and Intervention with Standard Errors (white area)

The third set of analyses examined the negative affect (NA) subscale of the PANAS as the level-1 dependent variable (see Table 4.5). Model 2 found no significant effects of time, intervention or the interaction of time*intervention on NA, indicating no significant change in NA over time, no significant difference in NA between interventions, and no differential change of NA over time by intervention. Although the $-2LL$ test suggested a significantly better fit for the random intercepts model (Model 3), ($\Delta_{-2LL} = 407.09$, $df = 1$, $p < .01$), indicating that the random intercepts model fitted the data significantly better than the

¹⁷ Cubic Spline with $\lambda = .05$ and standardized values

model ignoring the multilevel structure, this pattern of results did not change. This suggests that participants differ with regard to their mean NA scores, but that these scores are not different between interventions. The $-2LL$ test suggested a significantly better fit of the random slopes model (Model 4) where the slopes of the intervention were allowed to vary between participants ($\Delta_{-2LL} = 22.72$, $df = 1$, $p < .01$). The residual variance of the slopes was significant as well, suggesting that there might be differences between participants in the effects of the interventions on NA.

Table 4.5 Fixed Effects Estimates (Top) and Random Effects Estimates (Bottom) for PANAS Negative Affect Score

Parameter	Model 1	Model 2	Model 3	Model 4
Intercept	1.34 (.09)	1.31 (.15)	1.38 (.10)	1.38 (.09)
Level -1 (measurement occasion)				
Time (study day)		.000 (.001)	.001 (.004)	-.000 (.001)
S		-.06 (.11)	-.07 (.08)	-.07 (.09)
G		-.07 (.16)	.01 (.12)	.01 (.16)
T		.03 (.11)	.04 (.08)	.05 (.09)
TS		-.10 (.10)	-.10 (.08)	-.10 (.09)
S × time		.000 (.003)	-.000 (.002)	.001 (.002)
G × time		.01 (.01)	.001 (.004)	.001 (.005)
T × time		-.002 (.002)	-.003 (.002)	-.003 (.002)
TS × time		.002 (.003)	.001 (.002)	.001 (.002)
Intercept (σ^2)	.11*		.11*	.11*
Slope Intervention (σ^2)				.02**
-2LL (df)		1385.10 _a (11)	978.01 _b (12)	955.29 _c (13)

Note. ** $p < .01$, * $p < .05$, [†] $p < .1$. -2LL: -2 Log-likelihood. Values with different subscripts differ at $p < .01$; T = Three Good Things in Life, S = Using Signature Strengths in A New Way, G = Gratitude Visit, TS = Three Good Things in Life together with Using Signature Strengths in A New Way

This interaction effect was further probed using simple slopes analyses (Aiken & West, 1991) at three time points (for illustration purposes): 10, 40, and 70 days into the study. The slopes of the signature strength PPE in predicting PA increased from $B = -.1$ at 10 days over $B = .2$ at 40 days to $.5$ at 70 days, suggesting that the effects of this intervention increased with time (see Figure 4.12). Comparing Model 3 to Model 4, the $-2LL$ test suggested no significantly better fit of the random slopes model where the slopes of the intervention were allowed to vary between participants ($\Delta_{-2LL} = 1.18$, $df = 1$, *n.s.*).

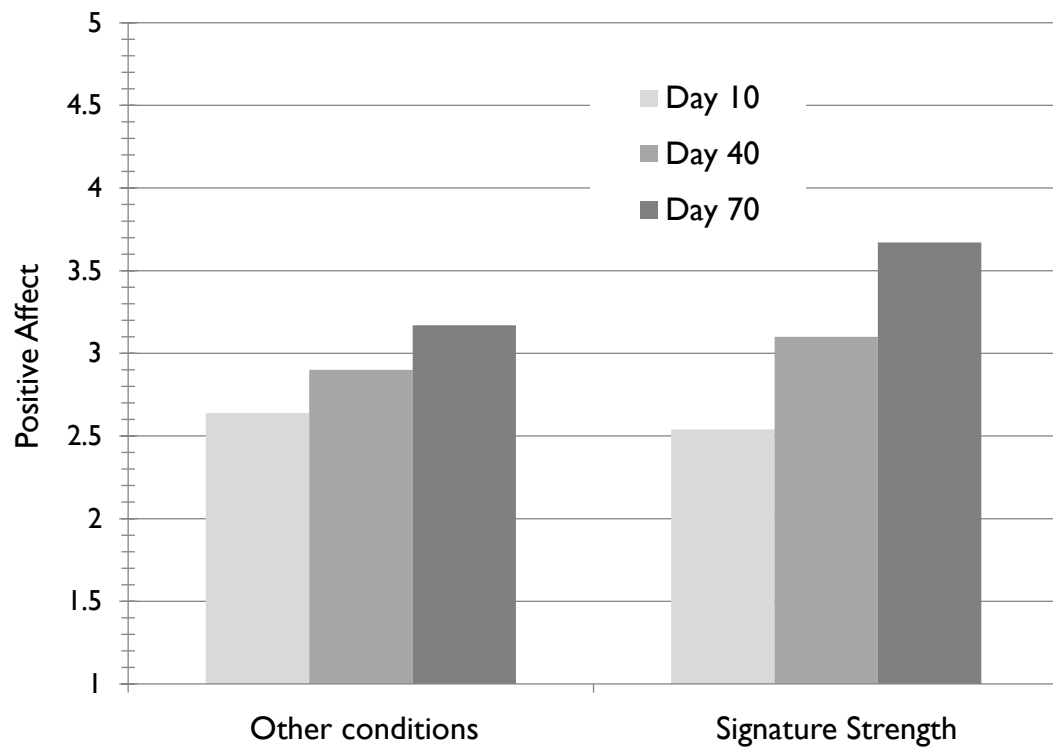


Figure 4.12 Interaction of Signature Strength Intervention and Time in Predicting Positive Affect.

Discussion

In this study, it was tested whether the effects of the PPEs outlined in Seligman et al. (2005) could be replicated within individuals by examining changes in daily subjective well-being measured by the PANAS in a controlled n-of-1-design (Avins et al., 2005). Four PPEs (*Three Good Things in Life*, *Using Signature Strengths in A New Way*, *Gratitude Visit* and a combined *Three Good Things in Life* and *Using Signature Strengths in A New Way*) were completed by all participants in a counterbalanced order (Tervo et al., 2003), thus allowing for the examination of within-person changes that might be masked in between-subjects designs. Furthermore, PPEs were applied in several predetermined sequences to examine whether an ‘optimal’ sequence existed or whether use of a combination of PPEs may produce a stronger effect.

Both visual and statistical analyses were used to analyse the results. The results showed no overall change in the three affective indicators of subjective well-being (positive affect scores, negative affect scores, and the total PANAS score) over time. This suggests that between-group differences might not necessarily transfer into individual changes in subjective well-being. Due to the lack of overall effect, the secondary research questions related to ordering and sequencing effects were unable to be addressed.

Lack of replication

Apart from the small interaction effect of the *Using Signature Strengths in A New Way* intervention and time in increasing positive affect, our study failed to replicate the effects found in Seligman et. al's (2005) study. Specifically, the two interventions *Gratitude Visit* and *Three Good Things in Life* had no significant effects on changes in positive affect, and all three interventions had no significant effects on changes in negative affect or overall well-being, as indicated by the PANAS total score.

One possible explanation as to why our study did not replicate the previously reported effects may be due to the difference in the samples used. In the original study, a convenience sample obtained through the research centre's website was used, and consequently participants may have started with a high interest in positive psychology and the research group in particular, possibly viewing the group as an authoritative in happiness research. In contrast, this study's sample was derived from local sources with limited connection to Positive Psychology sources. Therefore, a subject-expectancy effect may be contributing to the considerable effect sizes of the interventions in Seligman et al.'s (2005) research and the lack of effect in our study. This explanation is supported further by Mongrain and Anselmo-Matthews (2012), who highlight that the drop-rate for participants in

Seligman et al. (2005) is 29% compared with their study's 76% and the current study's 56%.

The present study adds to previous replication research (Study 1; Parks-Sheiner, 2009; Mongrain & Anselmo-Mathews, 2012) in indicating that the effects of Seligman et al.'s (2005) PPEs might be difficult to replicate. Seligman et al.'s original results need further replication before the optimistic conclusions about the effectiveness of PPEs are justified and their use as an evidence-based therapeutic technique could be recommended (Wood & Tarrier, 2010). The current results also suggest that PPEs might affect people differentially, and potential mediators and moderators need to be identified before such interventions can be recommended for general use to improve subjective well-being (Michie & Abraham, 2004).

Using Signature Strengths in A New Way Intervention

In this study, the *Using Signature Strengths in a New Way* PPE showed a small but significant positive interaction with positive affect over time. It has been suggested that the *Using Signature Strengths in a New Way* exercise might be particularly effective because over time, participants should improve in their ability to effectively implement the PPE and as they see benefits are more inclined to keep using it as it becomes easier to implement and be enjoyable (Seligman et al., 2005). However, this same explanation is repeated for why the *Three Good Things in Life* exercise was effective, yet our study found no significant effects for the

Three Good Things in Life exercise. It is very difficult to speculate about effective ingredients in the PPEs as long as theoretical development lags behind the application research.

Another possible explanation for the positive results for *Using Signature Strengths in a New Way* is that although it theoretically becomes easier to implement over time, there still exists great variety in how to implement it. According to the instructions (Seligman et al., 2005), participants have the opportunity to choose from five signature strengths and the specific implementation of the signature strength is left to the participants. These degrees of freedom in implementing the exercise might have led to increases in well-being, as previous theory and research has suggested that being able to choose and implement paths to action can be associated with increases in well-being (broaden-and-build hypothesis; Fredrickson, 2008).

PPE delivery

Our study assigned participants to various tasks for 9–10 weeks, whereas Seligman et al.'s (2005) study relied on self-selected adherence to interventions over time. Sin and Lyubomirsky's (2009) meta-analysis of PPEs showed that self-selected individuals benefited more from the interventions than individuals who were simply assigned a task. This suggests that the substantial effect size in the original study might have resulted from the fact that those who choose to continue with an intervention voluntarily are likely to have higher levels of motivation,

have more optimistic expectancies and put more effort into the intervention, in turn resulting in greater gains in happiness, whereas our study did not rely on such self-selection. On the other hand, if interventions to increase subjective well-being are to be implemented as evidence-based practice (Rashid & Seligman, in press; Seligman et al., 2006), their effectiveness should not rely on the self-selection of participants.

Limitations

A potential limitation of this study is the differences in the measures used. Seligman et al. used the AHI and the CES-D to measure happiness and depression, respectively. In order to examine within-participant changes over time using repeated measures, our study employed the PANAS and its subscales to indicate SWB. There is compelling evidence for the validity of the PANAS as a measure of subjective well-being (Crawford & Henry, 2004), and it has frequently been used in studies requiring frequent repeated assessments of affect (e.g., Steptoe et al., 2007). Due to their relative length, both the AHI and CES-D are not appropriate measures to use on a daily basis and were therefore not suitable for this study. Further research is needed to determine whether the AHI in particular and PANAS show equivalence.

It should also be noted that this study was not a randomised n-of-1 design but a counterbalanced design. Although it is preferable to use a randomised ordering of interventions in an n-of-1 design

(Sniehotta, Presseau, Hobbs, & Araújo-Soares, 2012) with such a small sample size ($n=15$), randomisation may in fact bias results as interventions may not be equally represented amongst few participants. Therefore it was considered more appropriate to use a counterbalanced ordering to examine the efficacy of the interventions within-persons.

Another potential limitation of this study is fatigue. As noted, participants were required to complete the PANAS on a daily basis over a 9–10 week period, which may seem a tedious task. This is an alternative explanation for this study's high drop-out rate (56%) and is supported further by the fact that participants' most frequently cited time demands as their reason for withdrawal from the study. However, if fatigue was a major concern, it would be expected that of the 15 participants who completed the full sequence, a large amount of their data would be missing over the duration of the study. This is not the case and suggests instead that further research is needed to explore the differing participant qualities of those who find the time requirements too onerous as compared to those who complete almost every daily measurement.

Implications

The failure to replicate significant changes in subjective well-being following the PPEs found in previous research (Seligman et al., 2005) together with the substantially smaller effect sizes or lack of differential effect in other between-group replication studies (Mongrain & Anselmo-Matthews, 2012; Parks-Sheiner, 2009), implies that the usefulness of PPEs in the clinical setting needs more empirical evidence. More research, particularly further replication studies, regarding the efficacy of PPEs raising subjective well-being at the within individuals is needed before such interventions can be considered evidence based practice for therapeutic treatment programs. Furthermore, the secondary research questions of this study, related to ordering and sequencing effects of the interventions, remain unaddressed due to the lack of overall effect. These are equally important areas of investigations; however they may need to be put aside at present until a substantial effect can be replicated for any one of the interventions.

CHAPTER V: GENERAL DISCUSSION

The aim of this dissertation was to replicate and conceptually evaluate a set of widely promoted positive psychology interventions and measures. The focus of the first chapter was on replicating Seligman et al.'s (2005) landmark study on positive psychology exercises (PPEs) in an Australian sample (Research Question 1). The results of Study 1 showed that the PPEs had no greater efficacy than a control exercise. In the discussion of Study 1 one possible explanation for the failure to replicate the effects seen in the 2005 study was offered, namely that the Authentic Happiness Inventory (AHI) might not be a suitable measure of happiness in an Australian context. In Study 2 the discriminant content validity of the AHI and its operationalisation of theoretical concepts reported to form the basis of the PPEs was examined (Research Question 2). The results of Study 2 showed that the AHI insufficiently represents these underlying theoretical concepts. In light of the potential measurement problems resulting from use of the AHI, the final part of this dissertation considered the efficacy of the PPEs using a better validated measure of subjective well-being in an n-of-1 design. The n-of-1 design was chosen so that changes within individuals could be investigated in greater depth (Research Question 3). Similar to Study 1, no differential effects on subjective well-being could be identified. A summary of the research questions, results and conclusions of each of the three studies is presented in Table 5.1.

Table 5.1. Summary of the Main Results of the Three Studies

Question/s	Aim	Findings	Conclusion
(1) Do the effects of the PPEs replicate cross-culturally? (Study 1)	To replicate Seligman et al.'s (2005) study on the efficacy of the PPEs in an Australian population.	All groups showed a significant increase in happiness levels and decrease in depression levels over time. There was no differential effect between participants who engaged in a PPE or those who received the control exercise. This is represented in Figure 5.1.	Failure to replicate Seligman et. al's results in an Australian population. No effect of the PPEs over control.
(2) Could the absence of intervention effects observed in Study 1 be due to measurement issues? Specifically, does the AHI validly operationalise Authentic Happiness Theory (AHT)? (Study 2)	To evaluate the discriminant content validity of the AHI and its representation of the constructs: <i>pleasure</i> , <i>engagement</i> and <i>meaning</i> .	54% of AHI items unsatisfactorily represented <i>pleasure</i> , <i>engagement</i> or <i>meaning</i> . There was an unequal distribution of items among constructs.	The AHI poorly operationalises AHT. Poor discriminant content validity of the AHI is a plausible partial explanation for the absence of intervention effects in Study 1.
(3) Even though intervention effects were not observed at the group level, can an effect for the PPEs be detected within individuals? (Study 3)	To determine whether Seligman et al.'s effects could be reproduced in an n-of-1 design.	Results showed no overall change in the affective indicators of subjective well-being over time. A small positive interaction of the PPE 'signature strengths' with positive affect. This is represented in Figure 5.2.	Failure to replicate Seligman et. al's results within individuals apart from one small sized interaction. The usefulness of the PPEs in producing individual change is questionable.

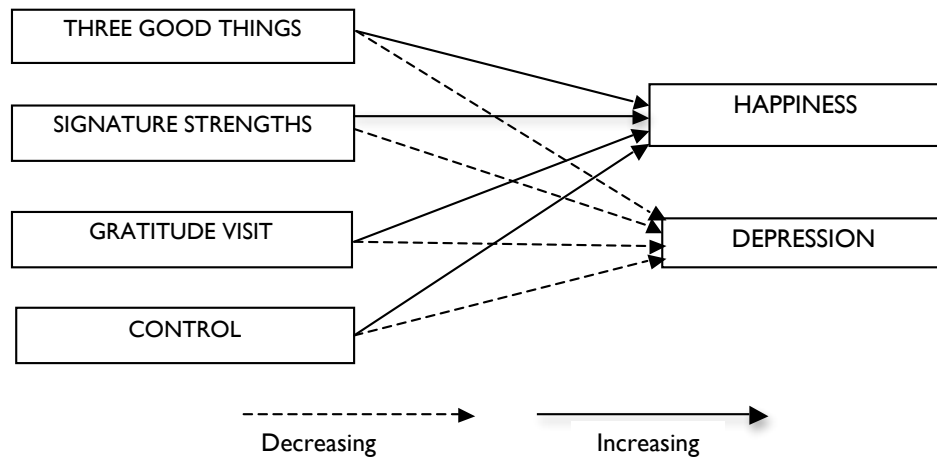


Figure 5.1 Summary of results from replication study of Seligman et al. (2005) in Australian population (Study 1).

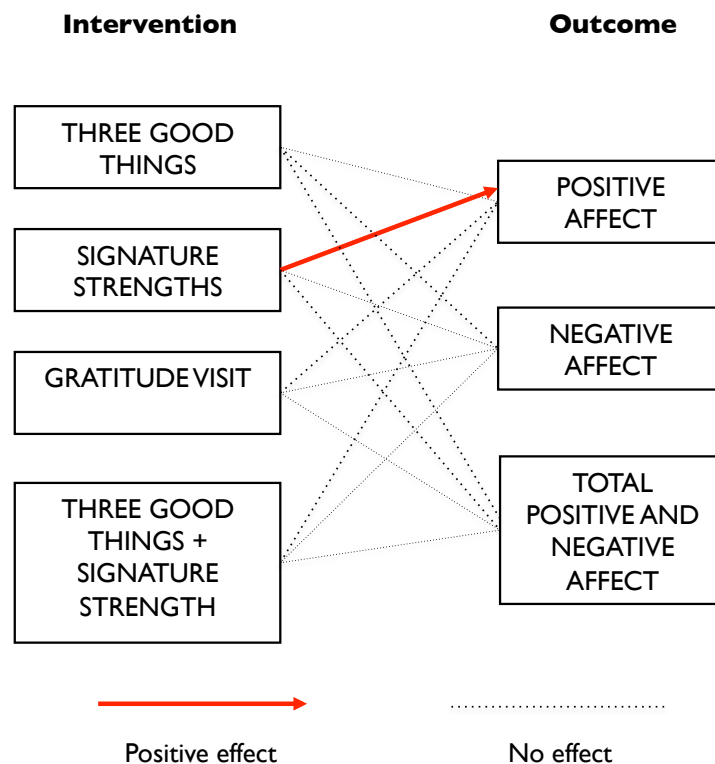


Figure 5.2 Summary of the results from n-of-1 study of the PPEs. A significant effect (time \times intervention interaction) only exists between 'signature strengths' PPEs and positive affect (Study 3).

Comparisons across studies

So far the results of the studies have been considered largely in terms of their replication of Seligman et al.'s (2005) findings. However, there are also consistencies and inconsistencies in the results of Studies 1, 2 and 3 within themselves.

Study 1 versus Study 3

In Study 1, all groups increased in happiness and decreased in depression over time and no differences were observed in the extent of change between the control and intervention groups. Similarly, when the same interventions were tested in Study 3 in an n-of-1 design, there was no significant change in happiness or depression levels over time, apart from a small positive interaction between the 'signature strengths' PPE on changes in positive affect. Both studies indicated a lack of differential effect for the PPEs. However, while Study 1 suggests people generally improve regardless of the activity they engage in (PPE or control), Study 3 suggests that people generally remain fairly stable over time. One possible explanation for the inconsistency in results seen in Studies 1 and 3 is that change at between-group level does not necessarily equate to change within individuals (Ottenbacher, 1990, 1992). Therefore, although Study 1 indicates that engaging in an activity has a positive effect over time, the effect does not appear to be robust enough to carry over to the n-of-1 design used in Study 3.

Study 1 versus Study 2

The results from Studies 1 and 2 raise questions about capturing changes in happiness using a potentially flawed measure. Study 2 demonstrated that the AHI is an inadequate measure of happiness according to Authentic Happiness Theory (AHT), as it was shown to poorly operationalise the constructs of this theory. However, the AHI was the instrument used in Study 1 and still overall improvement in scores was achieved. This positive change indicates that if something changed over time, it was not happiness as operationalised through *pleasure*, *engagement* and *meaning*.

Although the AHI overall has been shown to be inadequate happiness measure, the results from Study 2 indicate that 11 of the original 24 AHI items are satisfactory in their representation of AHT. As such, it needs to be investigated whether different results are produced in Study 1 by using only the satisfactory AHI items. However, reanalysis of the Study 1 data with the modified 11-item AHI produces no difference in results as compared to use of the full AHI. Similar to the original Study 1 results, a significant main effect exists for time for AHI scores but not for the time \times intervention interaction¹⁸. This further emphasises the point that change in scores over time is unrelated to happiness as operationalised through AHT.

¹⁸ A significant main effect exists for time for AHI scores $F(3.61, 1051.82) = 47.96, p < .001$ but not for the time \times intervention interaction $F(10.84, 1051.82) = .58 p < .85$.

Further research is required to determine which aspect of happiness the AHI is capturing, as this has direct implications for further understanding what the activities used in Study 1 actually changed. Additionally, AHT, which Seligman et al. argue underlies both the AHI and the PPEs, needs to be considered more thoroughly; the results from Studies 1 and 2 together suggest that change is brought about independent of changes in the constructs of *pleasure*, *engagement* and *meaning*.

Study 2 versus Study 3

Study 2 demonstrated that the AHI is an inappropriate index to use when measuring happiness as represented by AHT.

Although the discriminant content validity of the PANAS has not been assessed in regards to AHT, the PANAS is a well-established measure of subjective well-being (e.g. Watson et al., 1988a; Steptoe, Leigh Gibson, Hamer, & Wardle, 2007) and is sensitive to daily changes in subjective well-being (Watson et al.), making it more appropriate to use in circumstances where daily measures of happiness are required. These factors motivated the use of the PANAS over the AHI in Study 3. However, even though the PANAS might be a more valid measure of happiness, no significant change in positive affect, negative affect or total PANAS score could be detected over time following the participants' engagement in the PPEs. Converging evidence with Study 1 suggests that the lack of change within individuals is more likely due to the absence of an overall effect of the PPEs, rather than problems with measuring happiness.

Summary of comparisons

In considering the results of Studies 1, 2 and 3 together, some general conclusions can be drawn about the efficacy of the PPEs, the use of the AHI, and the relevance and applicability of AHT constructs. It seems that at the between-group level, engaging in the PPEs raises happiness and decreases depression. However, the PPEs are no more effective than a control exercise, suggesting either that the control exercise had active elements and so did not function as a control, or that engaging in any of the activities (PPE or control) can produce positive change. Whether the positive change seen at the between-group level is related to building *pleasure*, *engagement* and *meaning* is difficult to determine, as the outcome measure used (the AHI) poorly operationalises AHT. However, the fact that AHI scores still increased suggests the AHI does capture.

Potential explanations of results

Lack of unique intervention effects

The argument around replication in psychology in general has gained momentum recently (Pashler & Wagenmakers, 2012); this is particularly relevant to Seligman et al.'s (2005) research, where the practical applications of the researchers' novel results are emerging more quickly than replication studies to support the accuracy of the original findings. Of the two published partial replication studies of this research (Mongrain & Anselmo-Matthews, 2012; Parks-Sheiner, 2009), the original results could

not be fully reproduced and the effect sizes on the outcome measures were far smaller than in the original research. Studies 1 and 3 of this dissertation also did not replicate the original results. Considering the studies in in this dissertation together with the published replication studies, there appears to be a consistent inability to replicate the substantial original effects. This section will consider different explanations as to why this may be the case.

Demand characteristics

There are several possible explanations for why the Seligman et al. (2005) research fails to replicate. As discussed in Chapters 2 and 3, when explaining the non-significant effect for the PPEs found in both Studies 1 and 3, demand characteristics could have influenced the results. Rosenthal and Rosnow (1969) explain that demand characteristics help define the role of a ‘good participant’ and their responses are a function of that role. In the 2005 study, Seligman et al. recruited a convenience sample through the website associated with his self-help book *Authentic Happiness* (Seligman, 2002). Participants who enrolled this study were likely to have had prior interest in positive psychology and in Seligman himself, and thus might have viewed the website as a “plausible authority” (Seligman et al., p. 10–11). These biases create different demand characteristics in the 2005 participant sample as compared to the samples used in Studies 1 and 3, which have no overt links with Seligman or his research. One source of evidence of this is the difference in retention rates. The fact that Seligman et al. observed significantly higher retention rates than any of

the replication studies (Mongrain & Anselmo-Matthews, 2012; Parks-Sheiner, 2009; Studies 1 & 3) suggests that different demand characteristics are at play.

Motivational relevance is a possible explanation for the significantly higher retention rate observed by Seligman et al. (2005) as compared to any replication study. The original researchers accessed participants via the *Authentic Happiness* website so their participants were likely to have had an interest in positive psychology. If a study is interesting to participants and deals with things that are important to them, this influences their motivational relevance (Smith & Kirby, 2009). The concern here is that any results obtained might be reflective of participants' motivation to engage and expectation of positive effect rather than the general efficacy of the interventions. Seligman et al. (2005) acknowledged that their sample was, on average, mildly depressed and so probably composed of people who wanted to become happier, and that their participants might have been motivated to try things that could help them to feel better. By contrast, in Study 1 only 32% of people reported that they enrolled in the study with the desire to become happier.

Another potential biasing factor is the influence of the public figure of Seligman himself. As discussed in Chapter 1, Seligman has a significant public profile associated with positive psychology and happiness, not only in America but also globally (Azar, 2011; Yen,

2010). Thus it is understandable that he is perceived as an expert in this domain. Seligman et al. (2005) acknowledge that the mere act of doing something assigned by an expert, in the expectation of receiving benefit, can influence results more than the actual interventions themselves (Frank, 1973, as cited in Seligman et al., p. 419). In fact, Kelman's (1958) social influence theory suggests that a task being associated with someone who is liked or well-respected, such as an expert, can influence attitudes and behaviour via a phenomenon known as 'identification'. Therefore, research advertised as being associated with Seligman is likely to have a greater attraction for participants than is that conducted by lesser known researchers.

One of the key additions that Studies 1 and 3 bring to the literature is that this 'Seligman effect' is removed, and thus a far less biased intervention outcome is obtained. Of course there may be different demand characteristics at play, such as participants wanting to assist the researcher, yet such characteristics are also likely to be active in Seligman et al.'s (2005) original research. The results of the current dissertation and previous failed replication studies suggest that the significant findings obtained in the 2005 study are at least somewhat attributable to a 'Seligman effect'.

However, it should also be noted that both the current studies and Seligman et al.'s (2005) were single-blinded, in that the participants were unaware of which exercises were active interventions as opposed

to the control. Thus, neither the ‘Seligman effect’ nor motivational relevance can explain why a differential result was extracted for the PPEs over the control in Seligman et al.’s (2005) original research, as opposed to the lack of differential effect between the PPEs and control in Studies 1 and 3. Alternative explanations for why engaging in the control exercise resulted in significant changes in happiness will be explored further in the next section.

Control condition

The fact that in both Study 1 and Study 3 a differential effect of the PPEs over a control exercise was not found suggests that further consideration of the control exercise chosen by Seligman et al. (2005) is needed. As highlighted by Wood, Froh and Geraghty (2010), the use of inadequate control conditions is frequent in positive psychology research. Well-designed control conditions are those that are identical in all aspects to the intervention, apart from specific component which is hypothesised to be change-inducing, that is, the ‘active ingredient’ (Jacobson & Baucom, 1977). If there is any deviation from this procedure, it is impossible to evaluate the efficacy of the active ingredients of the intervention as compared to any generic mechanisms at work.

Based on Jacobson and Baucom’s (1977) recommendations, there appear to be some shortcomings in the control exercise used in the Seligman et al. (2005) study. Specifically, in the 2005 study participants

allocated to the control group were asked to write about their early memories every night for one week. However, no evidence was provided that writing about early memories should produce only a generic effect, such as expectancy of change; rather, there possibility exists that this exercise has elements which produce effects in and of itself. In fact, Parks, Schueller and Tasimi (in press) in their review of PPEs argue that both expressive writing and reminiscing can be active components in building happiness. As Seligman et al. (2005) did not specify whether to write about positive, negative or neutral exercises, there is further uncertainty as to whether this activity served its intended neutral effect, or if it in fact raised or lowered happiness levels.

Considering the results of the current studies, two questions require further exploration. Are only generic mechanisms at play in all exercises (PPEs and control) and is this what leads to overall positive change? Or, does the control exercise have active ingredients that are causing positive change? Mongrain and Anselmo-Matthews' (2012) replication of Seligman et al.'s (2005) study makes a start in addressing this issue by using a 'positive placebo', which focuses simply on positive self-representations. They found no difference in efficacy of the interventions as compared to a 'positive placebo', suggesting that simply the expectancy of positive change is enough to improve functioning and well-being. Wood, Froh and Geraghty (2010) make recommendations about the use of controls in future positive psychology research: a) use

of no-treatment or waiting list groups as a comparison group; b) use of identical therapies and selectively removing components from one therapy until it stops working, to isolate the truly effective component (e.g. selectively removing components of the *Using Signature Strengths in a New Way* according to the frequency and complexity of the task); c) comparison of PPEs with existing evidence-based techniques and therapies (e.g. comparison with a cognitive behavioural treatment program).

Broader replication issues

Cross-cultural differences

A critical issue in replication research is whether results can be replicated across cultures. Although positive psychology has been proposed to be culturally encompassing (e.g. Peterson & Seligman, 2004), in order to actually demonstrate this efficacy, the original results should be found using participants who are not drawn from a US-American background. To investigate cross-cultural differences comprehensively, investigation should not only take place in terms of Eastern versus Western cultures, but also looking at the more subtle intra-Western (or intra-Eastern) differences (Snider, 2003). Some of the cultural differences between Australia and America were discussed in Chapter 2. For example, social recognition and religious identification have been found to be more highly valued by Americans than Australians (Feather, 1973; Snider, 2003); whereas, the quality of ‘mateship’, which encompasses egalitarianism and tolerance, is more highly valued by Australians than Americans (Feather, 1973; Coombs-Richardson & Tolson, 2005). The failure to replicate Seligman et al.

(2005) in Studies 1 and 3 may be partly attributable to such intra-Western cultural differences. Since the foundation of many of the PPEs is based on ‘Americentric’ (Tillier, 2012) virtues and character strengths, it could be that perhaps a different effect will be achieved in culture where the same qualities are not as highly valued. The ‘gratitude visit’ exercise is an example of this issue. If Australian culture does not value social recognition as highly as the US-American culture, this in turn would suggest differential effects for this activity, which involves providing social recognition to another person in a public display of thanks. At a broader level, perhaps it should be considered that PPEs simply do not transfer well from US-American to Australian culture because an ‘Americentric’ view of what constitutes the ‘good life’ may not be global.

Individual applicability

In their 2005 paper, Seligman et al. consider the potential their interventions have in addressing depressive disorders. However, at present there are insufficient numbers of trials examining PPEs in clinically depressed populations to make any generalised claims of efficacy. Although Study 3 is not a clinical trial in this sense, it does consider the efficacy of PPEs within individuals in a non-patient sample. This is an equally important area of investigation, because PPEs were originally intended for use with the “average person” rather than depressed individuals (Sheldon and King, 2001, p. 216). Focusing on

the average person is consistent with the promotion of PPEs in a self-help context (e.g. Seligman, 2002, 2011), targetting people who simply want to raise their levels of happiness rather than overcome depression (Azar, 2011). The results from Study 3 showed largely no significant differences or trends in the data, which brings into question the usefulness of PPEs at the individual level.

To help explain the difference in results from between-groups to within-individuals, it is worth emphasising that statistical significance does not equate to clinical significance. The issue of clinical significance has been long-standing; in 1984, Jacobson, Follette and Revenstorf explained clinical significance in psychotherapy to be change which moves a patient from the range of the dysfunctional population to the range of the functional population. A substantial change in the outcome is needed, rather than simply statistical significance, which may translate practically to little change for the patient. For example, if a patient simply shows a 1 point improvement on a 30 point scale, this is unlikely to result in that patient being discharged from therapy; yet in a large scale group study such a result may prove to be statistically significant and lead to claims of treatment efficacy.

It is also important for new therapy to be compared with traditional evidence-based interventions (NHMRC, 1998; Wood & Tarrier, 2010); in the case of positive psychology, new treatments need to be compared with long-standing treatments such as cognitive

behavioural therapy or dialectical behaviour therapy. Furthermore, to really test the efficacy of a treatment, it is necessary for it to demonstrate positive effect not only in an artificial research environment but also in the field. The results from Study 3, which was conducted in the field, suggest that the efficacy of PPEs for individuals is questionable. Yet, a new form of PPE-based therapy is currently being advanced for use in an individual patient-clinician setting. This therapy has been termed positive psychotherapy (Seligman, Rashid and Parks, 2006) and is suggested to be useful for the treatment of depressive disorders. Although Seligman et al. state that they are aware that this new form of therapy is in its infancy, interestingly, a treatment manual has already been published and the techniques have been suggested for use by clinicians with their patients (Rashid & Seligman, in press).

Implications for Authentic Happiness Theory

Seligman et al. (2005) promote their results as evidence of the PPEs being effective interventions in raising happiness and also as support for Authentic Happiness Theory (AHT). As discussed in Chapter 1, the basis for AHT is the ‘happiness formula’ (Seligman, 2002):

$$H = S + C + V$$

where, H is one’s enduring level of happiness, S is one’s set range, C is the circumstances in one’s life and V represents the factors under one’s voluntary control. It is claimed that 50 per cent of the basis of happiness is based in S , that C plays only a minor role “no more than

between 8 and 15 per cent” (Seligman, 2002, p. 61) and that the remainder of the basis for happiness lies with V . The theory proposes that V is composed of *pleasure*, *engagement* and *meaning*.

The first problem with this theory lies in the use of a mathematical formula to explain the factors underlying happiness and well-being. No information is provided by Seligman (2002) about how and why the aforementioned construct weightings were determined, making it difficult to understand why this mathematical formula is appropriate. A similar problem arises in Fredrickson and Losada’s (2005) paper on the “positivity ratio”, which attempts to explain changes in human emotions over time using advanced mathematical tools. Brown, Sokal and Friedman (2013) published a criticism of Fredrickson and Losada’s (2005) paper, there in which they argued that there are significant conceptual and mathematic errors in calculating a “positivity ratio”; since then the modelling element of Fredrickson and Losada’s article has been formally withdrawn as invalid (Fredrickson, 2013). With this criticism in mind, the validity of the ‘happiness formula’ (Seligman, 2002), particularly the unsubstantiated percentage weightings and the assumed linear relationship, is questionable.

A second point of concern in regard to AHT is the relative contributions of the components of V (*pleasure*, *engagement*, and *meaning*). Originally there was no specification of the relative contributions these components make to happiness or whether a

combination of them is necessary. However, more recent research suggests that the three components are not equal contributors, and rather that *engagement* and *meaning* are stronger predictors of life satisfaction than *pleasure* (e.g. Peterson, Park & Seligman, 2005; Park et al., 2010). In other words, *engagement* and *meaning* have been shown to be more important to focus on when wanting to achieve happiness as compared to just focusing on *pleasure*. AHT has now been revised into well-being theory (Seligman, 2011), which has five measurable components: *pleasure*, *engagement*, *meaning*, *relationships* and *accomplishments*. Although well-being theory is proposed as an extension of AHT, there has been no revision of the components making different contributions, which again raises concern about whether the theory is really reflective of how these components interact in reality.

Theoretical Foundations of Positive Psychology Exercises

PPEs are meant to be a practical application of AHT (Seligman et al., 2005), however the theoretical foundations of these PPEs are less clear. According to Parks-Sheiner (2009), the ‘using signature strengths in new ways’ exercise is motivated by generating a ‘flow’ experience (Csikszentmihalyi, 1975), which may be seen as an application of *engagement*; however, the other PPEs do not have clear links with AHT-related concepts. Specifically, as noted by Parks-Sheiner (2009), the ‘three good things’ exercise is designed to counteract the ‘peak-end effect’ (Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993) and the

‘gratitude visit’ exercise is motivated by providing an intense and immediate increase in feelings of gratitude (Emmons & Shelton 2002). However, alternative theories also offer logical explanations. For example, the ‘using signature strengths in a new way’ PPE could also be explained by the broaden-and-build theory (Fredrickson, 1998). Specifically, ‘broadening’ one’s awareness, thoughts and actions through using ‘signature strengths’ may have a flow-on effect to ‘building’ skills and resources, and subsequently improving happiness levels.

Considering these varied explanations together, it is questionable whether the PPEs are solely motivated by AHT. This is further exemplified in the comment below, which suggests that Seligman et al. (2005) distilled their PPEs from a non-systematic review of historic happiness exercises, rather than developing them from AHT.

“From the Buddha...through the self-improvement industry of the 1990s, at least 100 ‘interventions’ claiming to increase happiness have been proposed. We have collected these and distilled about 40 of them into a form that is replicable and capable of being presented in a manual ... We saw so many powerful case studies ... that we were inspired to try out the interventions in them in RCTs”

(Seligman et al., 2005, p. 414)

It has been argued that developing psychological and broader health interventions needs to be well-founded in theory and evidence (Michie & Abraham, 2004; Fredrickson, 2008; Sniehotta et al., 2012). In the case of Seligman et al. (2005), where their results are promoted as evidence of support for not only the PPEs but also AHT, it would be beneficial for there to be a clearer connection between the theory and intervention.

At a broader level, positive psychology critics have argued that there might be conceptual problems with the underlying assumptions of AHT (e.g. Lazarus, 2003; Held, 2004, as discussed in Chapter 1), in that there is an overemphasis on the positive. AHT does not consider the potentially important role of negative emotions and experiences in achieving happiness. For example, literature regarding resilience suggests that many people confronted with loss or potentially traumatic events, recover quickly and continue to have positive emotional experiences (Bonanno, 2004) and in some cases further their adaptive capacities (Zautra, Arewasikporn, & Davis, 2010). From a different perspective, Wood and Tarrier (2010) suggest that the benefits of positive emotion are not linear, with them sometimes becoming maladaptive at higher levels, e.g. extreme happiness crossing over with mania. The complimentary interaction of positive and negative emotions is an issue which AHT fails to address.

Applied implications

The substantial positive effects for PPEs produced by Seligman et al. (2005), along with the overall increase in happiness levels and decrease in depression levels found in Study 1, still have important implications at the population level. Comparing the results from Study 1 and Study 3 demonstrates that although the PPEs do not appear to be robust enough to incur sustained change at within individuals they do offer a positive impact at the group level. This finding has significant ramifications for public health. As outlined in the Organisation for Economic Co-operation and Development's (OECD) guidelines on measuring subjective well-being, there is currently significant interest in the drivers and nature of people's subjective well-being, as it is associated with various health-, employment-, family- and economically-related benefits (Lyubomirsky, King & Diener, 2005). In order to develop effective policies, it is important for governments and other decision makers to understand what constitutes "better lives" (OECD, 2013, p. 21). According to the OEDC, changes in subjective well-being are just as important as changes in other well-being domains such as: income, jobs, health, skills and housing, civic engagement and the environment. Thus interventions to increase subjective well-being at the population level have significant implications in helping societies progress. Although PPEs require further development and exploration around the specific mechanisms that bring about positive change, the

relative ease of implementation of these PPEs and their initial promising group-level results, suggests that they may be beneficial for use in the public health context.

Limitations and future research direction

Attrition rates and missing data

Participant attrition rates during the longitudinal research components of this dissertation was substantial; Study 1 had 41% drop out over six months and Study 3 had 59% drop out over 9–10 weeks. Missing data is frequently encountered in clinical research, and this problem is often exacerbated in Internet-based research which requires participants to return to complete multiple assessments (Parks-Sheiner, 2009). Earlier in this chapter, it was suggested that higher attrition rates observed in the replication studies, as compared to the original study, may be attributed to the attraction of the ‘Seligman factor’ and subsequent differential demand characteristics of studies associated with Seligman compared to those not directly associated. It should be noted though, that no additional 'study loyalty' elements were offered by Seligman et al. (2005) as compared to the current research, again emphasising the potential role Seligman's public profile plays alone.

Parks-Sheiner (2009) differentiates between attrition rates observed in clinical trials as compared to those in a non-clinical intervention studies. As a non-patient dropping out of an intervention study does not carry the same level of risk as a patient dropping out, it has been suggested that the issue of non-patient attrition rates do not require the same level of consideration (Parks-Sheiner, 2009). However, the fact that high attrition rates occur repeatedly in studies involving

the PPEs, Seligman et al.'s (2005) research excluded, suggests that this issue requires just as much consideration as in clinical studies. Parks-Sheiner (2009) notes that the motivation behind patient dropouts is often different to non-patient dropouts, proposing that in clinical trials dropouts are an indicator that the treatment is not well-tolerated by patients, whereas in non-clinical trials it signifies that the intervention is not “sticky” (p. 53), that is, it is not attractive or beneficial enough to retain participants. Even if the missing data is appropriately accounted for in analyses and the interventions still show a positive impact, if only 50% of participants complete the intervention, this still suggests problems with the overall efficacy of the intervention. A Cochrane review (2002) on ‘intention-to-treat’ analyses concludes that a large drop-out rate is often considered a marker of the trial quality. If PPEs are not ‘sticky’, the value of them is significantly lowered both for a clinician planning to use the exercise in therapy, for the lay-person employing it as a self-help strategy and for any attempt to use PPEs as a public health measure.

These concerns regarding attrition rates, participant factors which influence the likelihood of dropout, and the ‘stickiness’ of inventions, give rise to several opportunities for future research. For example, it could be useful to investigate which participants are more likely to be influenced by the Seligman factor and what it is about his research and profile that attracts participants. It might also be relevant

to explore how interventions can be made more ‘sticky’ to increase retention rates and to investigate which participants find the time requirements of PPEs too onerous.

Cross-cultural and clinical replications

This dissertation has demonstrated that the assumption that AHT and PPEs are pan-culturally relevant might be overly optimistic. Rather, various critics suggest the positive psychology theories and interventions emerging are pervaded by Western cultural values and assumptions (e.g. Becker & Marecek, 2008; Christopher & Hickinbottom, 2008; Slife & Richardson, 2008), and the efforts to translate ancient philosophical concepts as well as Eastern societal values, in an attempt to be culturally encompassing, have been criticised for their decontextualized interpretations (Held, 2004; Yen, 2010). The only way to demonstrate whether the theories and interventions of positive psychology are pan-culturally relevant is to conduct replications of the original research with different cultural groups. Studies 1 and 3 of this dissertation are a first step in addressing subtle cultural differences by testing the efficacy of PPEs in a Western society outside of North America. Some initial attempts have been made to assess the relevance of AHT in different cultures; for example, Kumano (2011) explored the relevance of this theory to a Japanese sample and Ruch, et al. (2010) investigated the validity of a measure based on AHT in German speaking populations. Yet, further

testing is needed regarding the validity of not only the theory but also the interventions in a broader range of cultures.

With regard to the clinical applicability of PPEs, there are currently only a few studies (e.g. Seligman, Rashid & Parks, 2006) looking at the efficacy of such interventions in patient groups. This means that the relevance and appropriateness of PPEs in treating clinical disorders is uncertain. The results from Study 3 indicate that the efficacy of PPEs within individuals is questionable. However, the generalisations which can be made about clinical applicability from this study are limited. A systematic approach needs to be taken in the development, implementation and evaluation of PPEs if they are to be considered for use in clinical practice.

The National Health and Medical Research Council (NHMRC, 1998) has provided guidelines to improve the quality of health care and decrease the use of unnecessary, ineffective or harmful interventions. Under the NHMRC guidelines, several steps should be achieved before an intervention is recommended for clinical practice. In brief, i) the topic of investigation needs to be conceptually related to clinical practice, ii) the intervention needs to be considered from multi-disciplinary perspective, iii) health outcomes and barriers to change need to be identified, iv) the scientific evidence of a relationship between the interventions and outcomes needs to be considered, v) the level, quality, relevance and strength of evidence needs to be reviewed, vi)

recommendations need to be developed based on the evidence, vii) the efficacy of the interventions needs to be reviewed through pilot testing and the results obtained used to evaluate and revise the recommendations. It is also important to conduct trials in the population relevant to the claims being made, the benefits need to significantly exceed any harm produced (e.g. negative side effects), and consideration needs to be given to what individual factors are likely to influence whether an intervention is more or less successful.

This detailed process highlights that simply using a randomised controlled trial does not immediately mean that a good clinical recommendation will result. Future research efforts investigating the efficacy of PPEs in patient samples should be guided by the NHMRC guidelines outlined above. It is also important to apply the study design elements discussed earlier, such as: suitable control groups, effective control of the treatment variable, sound measurement instruments, and appropriate analyses. Conducting research in this systematic fashion will assist in determining whether efforts such as positive psychotherapy are really worth pursuing.

Conclusion

The current thesis presented three studies directly related to the influential research conducted by Seligman et al. (2005) on the effects of PPEs. Studies 1 and 3 considered the efficacy of the PPEs at the group level and in the individual context, as well as the cross-cultural

transferability. Study 2 investigated the discriminant content validity of the outcome measure (AHI) used to capture changes in happiness levels. The results demonstrated that the PPEs were generally no more effective than the control exercise in raising happiness. Furthermore, the AHI was shown to have insufficient discriminant content validity with regards to Authentic Happiness Theory. This finding not only raises concern about future application of the AHI in its current form, but also means that research using the AHI as an outcome measure should be interpreted with caution. Taken together, the results of these three studies indicate poor support for the efficacy of the PPEs and suggest that there may be problems with the theoretical concepts underlying the measure and interventions.

The excitement around positive psychology research and what it may offer in terms of achieving happiness, has led to a rapid progression from theory to application. Most recently, it appears that positive psychology has progressed to smart phones, with Signal Patterns (2013) recently developing the positive psychology smart phone 'app' *Live Happy*. However, existing interventions, measures and theories investigated in the current thesis appear underdeveloped. There does appear to be some potential for PPEs to offer benefit in the public health context, but a greater understanding of exactly how these short-term interventions can be applied to achieve a sustained positive impact on happiness levels is required. In order to develop such knowledge, more scientifically rigorous studies which produce robust and replicable results are needed. This thesis makes a start in addressing the cross-cultural and clinical applicability of PPEs,

but the generalisability of the conclusions drawn is limited. Therefore it is recommended that future research efforts focus on isolating the ‘active’ elements of PPEs, so that their efficacy can be tested in a variety of different contexts and with diverse population samples. Achieving happiness has intrigued philosophers for centuries and remains a complex subject of investigation. Although short-term interventions alone are not the answer to “what makes for the good life”, their contribution is definitely worthy of further exploration.

REFERENCES

- Abraham, C., Krahe, B., Dominic, R., & Fritsche, I. (2002). Do health promotion messages target cognitive and behavioural correlates of condom use? A content analysis of safer sex promotion leaflets in two countries. *British Journal of Health Psychology*, 7, 227-246.
- Abraham, C., Southby, L., Quandte, S., Krahé, B., & van der Sluijs, W. (2007). What's in a leaflet? Identifying research-based persuasive messages in European alcohol-education leaflets *Psychology and Health*, 22(1), 31-60.
- Argyle, M., Martin, M., & Crossland, J. (1989). Happiness as a function of personality and social encounters. In J. P. Forgas & J. M. Innes (Eds.), *Recent advances in social psychology: An international perspective* (pp. 189- 203). Amsterdam: North Holland,: Elsevier Science.
- Aspinwall, L. G., & Staudinger, U. M. (2003). *A psychology of human strengths: Fundamental questions and future directions for a positive psychology*. Washington, D.C.: American Psychological Association.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th, text revision ed.). Washington, DC: Author.
- Azar, B. (2011). Positive psychology advances, with growing pains. *Monitor on Psychology*, 42(4), 32-36.

- Barlow, D. H., & Hersen, D. (1984). *Single case experimental designs: Strategies for studying behavior change*. New York: Pergamon.
- Bates, D., & Maechler, M. (2009). lme4: Linear mixed-effects models using S4 classes: R package version 0.999375-31. Retrieved 14th October 2013 from: <http://CRAN.Rproject.org/package=lme4>
- Becker, D., & Marecek, J. (2008). Positive psychology - History in the remaking? *Theory & Psychology*, 18(5), 591-604.
- Blacha, M. D., & Fancher, R. E. (1977). A content validity study of the defense mechanism inventory. *J Pers Assess*, 41(4), 402-404.
- Boehm, J. K., & Lyubomirsky, S. . (2009). The promise of sustainable happiness. In S. J. Lopez (Ed.), *Handbook of positive psychology* (2 ed., pp. 667-677). Oxford: Oxford University Press.
- Bonanno, G. A. (2004). Loss, trauma, and human resilience - Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1), 20-28.
- Brickman, P., & Campbell, D. T. (1971). Hedonic relativism and planning the good society. In Appley (Ed.), *Adaptation-Level Theory*. New York: Academic Press.
- Brown, N.J.L., Sokal, A.D., & Friedman, H.L. (2013). The Complex Dynamics of Wishful Thinking: The Critical Positivity Ratio. *American Psychologist*, Advance online publication.
- Cacioppo J., Petty R., Losch M., Kim H. (1986)
Electromyographic activity over facial muscle regions can differentiate the valence and intensity of affective reactions. *Journal of Personality and Social Psychology*. 50(2), 260-8.

Christopher, J. C., & Hickinbottom, S. (2008). Positive psychology, ethnocentrism, and the disguised ideology of individualism.

Theory & Psychology, 18(5), 563-589.

The Cochrane Collaboration. (2002). Further issues in meta-analysis:

Intention to treat issues. Retrieved 14th October 2013 from:

<http://www.cochrane-net.org/openlearning/html/mod14-4.htm>

Coleman, A. (2010) Infinite responder software version 148e.

Retrieved 14th October 2013 from: infinite.ibasiscs.downloadable.biz

Coombs-Richardson, R., & Tolson, H. (2005). A comparison of values rankings for selected American and Australian teachers. *Journal of Research in International Education*, 4(3), 263-277.

Crawford, J. R., & Garthwaite, P. H. (2002). Investigation of the single case in neuropsychology: confidence limits on the abnormality of test scores and test score differences. *Neuropsychologia*, 40(8), 1196-1208.

Crawford, J. R., & Henry, J. D. (2004). The positive and negative affect schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, 43, 245-265.

Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety*. San Francisco, CA: Jossey-Bass.

Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. New York Harper and Row.

Csikszentmihalyi, M. (1997). *Finding flow: The psychology of engagement with everyday life*. New York: Basic Books.

- Cusin, C., Yang, H., Yeung, A., & Fava, M. (2009). Rating Scales for Depression. In L. Baer & M. Blais (Ed.), *Handbook of Clinical Rating Scales and Assessment in Psychiatry and Mental Health*. Boston: Humana Press.
- Davidson, K. M., & Tyrer, P. (1996). Cognitive therapy for antisocial and borderline personality disorders: Single case study series. *British Journal of Clinical Psychology*, 35, 413-429.
- Deci, E. L., & Ryan, R. M. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies*, 9(1), 1-11.
- Diener, E. (2012). New findings and future directions for subjective well-being research. *American Psychologist*, 67(8), 590-597
- Diener, E., Sandvik, E., & Pavot, W. (1991). Happiness is the frequency, not the intensity, of positive versus negative affect. In M. A. F. Strack, & N. Schwartz (Ed.), *Subjective well-being: An interdisciplinary perspective* (pp. 119-193). Oxford, UK: Pergamon.
- Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: revising the adaptation theory of well-being. *American Psychologist*, 61(4), 305-314.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125(2), 276-302.
- Dixon, D., Pollard, B., Johnston, M. (2007) What does the chronic pain grade questionnaire measure? *Pain*, 130, 249-253.

- Duckworth, A. L., Steen, T. A., & Seligman, M. E. P. (2005). Positive psychology in clinical practice. *Annual Review in Clinical Psychology*. 1, 629-651.
- Ehrenreich, B. (2009). *Smile or die: How positive thinking fooled America and the world*. New York, NY: Henry Holt.
- Eid, M., & Diener, E. (1999). Intraindividual variability in affect: Reliability, validity, and personality correlates. *Journal of Personality and Social Psychology*, 76(4), 662-676.
- Ekkekakis, P. (2012). The measurement of affect, mood, and emotion in exercise psychology. In R. C. E. G. Tenenbaum, & A. Kamata (Ed.), *Measurement in sport and exercise psychology* (pp. 321-332). Champaign, IL: Human Kinetics.
- Emmons, R A., & McCullough, M.E. (2003). Counting blessings versus burdens: an experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, 84(2), 377-389.
- Emmons, R A., & Shelton , C. M. (2002). Gratitude and the science of positive psychology. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 459-471). New York , NY , US: Oxford University Press
- Feather, N. (1973). *Values in Education and Society*. New York: The Free Press.
- Fisseni H. J. (2004) Lehrbuch der psychologischen Diagnostik—Mit Hinweisen zur Intervention (3. Auflage). Göttingen, Germany: Hogrefe Verlag.
- Fordyce, M.W. (1977). Development of a program to increase personal happiness. *Journal of Counseling Psychology*, 24, 511-521.

- Forgas, J. (2009). When sad is better than happy: Negative affect can improve the quality and effectiveness of persuasive messages and social influence strategies. *Journal of Experimental Social Psychology*, 43(4), 513-528.
- Franke, R., & Kaul, J. (1978). The Hawthorne experiments: First statistical interpretation. *American Sociological Review*, 43, 623-643.
- Fredrickson, B. L. (1998). What Good Are Positive Emotions? *Review of General Psychology*, 2(3), 300-319.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology. The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218-226.
- Fredrickson, B. L. (2008). Promoting positive affect. . In M. Eid & R. J. Larsen (Eds.), *The Science of Subjective Well-Being* (pp. 449-468). New York: Guilford.
- Fredrickson, B. L. (2013). Updates thinking on positive ratios. *American Psychologist*, Advance online publication.
- Friedman, H. (2009). Positive Psychology From A to W [Review of the Encyclopedia of positive psychology]. *PsycCRITIQUES*, 54(35).
- Froh, J. J. (2004). The history of positive psychology: Truth be told. *The Psychologist*, 16(3), 18-20.
- Fujita, F., & Diener, E. (2005). Life satisfaction set point: stability and change. *Journal of Personality and Social Psychology*, 88(1), 158-164.
- Galay, K. (2010). Time Use and Happiness. 1st June, 2011, from http://www.grossnationalhappiness.com/surveyReports/timeUse/Time_Use.pdf

- Gliner, J. A., Morgan, G. A., & Leech, N. L. (2009). *Research methods in applied settings : an integrated approach to design and analysis* (2nd ed.). New York: Routledge/Psychology Press.
- Gross, J. (1998). The Emerging Field of Emotion Regulation: An Integrative Review. *Review of General Psychology*, 2(3), 271-299.
- Gruber, J., Kogan, A., Quoidbach, J., & Mauss, I.B. (2003) Happiness is best kept stable: positive emotion variability is associated with poorer psychological health, *Emotion*, 13(1),1-6.
- Harmon-Jones, E., Harmon-Jones, C., Abramson, L., & Peterson, C. (2009) PANAS Positive Activation Is Associated with Anger, *Emotion*, 9(2), 183-196.
- Held, B. S. (2002). The tyranny of the positive attitude in America.: Observation and speculation. *Journal of Clinical Psychology*, 58(9), 965-991.
- Held, B. S. (2004). The Negative Side of Positive Psychology. *Journal of Humanistic Psychology*, 44(1), 9-46.
- Hofstede, G. (1997). *Cultures and organizations: software of the mind*. London: Mc Graw Hill.
- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education, *Exceptional Children*, 71(3), 213-213.
- Hox, J. J. (2002). *Multilevel analysis: Techniques and applications*. Mahwah, NJ: Erlbaum.
- Jacobson, N. S., & Baucom, D. H. (1977). Design and Assessment of Nonspecific Control Groups in Behavior-Modification Research. *Behavior Therapy*, 8(4), 709-719.

- Jones, E. E. (1993). Introduction to Special Section - Single-Case Research in Psychotherapy. *Journal of Consulting and Clinical Psychology*, 61(3), 371-372.
- Kashdan, T. B., & Steger, M. F. (2011). Challenges, pitfalls, and aspirations for positive psychology. In K. M. Sheldon, T. B. Kashdan, & M. F. Steger, (Eds.), *Designing positive psychology: Taking stock and moving forward* (pp. 9-21).
- Kahneman, D., Fredrickson, B. L., Schreiber, C. A., & Redelmeier, D. A. (1993). When More Pain Is Preferred to Less - Adding a Better End. *Psychological Science*, 4(6), 401-405.
- Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. A. (2006). Would you be happier if you were richer? A focusing illusion. *Science*, 312(5782), 1908-1910.
- Kerlinger, F. (1986). *Foundations of Behavioural Research* (3rd ed.) Orlando, FL: Harcourt Brace & Company.
- Kelman, H.C. (1958). Compliance, identification, and internalization: three processes of attitude change. *Journal of Conflict Resolution*, 2, 51-60.
- Ketai, R. (1975). Affect, Mood, Emotion, and Feeling - Semantic Considerations. *American Journal of Psychiatry*, 132(11), 1215-1217.

- Kristjansson, K. (2010). Positive Psychology, Happiness, and Virtue: The Troublesome Conceptual Issues. *Review of General Psychology*, 14(4), 296-310.
- Kumano, M. (2011). Orientations to happiness in Japanese people: pleasure, meaning and engagement. *Shinrigaky Kenkyu: The Japanese Journal of Psychology*, 81(6), 619-624.
- Lambert, M.J., & Erekson, D.M. (2008). Positive Psychology and the Humanistic Tradition. *Journal of Psychotherapy Integration*, 18(2), 222-232.
- Lawshe, C.H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28, 563-575.
- Lazarus, R. S. (2003). Does the positive psychology movement have legs? *Psychological Inquiry*, 14(2), 93-109.
- Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, US: Guilford Press.
- Linley, P. A., Maltby, J., Wood, A. M., Osborne, G., & Hurling, R. (2009). Measuring happiness: The higher order factor structure of subjective and psychological well-being measures. *Personality and Individual Differences*, 47(8), 878-884.
- Little, R.J.A., & Rubin, D.B. . (2002). *Statistical analysis with missing data* (2nd ed.). New York: Wiley.
- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2003). Reexamining adaptation and the set point model of happiness:

- reactions to changes in marital status. *Journal of Personality and Social Psychology*, 84(3), 527-539.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131(6), 803-855.
- Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46(2), 137-155.
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, 9(2), 111-131.
- Lyubomirsky, S., Sousa, L., & Dickerhoof, R. (2006). The costs and benefits of writing, talking, and thinking about life's triumphs and defeats. *Journal of Personality and Social Psychology*, 90(4), 692-708.
- McGill, R., Tukey, J.W., Larsen, W.A. (1978). Variations of Box Plots. *American Statistician*, 32(1), 12-16.
- McReynolds, L.V., & Kearns, K.P. (1983). *Single-subject experimental designs in communicative disorders*. Baltimore: University Park Press.
- Mezo, P. G., McCabe, R. E., Antony, M. M., & Burns, K. (2005). Psychometric validation of a monitoring-blunting measure for

- social anxiety disorder: the coping styles questionnaire for social situations (CSQSS). *Depress Anxiety*, 22(1), 20-27.
- Michie, S., & Abraham, C. (2004). Interventions to change health behaviours: Evidence-based or evidence-inspired? *Psychology and Health*, 19(1), 29-49.
- Molenaar, P. C. M., & Campbell, C. G. (2009). The new person-specific paradigm in psychology. *Current Directions in Psychological Science*, 18(2), 112-117.
- Mongrain, M., & Anselmo-Matthews, T. (2012). Do Positive Psychology Exercises Work? A Replication of Seligman et al. (2005). *Journal of Clinical Psychology*, 68(4).
- Morris, A., Cleary A. & Still M. (2008) The role of autonomic arousal in feelings of familiarity. *Conscious Cognition*. 17(4),1378-85.
- Morwitz, V. G., Johnson, E., & Schmittlein, D. (1993). Does Measuring Intent Change Behavior. *Journal of Consumer Research*, 20(1), 46-61.
- Musil, C. M., Warner, C. B., Yobas, P. K., & Jones, S. L. (2002). A comparison of imputation techniques for handling missing data. *West J Nurs Res*, 24(7), 815-829.
- National Health and Medical Research Council (1998). *A guide to the development, implementation and evaluation of clinical practice guidelines*. Commonwealth of Australia.
- OECD. (2013). OECD Guidelines on Measuring Subjective Well-being. Retrieved 14th October 2013 from:
<http://dx.doi.org/10.1787/9789264191655-en>

- Ooms, Jeroen. (2009). yeroon.net/lme4: A web interface for the R package lme4. 14th October 2013 from:
<http://www.yeroon.net/lme4>
- Park, N., Park, M., & Peterson, C. (2010). When is the Search for Meaning Related to Life Satisfaction? *Applied Psychology: Health and Well-being.*, 2(1), 1-13.
- Parks, A.C., Schueller, S. & Tasimi, A. (in press). Increasing happiness in the general population: Empirically Supported Self-Help? To appear in I. Boniwell & S. David (Eds.), *Oxford Handbook of Happiness*. Oxford: Oxford University Press.
- Parks-Sheiner, A. C. . (2009). *Positive Psychotherapy: Building a Model of Empirically Supported Self-help* (Doctor of Philosophy Dissertation), University of Pennsylvania, Pennsylvania. (3363580)
- Pashler, H. & Wagenmakers, E. J. (2012). Editors' Introduction to the Special Section on Replicability in Psychological Science: A Crisis of Confidence. *Perspectives on Psychological Science*, 7(6), 528-530.
- Peterson, C, Park, N., & Seligman, M. E. (2005). Assessment of character strengths. In G. P. Koocher, J. C. Norcross & S. S. Hill (Eds.), *Psychologists' desk reference* (3rd ed.). New York: Oxford University Press.

- Peterson, C., Park, N., Steen, T. A., & Seligman, M. (2006). *The Authentic Happiness Inventory*. University of Michigan.
- Pink, B. (2011). Technical Paper: Socio-Economic Indexes for Areas (SEIFA) 2011. Technical paper 2033.0.55.001. Canberra, Australia: Australian Bureau of Statistics.
- Pollard, B., Johnston, M., & Dieppe, P. (2006). What do osteoarthritis health outcome instruments measure? Impairment, activity limitation, or participation restriction? *Journal of Rheumatology*, 33(4), 757-763.
- Radloff, L. S. . (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.
- Rashid, T., & Seligman, M. (in press). *Positive psychotherapy: A treatment manual*. New York: Oxford University Press.
- Raudenbush, S. W., & Liu, X. (2000). Statistical power and optimal design for multisite randomized trials. *Psychological Methods*, 5(2), 199-213.
- Rosenthal, R., & Rosnow, R. L. (1969). *Artifact in behavioral research*. New York: Academic Press.
- Ruch, W., Harzer, C. Proyer, R. T., Park, N., & Peterson, C. (2010). Ways to happiness in German-speaking countries: The adaptation of the German version of the Orientations to Happiness

- Questionnaire in paper-pencil and internet samples. *European Journal of Psychological Assessment*, 26, 224-231.
- Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review*, 110(1), 145-172.
- Russell, J. A., & Feldman-Barrett, L. (1999). Core Affect, Prototypical Emotional Episodes, and Other Things Called Emotion: Dissecting the Elephant. *Journal of Personality and Social Psychology*, 76(5), 805-819.
- Rusk, R.D., & Waters, L.E. (2013). Tracing the size, reach, impact, and breadth of positive psychology. *The Journal of Positive Psychology*, 8(3), 207-221.
- Ryff, C. D., & Singer, B. H. (2008). Know thyself and become what you are: A eudaimonic approach to psychological well-being. *Journal of Happiness Studies*, 9(1), 13-39.
- Sanjuan, P. (2011). Affect Balance as Mediating Variable Between Effective Psychological Functioning and Satisfaction with Life. *Journal of Happiness Studies*, 12(3), 373-384.
- Sasson-Gelman, J. (2008). *An exploration of factors influencing participation, employment, and subjective well-being in individuals with multiple sclerosis*. (Doctor of Philosophy), University of Wisconsin-Madison. (3327840)

- Schiffrrin, H. H., & Nelson, K. S. (2010). Stressed and Happy?
Investigating the Relationship Between Happiness and Perceived
Stress. *Journal of Happiness Studies*, 11, 33-39.
- Schulz, K. F., Altman, D. G., Moher, D., & Grp, C. (2010). CONSORT
2010 Statement: updated guidelines for reporting parallel group
randomised trials. *BMC Medicine*, 8.
- Seligman, M. (2002). *Authentic happiness: using the new positive
psychology to realize your potential for lasting fulfillment*. The Free
Press.
- Seligman, M. (2011a). *Flourish: A Visionary New Understanding of
Happiness and Well-being* New York: Free Press.
- Seligman, M. (2011b). What is Well-Being? Retrieved 14th October
2013 from: www.authentichappiness.com
- Seligman, M., & Csikszentmihalyi, M. (2000). Positive psychology. An
introduction. *American Psychologist*, 55(1), 5-14.
- Seligman, M., Steen, T., Park, N., & Peterson, C. (2005). Positive
psychology progress - Empirical validation of interventions.
American Psychologist, 60(5), 410-421.
- Seligman, M., Rashid, T., & Parks, A. (2006). Positive psychotherapy.
American Psychologist, 61(8), 774-788.
- Shapiro, S. B. (2001). Illogical positivism. *American Psychologist*, 56(1),
82-82.

- Sheldon, K. M., & King, L. (2001). Why positive psychology is necessary. *American Psychologist*, 56(3), 216-217.
- Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualising best possible selves. . *Journal of Positive Psychology*, 1(2), 73-82.
- Signal Patterns (2013). Live Happy- A Happiness Boosting Postive Psychology Program. Retrieved 15th December from: http://www.signalpatterns.com/iphone/livehappy_std.html
- Slife, B. D., & Richardson, F. C. (2008). Problematic ontological underpinnings of positive psychology. *Theory & Psychology*, 18(5), 699-723.
- Smith, C. A., & Kirby, L. D. (2009). Putting appraisal in context: Toward a relational model of appraisal and emotion. *Cognition & Emotion*, 23(7), 1352-1372.
- Snider, P.D. (2003). *Exploring the Relationships between Individualism and Collectivism and Attitudes towards Counselling among Ethnic Chinese, Australian, and American University Students*. (Doctor of Philosophy), Murdoch University.
- Sniehotta, F., Presseau, J., Hobbs, N., & Araújo-Soares, V. (2012). Testing Self-Regulation Interventions to Increase Walking Using Factorial Randomized N-of-1 Trials. *Health Psychology*, 31 (6), 733-737.
- Snijders, Tom A. B., & Bosker, Roel. (1999). *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*. New York: Sage.

Snyder, C.R., & Lopez, S. J. (2002). *Handbook of positive psychology*.

New York: Oxford University Press.

Soutphommasane, T. (2011). What Crisis? Wellbeing and the Australian quality of life *Per Capita Research Paper*. Melbourne.

Spybrook, J., Bloom, H., Congdon, R., Hill, C., Liu, X., Martinez, A., &

Raudenbush, S. W. (2011). Optimal Design Plus Empirical

Evidence (v 3.01). Retrieved 14th October 2013 from:

<http://pikachu.harvard.edu/od/>

Step toe, A., Leigh Gibson, E., Hamer, M., & Wardle, J. (2007).

Neuroendocrine and cardiovascular correlates of positive affect

measured by ecological momentary assessment and by

questionnaire. *Psychoneuroendocrinology*, 32(1), 56-64.

Taylor, E. (2001). Positive Psychology and Humanistic Psychology: A

Reply to Seligman. *Journal of Humanistic Psychology*, 41(1), 13-

29.

Tellegen, A., Watson, D., & Clark, L. A. (1999). On the dimensional and

hierarchical structure of affect. *Psychological Science*, 10(4), 297-

303.

Tervo, R. C., Estrem, T. L., Bryson-Brockmann, W., & Symons, F. J.

(2003). Single-case experimental designs: applications in

developmental-behavioral pediatrics. *J Dev Behav Pediatr*, 24(6),

438-448.

- Tillier, W. (2012). Positive psychology. Retrieved 14th October 2013, from
<http://www.positivedisintegration.com/positivepsychology.htm>
- Veenhoven, R. (2003). Hedonism and Happiness. *Journal of Happiness Studies*, 4(4), 437-457.
- Waterman, A. S., Schwartz, S. J., & Conti, R. (2008). The implications of two conceptions of happiness (hedonic enjoyment and eudaimonia) for the understanding of intrinsic motivation. *Journal of Happiness Studies*, 9(1), 41-79.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063-1070.
- Wiest, M., Schüz, B., Webster, N., & Wurm, S. (2011). Subjective Well-Being and Mortality Revisited: Differential Effects of Cognitive and Emotional Facets of Well-Being on Mortality. *Health Psychology*, 30(6), 728-735.
- Wood, A.M., Froh, J. J., & Geraghty, A. W. A. (2010). Gratitude and well-being: A review and theoretical integration. *Clinical Psychology Review*, 30(7), 890-905.
- Wood, A. M., & Tarrier, N. (2010). Positive Clinical Psychology: A new vision and strategy for integrated research and practice. *Clinical Psychology Review*, 30(7), 819-829.


Yen, J. (2010). Authorizing Happiness: Rhetorical Demarcation of Science and Society in Historical Narratives of Positive Psychology. *Journal of Theoretical and Philosophical Psychology*, 30(2), 67-78.

Zautra, A. J., Arewasikporn, A., & Davis, M. C. (2010). Resilience: Promoting well-being through recovery, sustainability, and growth. *Research in Human Development*, 7(3), 221-238.

APPENDICES

STUDY 1

Content of newspaper advertisement:

**UNIVERSITY
OF TASMANIA**

HAPPINESS STUDY

We are running a program to discover how effective each of a number of strategies is in improving people's life satisfaction. If you are interested in improving your satisfaction with life and you would like to participate in our program, then we would like to hear from you!

Participation in this study will involve you learning to incorporate a happiness exercise or a placebo exercise into your life for one week and recording its effect on your life-satisfaction.

For further information please visit www.happiness-study.org.

Media release:

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

DATE: NOVEMBER 2011

ATTENTION: Chiefs of Staff, News Directors



Participants wanted for new happiness study

New happiness research project

Is 2012 your year to get happy?

Rosalind Woodworth, a Doctor of Philosophy student in the UTAS School of Psychology, needs participants for an internet-based study that will test the “interventions” recommended by American psychologist Martin Seligman. According to Seligman, these interventions are easy ways to increase the happiness of the ordinary person.

Rosalind has already completed one study previously based on recommendations from Seligman. She followed 17 people for ten weeks who applied some of the interventions Seligman proposed. “Seligman had five interventions and he found that three showed particularly good results,” she said. One of these interventions focused on building gratitude, two focused on increasing awareness of what is most positive about oneself, and two focused on identifying strengths of character. It remains unclear as to why Seligman believes that these particular interventions work.

Rosalind’s first study tried these interventions with people over a ten week period and didn’t find any clear results.

“My participants didn’t report any real difference in their happiness levels.”

Rosalind’s second study will investigate whether a problem exists with the interventions themselves or whether other factors may be influencing the results.

“I’m interested in finding out why Seligman had such strong, positive results – I’m also interested in seeing whether it might be a cultural difference, as Seligman’s studies are US-based.”

“Those positive results may be a result of Seligman’s status in America as a big-name researcher.

“He has quite a big following and a series of popular books. It may be that his profile is attracting people who already believe in his teachings on optimism.”

“Seligman remains silent in his research as to why the interventions he has developed should work. Part of my research is to further explore this issue.”

Participating in the study:

Participants will take part in the study via an internet based program.

Rosalind would like only participants living in Australia in order to compare her results the US results Seligman showed.

She would like 500 people ideally.

To take part in the study, please visit www.happiness-study.org


For more information/interviews, please call Rosalind on: 0409147919 or email: rjw1@utas.edu.au

Information Released by:

The Media Office, University of Tasmania

Phone: (03) 6226 2124 or 0447 537 375 Email: Media.Office@utas.edu.au

Greeting page for website:



The Happiness Study
at the
University of Tasmania School of Psychology

Information for new participants

If you are interested in participating in the Happiness Study that is being run through the School of Psychology at the University of Tasmania, or if you'd just like to learn more about the study, please [click here](#).

Returning participants who have already registered

VIA Survey of Character

If you have received an email asking you to complete the VIA Survey of Character, please take another look at that email ... it contains a link to the survey. To complete the survey, you can either click on the link, or copy and paste it into your browser address bar.

Follow-up surveys

If were given your instructions for the Happiness Exercises more than a week ago and you are returning to complete one of the follow-up questionnaires, please click on the link supplied to you in the reminder email. If you have not yet received a reminder, then it is not yet time for you to complete the follow-up survey.

Part of the website for the Happiness Study at the University of Tasmania.

Information sheet presented on website:

PARTICIPANT INFORMATION SHEET SOCIAL SCIENCE/ HUMANITIES RESEARCH

Thank you for showing interest in participating in this research. Before you decide to participate in this research, it is important that you understand why this research is being conducted and what it will involve. Please read this information carefully. If you have any questions please contact the research team at Happiness.Study@utas.edu.au

Title: Positive Psychology: The meaning of 'happiness'

1. What is the purpose of this study?

This study aims to investigate the effectiveness of various intervention programs to increase happiness in individuals. The data is being collected by Rosalind Woodworth (Student Research) as part of the requirements of completing a Doctor of Philosophy (Clinical) at the University of Tasmania, under the supervision of Principal Researchers Dr Angela O'Brien-Malone (Honorary Research Associate), Dr Mark Diamond (Clinical Psychologist) and Dr. Benjamin Schuez (Lecturer).

2. Who can participate?

In this study we are interested in the effectiveness of particular happiness exercise in adults in the general population, involving all members of the community. Therefore anyone who is over the age of 18 is welcome to participate.

3. What does this study involve?

This study involves participating in a 'happiness exercise' for one week and then completing follow-up questionnaires at one week, one month, three months and six months after completing the initial exercise. If you agree to participate, today you will provide some background information, complete questionnaires, and then we will give you specific instructions about how to incorporate a particular happiness exercise into your life for one week and what this will involve. There is no guarantee that undertaking this exercise will make you happier and you should also be aware that you may receive an inert (control) exercise.

4. Can I withdraw from the research?

Yes, you can withdraw at any time. It is important that you understand that your involvement in this study is voluntary. There will be no negative consequences to you if you decide to withdraw at anytime during the program.

5. Will information about me be kept confidential?

All the information that is collected about you during the course of the research will be kept strictly confidential. We will collect no information that could personally identify you, and the data we collect will be seen by researchers only. The storage of the electronic data will adhere to the University regulations and be kept on University premises in an electronic data archive. This non-identifiable data kept in the research data archive may be used by other researchers in the future.

6. What are the possible risks and benefits of participation?

This study aims to increase happiness levels in individuals' lives, so it might be of benefit to you as an individual participant. The information that we learn from each participant will help us to create programs for the wider community. However, it is also important to understand that we cannot guarantee that the interventions will result in greater happiness. Additionally, if you complete follow-up tests at one week, one month, three months and six months after completing the initial exercise, you will be entered into a lottery to win a prize. We anticipate that this study will involve no specific risks and reemphasise that you are free to withdraw from the study at any time.

7. What if I have questions about this research?

If you would like to discuss any aspect of this study please feel free to contact me (Rosalind Woodworth- Student Researcher) at Happiness.Study@utas.edu.au. I will be happy to discuss any aspect of the research with you.

This study has been approved by the Tasmanian Social Sciences Research Ethics Committee.

If you have concerns or complaints about the conduct of this study should contact the Executive Officer of the HREC (Tasmania) Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. You will need to quote H11792.

Thank you for taking the time to read this information.

Consent form presented on website:

**PARTICIPANT CONSENT FORM
SOCIAL SCIENCE/ HUMANITITES
RESEARCH**

Before continuing, your acceptance is required as confirmation of your informed consent to participate in this study. Please read the questions below carefully and respond accordingly.

I have read and understood the 'Participant Information' section for this project.

YES NO

The nature and possible effects of the study have been explained to me.

YES NO

I understand that the study involves: (a) participating in a 'happiness exercise' for one week, (b) completing follow up questionnaires, (c) providing some background demographic information. I also understand that there is no guarantee that undertaking this exercise will lead me to having greater feelings of happiness and that I may receive an inert (control) exercise.

YES NO

I understand that my involvement in this research study is voluntary and that there will be no consequences to me if I decide to withdraw from the research.

YES NO

The research team anticipates that this study involves no specific risks; however the research team's details will be made available to me so that any pressing concerns can be discussed as soon as possible. If my participation is causing me significant distress or problems though, I am free to withdraw

YES NO

I agree that research data gathered from me for the study may be published provided that I cannot be identified as a participant

YES NO

I understand that any information I supply to the researcher(s) will be used only for the purposes of research

YES NO

I agree to participate in this study

YES NO

Demographics questions:

- 1. Are you female or male?**
- 2. How many years old were you last birthday?**
- 3. What is the highest level of education you have completed?**
 - Less than year 12
 - Year 12
 - Vocational training
 - Bachelor's Degree
 - Post-graduate Degree
- 4. How would you classify your income?**
 - Below average
 - Average
 - Above average
- 5. Please indicate your agreement with the statement "I have high self-esteem" from 1 (not very true of me) to 5 (very true of me).**
- 6. Please indicate your agreement with the statement "I feel connected with others" from 1 (strongly disagree) to 7 (strongly agree).**
- 7. Please indicate your agreement with the statement "When I am with other people, I feel included" from 1 (strongly disagree) to 7 (strongly agree).**
- 8. What is your main reason for taking part in this research?**
 - Desire to become happier
 - Interested in participating in new research
 - Course requirement
 - Possibility of winning a prize
 - Something to do
 - Other- please indicate your reason in the comment box
- 9. Please enter your email address**

Questionnaires used in Study 1:

Authentic Happiness Inventory

Please read each group of statements carefully. Then pick the one statement in each group that best describes the way you have been feeling for the past week, including today. Be sure to read all of the statements in each group before circling the letter corresponding to your choice.

1. A. I feel like a failure.
 B. I do not feel like a winner.
 C. I feel like I have succeeded more than most people.
 D. As I look back on my life, all I see are victories.
 E. I feel I am extraordinarily successful.
2. A. I am usually in a bad mood.
 B. I am usually in a neutral mood.
 C. I am usually in a good mood.
 D. I am usually in a great mood.
 E. I am usually in an unbelievably great mood.
3. A. When I am working, I pay more attention to what is
 going on around me than to what I am doing.
 B. When I am working, I pay as much attention to what
 is going on around me as to what I am doing.
 C. When I am working, I pay more attention to what I
 am doing than to what is going on around me.
 D. When I am working, I rarely notice what is going on
 around me.
 E. When I am working, I pay so much attention to what I
 am doing that the outside world practically ceases to
 exist.
4. A. My life does not have any purpose or meaning.
 B. I do not know the purpose or meaning of my life.
 C. I have a hint about my purpose in life.
 D. I have a pretty good idea about the purpose or
 meaning of my life.
 E. I have a very clear idea about the purpose or meaning
 of my life.

5. A. I rarely get what I want.
B. Sometimes, I get what I want, and sometimes not.
C. Somewhat more often than not, I get what I want.
D. I usually get what I want.
E. I always get what I want.
6. A. I have sorrow in my life.
B. I have neither sorrow nor joy in my life.
C. I have more joy than sorrow in my life.
D. I have much more joy than sorrow in my life.
E. My life is filled with joy.
7. A. Most of the time I feel bored.
B. Most of the time I feel neither bored nor interested in what I am doing.
C. Most of the time I feel interested in what I am doing.
D. Most of the time I feel quite interested in what I am doing.
E. Most of the time I feel fascinated by what I am doing.
8. A. I feel cut off from other people.
B. I feel neither close to nor cut off from other people.
C. I feel close to friends and family members.
D. I feel close to most people, even if I do not know them well.
E. I feel close to everyone in the world.
9. A. By objective standards, I do poorly.
B. By objective standards, I do neither well nor poorly.
C. By objective standards, I do rather well.
D. By objective standards, I do quite well.
E. By objective standards, I do amazingly well.
10. A. I am ashamed of myself.
B. I am not ashamed of myself.
C. I am proud of myself.
D. I am very proud of myself.
E. I am extraordinarily proud of myself.

- 11.** A. Time passes slowly during most of the things that I do.
B. Time passes quickly during some of the things that I do and slowly for other things.
C. Time passes quickly during most of the things that I do.
D. Time passes quickly during all of the things that I do.
E. Time passes so quickly during all of the things that I do that I do not even notice it.
- 12.** A. In the grand scheme of things, my existence may hurt the world.
B. My existence neither helps nor hurts the world.
C. My existence has a small but positive effect on the world.
D. My existence makes the world a better place.
E. My existence has a lasting, large, and positive impact on the world.
- 13.** A. I do not do most things very well.
B. I do okay at most things I am doing.
C. I do well at some things I am doing.
D. I do well at most things I am doing.
E. I do really well at whatever I am doing.
- 14.** A. I have little or no enthusiasm.
B. My enthusiasm level is neither high nor low.
C. I have a good amount of enthusiasm.
D. I feel enthusiastic doing almost everything.
E. I have so much enthusiasm that I feel I can do most anything.
- 15.** A. I do not like my work (paid or unpaid).
B. I feel neutral about my work.
C. For the most part, I like my work.
D. I really like my work.
E. I truly love my work.

- 16.** A. I am pessimistic about the future.
B. I am neither optimistic nor pessimistic about the future.
C. I feel somewhat optimistic about the future.
D. I feel quite optimistic about the future.
E. I feel extraordinarily optimistic about the future.
- 17.** A. I have accomplished little in life.
B. I have accomplished no more in life than most people.
C. I have accomplished somewhat more in life than most people.
D. I have accomplished more in life than most people.
E. I have accomplished a great deal more in my life than most people.
- 18.** A. I am unhappy with myself.
B. I am neither happy nor unhappy with myself--I am neutral.
C. I am happy with myself.
D. I am very happy with myself.
E. I could not be any happier with myself.
- 19.** A. My skills are never challenged by the situations I encounter.
B. My skills are occasionally challenged by the situations I encounter.
C. My skills are sometimes challenged by the situations I encounter.
D. My skills are often challenged by the situations I encounter.
E. My skills are always challenged by the situations I encounter.

20. A. I spend all of my time doing things that are unimportant.
B. I spend a lot of time doing things that are neither important nor unimportant.
C. I spend some of my time every day doing things that are important.
D. I spend most of my time every day doing things that are important.
E. I spend practically every moment every day doing things that are important.
21. A. If I were keeping score in life, I would be behind.
B. If I were keeping score in life, I would be about even.
C. If I were keeping score in life, I would be somewhat ahead.
D. If I were keeping score in life, I would be ahead.
E. If I were keeping score in life, I would be far ahead.
22. A. I experience more pain than pleasure.
B. I experience pain and pleasure in equal measure.
C. I experience more pleasure than pain.
D. I experience much more pleasure than pain.
E. My life is filled with pleasure.
23. A. I do not enjoy my daily routine.
B. I feel neutral about my daily routine.
C. I like my daily routine, but I am happy to get away from it.
D. I like my daily routine so much that I rarely take breaks from it.
E. I like my daily routine so much that I almost never take breaks from it.
24. A. My life is a bad one.
B. My life is an OK one.
C. My life is a good one.
D. My life is a very good one.
E. My life is a wonderful one.

Centre for Epidemiological Studies- Depression Scale (CES-D)

To take the questionnaire, please select which option best reflects how each statement applies to you. The items refer to how you have felt and behaved over the last week.

Please note: This test will only be scored correctly if you answer each one of the questions.

1. I was bothered by things that don't usually bother me.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
2. I did not feel like eating; my appetite was poor.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
3. I felt that I could not shake off the blues even with the help of my family or friends.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
4. I felt that I was just as good as other people.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
5. I had trouble keeping my mind on what I was doing.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
6. I felt depressed.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
7. I felt everything I did was an effort.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)

8. I felt hopeful about the future.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
9. I thought my life had been a failure.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
10. I felt fearful.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
11. My sleep was restless.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
12. I was happy.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
13. I talked less than usual.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
14. I felt lonely.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
15. People were unfriendly.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)

16. I enjoyed life.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
17. I had crying spells.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
18. I felt sad.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
19. I felt that people disliked me.
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
20. I could not get "going".
 - Rarely or none of the time (<1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)

VIA Signature Strengths Questionnaire¹⁸

Please choose one option in response to each statement. All of the questions reflect statements that many people would find desirable, but we want you to answer only in terms of **whether the statement describes what you are like**. Please be honest and accurate! We can not rank your strengths until you answer all of the 240 questions.

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
1. I find the world a very interesting place.	•	•	•	•	•
2. I always go out of my way to attend educational events.	•	•	•	•	•
3. I always identify the reasons for my actions.	•	•	•	•	•
4. Being able to come up with new and different ideas is one of my strong points.	•	•	•	•	•
5. I am very aware of my surroundings.	•	•	•	•	•
6. I always have a broad outlook on what is going on.	•	•	•	•	•
7. I have taken frequent stands in the face of strong opposition.	•	•	•	•	•

¹⁸ Only administered to participants completing the 'using signature strengths in a new way' exercise

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
8. I never quit a task before it is done.	•	•	•	•	•
9. I always keep my promises.	•	•	•	•	•
10. I am never too busy to help a friend.	•	•	•	•	•
11. I am always willing to take risks to establish a relationship.	•	•	•	•	•
12. I never miss group meetings or team practices.	•	•	•	•	•
13. I always admit when I am wrong.	•	•	•	•	•
14. In a group, I try to make sure everyone feels included.	•	•	•	•	•
15. I have no trouble eating healthy foods.	•	•	•	•	•
16. I have never deliberately hurt anyone.	•	•	•	•	•
17. It is important to me that I live in a world of beauty.	•	•	•	•	•
18. I always express my thanks to people who care about me.	•	•	•	•	•
19. I always look on the bright side.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
20. I am a spiritual person.	•	•	•	•	•
21. I am always humble about the good things that have happened to me.	•	•	•	•	•
22. Whenever my friends are in a gloomy mood, I try to tease them out of it.	•	•	•	•	•
23. I want to fully participate in life, not just view it from the sidelines.	•	•	•	•	•
24. I always let bygones be bygones.	•	•	•	•	•
25. I am never bored.	•	•	•	•	•
26. I love to learn new things.	•	•	•	•	•
27. I always examine both sides of an issue.	•	•	•	•	•
28. When someone tells me how to do something, I automatically think of alternative ways to get the same thing done.	•	•	•	•	•
29. I know how to handle myself in different social situations.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
30. Regardless of what is happening, I keep in mind what is most important.	•	•	•	•	•
31. I have overcome an emotional problem by facing it head on.	•	•	•	•	•
32. I always finish what I start.	•	•	•	•	•
33. My friends tell me that I know how to keep things real.	•	•	•	•	•
34. I really enjoy doing small favors for friends.	•	•	•	•	•
35. There are people in my life who care as much about my feelings and well-being as they do about their own.	•	•	•	•	•
36. I really enjoy being a part of a group.	•	•	•	•	•
37. Being able to compromise is an important part of who I am.	•	•	•	•	•
38. As a leader, I treat everyone equally well regardless of his or her experience.	•	•	•	•	•
39. Even when candy or cookies are under my nose, I never overeat.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
40. Better safe than sorry is one of my favourite mottoes.	•	•	•	•	•
41. The goodness of other people almost brings tears to my eyes.	•	•	•	•	•
42. I get chills when I hear about acts of great generosity.	•	•	•	•	•
43. I can always find the positive in what seems negative to others.	•	•	•	•	•
44. I practice my religion.	•	•	•	•	•
45. I do not like to stand out in a crowd.	•	•	•	•	•
46. Most people would say I am fun to be with.	•	•	•	•	•
47. I never dread getting up in the morning.	•	•	•	•	•
48. I rarely hold a grudge.	•	•	•	•	•
49. I am always busy with something interesting.	•	•	•	•	•
50. I am thrilled when I learn something new.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
51. I make decisions only when I have all of the facts.	•	•	•	•	•
52. I like to think of new ways to do things.	•	•	•	•	•
53. No matter what the situation, I am able to fit in.	•	•	•	•	•
54. My view of the world is an excellent one.	•	•	•	•	•
55. I never hesitate to publicly express an unpopular opinion.	•	•	•	•	•
56. I am a goal-oriented person.	•	•	•	•	•
57. I believe honesty is the basis for trust.	•	•	•	•	•
58. I go out of my way to cheer up people who appear down.	•	•	•	•	•
59. There are people who accept my shortcomings.	•	•	•	•	•
60. I am an extremely loyal person.	•	•	•	•	•
61. I treat all people equally regardless of who they might be.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
62. One of my strengths is helping a group of people work well together even when they have their differences.	•	•	•	•	•
63. I am a highly disciplined person.	•	•	•	•	•
64. I always think before I speak.	•	•	•	•	•
65. I experience deep emotions when I see beautiful things.	•	•	•	•	•
66. At least once a day, I stop and count my blessings.	•	•	•	•	•
67. Despite challenges, I always remain hopeful about the future.	•	•	•	•	•
68. My faith never deserts me during hard times.	•	•	•	•	•
69. I do not act as if I am a special person.	•	•	•	•	•
70. I welcome the opportunity to brighten someone else's day with laughter.	•	•	•	•	•
71. I never approach things halfheartedly.	•	•	•	•	•
72. I never seek vengeance.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
73. I am always curious about the world.	•	•	•	•	•
74. Every day, I look forward to the opportunity to learn and grow.	•	•	•	•	•
75. I value my ability to think critically.	•	•	•	•	•
76. I pride myself on being original.	•	•	•	•	•
77. I have the ability to make other people feel interesting.	•	•	•	•	•
78. I have never steered a friend wrong by giving bad advice.	•	•	•	•	•
79. I must stand up for what I believe even if there are negative results.	•	•	•	•	•
80. I finish things despite obstacles in the way.	•	•	•	•	•
81. I tell the truth even if it hurts.	•	•	•	•	•
82. I love to make other people happy.	•	•	•	•	•
83. I am the most important person in someone else's life.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
84. I work at my very best when I am a group member.	•	•	•	•	•
85. Everyone's rights are equally important to me.	•	•	•	•	•
86. I am very good at planning group activities.	•	•	•	•	•
87. I control my emotions.	•	•	•	•	•
88. My friends believe that I make smart choices about what I say and do.	•	•	•	•	•
89. I see beauty that other people pass by without noticing.	•	•	•	•	•
90. If I receive a gift, I always let the person who gave it know I appreciated it.	•	•	•	•	•
91. I have a clear picture in my mind about what I want to happen in the future.	•	•	•	•	•
92. My life has a strong purpose.	•	•	•	•	•
93. I never brag about my accomplishments.	•	•	•	•	•
94. I try to have fun in all kinds of situations.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
95. I love what I do.	•	•	•	•	•
96. I always allow others to leave their mistakes in the past and make a fresh start.	•	•	•	•	•
97. I am excited by many different activities.	•	•	•	•	•
98. I am a true life-long learner.	•	•	•	•	•
99. My friends value my objectivity.	•	•	•	•	•
100. I am always coming up with new ways to do things.	•	•	•	•	•
101. I always know what makes someone tick.	•	•	•	•	•
102. People describe me as "wise beyond my years."	•	•	•	•	•
103. I call for action while others talk.	•	•	•	•	•
104. I am a hard worker.	•	•	•	•	•
105. My promises can be trusted.	•	•	•	•	•
106. I have voluntarily helped a neighbor in the last month.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
107. My family and close friends cannot do anything that would make me stop loving them.	•	•	•	•	•
108. I never bad-mouth my group to outsiders.	•	•	•	•	•
109. I give everyone a chance.	•	•	•	•	•
110. To be an effective leader, I treat everyone the same.	•	•	•	•	•
111. I never want things that are bad for me in the long run, even if they make me feel good in the short run.	•	•	•	•	•
112. I always avoid activities that are physically dangerous.	•	•	•	•	•
113. I have often been left speechless by the beauty depicted in a movie.	•	•	•	•	•
114. I am an extremely grateful person.	•	•	•	•	•
115. If I get a bad grade or evaluation, I focus on the next opportunity, and plan to do better.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
116. In the last ~24 hours, I have spent 30 minutes in prayer, meditation or contemplation.	•	•	•	•	•
117. I am proud that I am an ordinary person.	•	•	•	•	•
118. I try to add some humor to whatever I do.	•	•	•	•	•
119. I look forward to each new day.	•	•	•	•	•
120. I believe it is best to forgive and forget.	•	•	•	•	•
121. I have many interests.	•	•	•	•	•
122. I always go out of my way to visit museums.	•	•	•	•	•
123. When the topic calls for it, I can be a highly rational thinker.	•	•	•	•	•
124. My friends say that I have lots of new and different ideas.	•	•	•	•	•
125. I always get along well with people I have just met.	•	•	•	•	•
126. I am always able to look at things and see the big picture.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
127. I always stand up for my beliefs.	•	•	•	•	•
128. I do not give up.	•	•	•	•	•
129. I am true to my own values.	•	•	•	•	•
130. I always call my friends when they are sick.	•	•	•	•	•
131. I always feel the presence of love in my life.	•	•	•	•	•
132. It is important for me to maintain harmony within my group.	•	•	•	•	•
133. I am strongly committed to principles of justice and equality	•	•	•	•	•
134. I believe that our human nature brings us together to work for common goals.	•	•	•	•	•
135. I can always stay on a diet.	•	•	•	•	•
136. I think through the consequences every time before I act.	•	•	•	•	•
137. I am always aware of the natural beauty in the environment.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
138. I go to extremes to acknowledge people who are good to me.	•	•	•	•	•
139. I have a plan for what I want to be doing five years from now.	•	•	•	•	•
140. My faith makes me who I am.	•	•	•	•	•
141. I prefer to let other people talk about themselves.	•	•	•	•	•
142. I never allow a gloomy situation to take away my sense of humor.	•	•	•	•	•
143. I have lots of energy.	•	•	•	•	•
144. I am always willing to give someone a chance to make amends.	•	•	•	•	•
145. I can find something of interest in any situation.	•	•	•	•	•
146. I read all of the time.	•	•	•	•	•
147. Thinking things through is part of who I am.	•	•	•	•	•
148. I am an original thinker.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
149. I am good at sensing what other people are feeling.	•	•	•	•	•
150. I have a mature view on life.	•	•	•	•	•
151. I always face my fears.	•	•	•	•	•
152. I never get sidetracked when I work.	•	•	•	•	•
153. I take pride in not exaggerating who or what I am.	•	•	•	•	•
154. I am as excited about the good fortune of others as I am about my own.	•	•	•	•	•
155. I can express love to someone else.	•	•	•	•	•
156. Without exception, I support my teammates or fellow group members.	•	•	•	•	•
157. I refuse to take credit for work I have not done.	•	•	•	•	•
158. My friends always tell me I am a strong but fair leader.	•	•	•	•	•
159. I can always say "enough is enough."	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
160. I always keep straight right from wrong.	•	•	•	•	•
161. I greatly appreciate all forms of art.	•	•	•	•	•
162. I feel thankful for what I have received in life.	•	•	•	•	•
163. I know that I will succeed with the goals I set for myself.	•	•	•	•	•
164. I believe that each person has a purpose in life.	•	•	•	•	•
165. I rarely call attention to myself.	•	•	•	•	•
166. I have a great sense of humor.	•	•	•	•	•
167. I cannot wait to get started on a project.	•	•	•	•	•
168. I rarely try to get even.	•	•	•	•	•
169. It is very easy for me to entertain myself.	•	•	•	•	•
170. If I want to know something, I immediately go to the library or the Internet and look it up.	•	•	•	•	•
171. I always weigh the pro's and con's.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
172. My imagination stretches beyond that of my friends.	•	•	•	•	•
173. I am aware of my own feelings and motives.	•	•	•	•	•
174. Others come to me for advice.	•	•	•	•	•
175. I have overcome pain and disappointment.	•	•	•	•	•
176. I stick with whatever I decide to do.	•	•	•	•	•
177. I would rather die than be phony.	•	•	•	•	•
178. I enjoy being kind to others.	•	•	•	•	•
179. I can accept love from others.	•	•	•	•	•
180. Even if I disagree with them, I always respect the leaders of my group.	•	•	•	•	•
181. Even if I do not like someone, I treat him or her fairly.	•	•	•	•	•
182. As a leader, I try to make all group members happy.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
183. Without exception, I do my tasks at work or school or home by the time they are due.	•	•	•	•	•
184. I am a very careful person.	•	•	•	•	•
185. I am in awe of simple things in life that others might take for granted	•	•	•	•	•
186. When I look at my life, I find many things to be grateful for.	•	•	•	•	•
187. I am confident that my way of doing things will work out for the best.	•	•	•	•	•
188. I believe in a universal power, a god.	•	•	•	•	•
189. I have been told that modesty is one of my most notable characteristics.	•	•	•	•	•
190. I find satisfaction in making others smile or laugh.	•	•	•	•	•
191. I can hardly wait to see what life has in store for me in the weeks and years ahead.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
192. I am usually willing to give someone another chance.	•	•	•	•	•
193. I think my life is extremely interesting.	•	•	•	•	•
194. I read a huge variety of books.	•	•	•	•	•
195. I try to have good reasons for my important decisions.	•	•	•	•	•
196. In the last month I have found an original solution to a problem in my life.	•	•	•	•	•
197. I always know what to say to make people feel good.	•	•	•	•	•
198. I may not say it to others, but I consider myself to be a wise person.	•	•	•	•	•
199. I always speak up in protest when I hear someone say mean things.	•	•	•	•	•
200. When I make plans, I am certain to make them work.	•	•	•	•	•
201. My friends always tell me I am down to earth.	•	•	•	•	•
202. I am thrilled when I can let others share the spotlight.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
203. I have a neighbor or someone at work or school that I really care about as a person.	•	•	•	•	•
204. It is important to me to respect decisions made by my group.	•	•	•	•	•
205. I believe that everyone should have a say.	•	•	•	•	•
206. As a leader, I believe that everyone in the group should have a say in what the group does.	•	•	•	•	•
207. For me, practice is as important as performance.	•	•	•	•	•
208. I always make careful choices.	•	•	•	•	•
209. I often have a craving to experience great art, such as music, drama, or paintings.	•	•	•	•	•
210. I feel a profound sense of appreciation every day.	•	•	•	•	•
211. If I feel down, I always think about what is good in my life.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
212. My beliefs make my life important.	•	•	•	•	•
213. No one would ever describe me as arrogant.	•	•	•	•	•
214. I believe life is more of a playground than a battlefield.	•	•	•	•	•
215. I awaken with a sense of excitement about the day's possibilities.	•	•	•	•	•
216. I do not want to see anyone suffer, even my worst enemy.	•	•	•	•	•
217. I really enjoy hearing about other countries and cultures.	•	•	•	•	•
218. I love to read nonfiction books for fun.	•	•	•	•	•
219. My friends value my good judgment.	•	•	•	•	•
220. I have a powerful urge to do something original during this next year.	•	•	•	•	•
221. It is rare that someone can take advantage of me.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
222. Others consider me to be a wise person.	•	•	•	•	•
223. I am a brave person.	•	•	•	•	•
224. When I get what I want, it is because I worked hard for it.	•	•	•	•	•
225. Others trust me to keep their secrets.	•	•	•	•	•
226. I always listen to people talk about their problems.	•	•	•	•	•
227. I easily share feelings with others	•	•	•	•	•
228. I gladly sacrifice my self-interest for the benefit of the group I am in.	•	•	•	•	•
229. I believe that it is worth listening to everyone's opinions.	•	•	•	•	•
230. When I am in a position of authority, I never blame others for problems.	•	•	•	•	•
231. I exercise on a regular basis.	•	•	•	•	•
232. I cannot imagine lying or cheating.	•	•	•	•	•

	Very much like me	Like me	Neutral	Unlike me	Very much unlike me
233. I have created something of beauty in the last year.	•	•	•	•	•
234. I have been richly blessed in my life.	•	•	•	•	•
235. I expect the best.	•	•	•	•	•
236. I have a calling in my life.	•	•	•	•	•
237. People are drawn to me because I am humble.	•	•	•	•	•
238. I am known for my good sense of humor.	•	•	•	•	•
239. People describe me as full of zest.	•	•	•	•	•
240. I try to respond with understanding when someone treats me badly.	•	•	•	•	•

Email text:

- First email- Group “Three good things”:

Thank you for deciding to participate in The Happiness Study at the University of Tasmania. This study involves participating in a ‘happiness exercise’ for one week and then completing follow-up questionnaires. The specific exercise which you have been allocated for the week involves developing a greater awareness about things which you find positive in your own life. Each day for the next week please record three good things, plus a causal explanation as to why each of these things happened. It is not important how significant or insignificant you view each of these “good things”, but do try and always record three for each day.

At the end of week you will receive an email requesting you to complete follow-up questionnaires. Your continued **participation in this program will lead to you being entered in a lottery draw to win a prize.** If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

- First email- Group “Gratitude visit”:

Thank you for deciding to participate in The Happiness Study at the University of Tasmania. This study involves participating in a ‘happiness exercise’ for one week and then completing follow-up questionnaires. The specific exercise which you have been allocated for the week involves selecting one important person from your past who has made a major positive difference in your life and to whom you have never fully expressed your thanks. Please do not confound this selection with new-found romantic love, or with the possibility of a future gain. Take your time to write a letter to this person, about 1 page in length.

Invite that person to your home, or travel to that person's home- it is important that you deliver the letter face to face. Do not tell the person the purpose of the visit in advance; a simple "I just want to see you" will suffice. When you are both comfortable deliver your letter and let the other person react unhurriedly. Reminisce together about the concrete events that make this person so important to you.

At the end of week you will receive an email requesting you to complete follow-up questionnaires. Your continued **participation in this program will lead to you being entered in a lottery draw to win a prize.** If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

- First email- Group "Using your signature strengths":

Thank you for deciding to participate in The Happiness Study at the University of Tasmania. This study involves participating in a 'happiness exercise' for one week and then completing follow-up questionnaires. The specific exercise which you have been allocated for the week involves using your strengths in new ways. However, before you are able to do this exercise you will need to complete the Inventory of Character Strengths, which will give you information about your top five character strengths. Please click on the following link to be redirected to the Inventory of Character Strengths: www.happiness-study.org

Once you have completed the Inventory of Character Strengths you will be informed of your top five character strengths, which will also be emailed to you. Please take some time to read the description of each of your strengths. You are then required to choose **one** of these five

strengths and use it in a new and different way for each day of the next week.

At the end of week you will receive an email requesting you to complete follow-up questionnaires. Your continued **participation in this program will lead to you being entered in a lottery draw to win a prize**. If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

- First email- Group “Early Memories”/ Control :

Thank you for deciding to participate in The Happiness Study at the University of Tasmania. This study involves participating in a ‘happiness exercise’ for one week and then completing follow-up questionnaires. The specific exercise which you have been allocated involves writing about early memories every night for the next week. At the end of week you will receive an email requesting you to complete follow-up questionnaires. Your continued **participation in this program will lead to you being entered in a lottery draw to win a prize**. If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

- Follow up:

Thank you for your continued participation in The Happiness Study at the University of Tasmania. Now that you have completed your happiness exercise for one week, you encouraged to return to the website to complete follow-up questionnaires. **You are reminded that**

your continued participation in the follow-up aspects of this program will lead to you being entered in a lottery draw to win a prize.

Please click on the following link to be redirected to the happiness study questionnaires:

<http://www.happiness-study.org/ls/index.php?sid=62827&lang=en>

If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

- 1 week follow up:

Thank you for your continued participation in The Happiness Study at the University of Tasmania. At this point in the study you are encouraged to return to the website to complete 1 week follow-up questionnaires. **You are reminded that your continued participation in the follow-up aspects of this program will lead to you being entered in a lottery draw to win a prize.**

Please click on the following link to be redirected to the happiness study questionnaires:

<http://www.happiness-study.org/ls/index.php?sid=62827&lang=en>

If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

- 1 month follow up:

Thank you for your continued participation in The Happiness Study at the University of Tasmania. At this point in the study you are

encouraged to return to the website to complete 1 month follow-up questionnaires. **You are reminded that your continued participation in the follow-up aspects of this program will lead to you being entered in a lottery draw to win a prize.**

Please click on the following link to be redirected to the happiness study questionnaires:

<http://www.happiness-study.org/ls/index.php?sid=62827&lang=en>

If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

- 3 month follow up:

Thank you for your continued participation in The Happiness Study at the University of Tasmania. At this point in the study you are encouraged to return to the website to complete 3 month follow-up questionnaires. **You are reminded that your continued participation in the follow-up aspects of this program will lead to you being entered in a lottery draw to win a prize.**

Please click on the following link to be redirected to the happiness study questionnaires:

<http://www.happiness-study.org/ls/index.php?sid=62827&lang=en>

If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

- 6 month follow-up:

Thank you for your continued participation in The Happiness Study at the University of Tasmania. The final requirement of the study is to return to the website to complete 6 month follow-up questionnaires. On completion of these questionnaires you will be entered in the lottery draw to win a prize.

Please click on the following link to be redirected to the happiness study questionnaires:

<http://www.happiness-study.org/ls/index.php?sid=62827&lang=en>

If you would like to discuss any aspect of this study please feel free to contact the research team at Happiness.Study@utas.edu.au. We will be happy to discuss any aspect of the research with you.

Kind regards,

Rosalind Woodworth (Student Researcher)

STUDY 2

PARTICIPANT INFORMATION SHEET— SOCIAL SCIENCE/ HUMANITIES RESEARCH

Title: Positive Psychology: The meaning of 'happiness'

This information sheet is for you to keep.

1. Invitation

You are invited to participate in a research study to investigate the construction of various measures of happiness. The study is being conducted by Dr Angela O'Brien-Malone, Honorary Research Associate (Principal researcher), Dr Mark Diamond, Clinical Psychologist (Principal Researcher), Dr Benjamin Schuez (Principal Researcher), and Rosalind Woodworth, DPsych(Clinical) (Student researcher) under the supervision of the principal researchers.

2. What is the purpose of this study?

This study is part of a multiple-part project aimed at investigating various aspects of positive psychology. The purpose of this component of the project is to investigate the match between a measures of happiness (Authentic Happiness Inventory) and the way that happiness is described by Professor Martin Seligman and some other researchers in the area.

3. Why have I been invited to participate in this study?

You are eligible to participate in this study because in our research we are interested in responses from people who have expertise in psychology. Participation is completely voluntary.

4. What does this study involve?

After providing some basic, non-identifying, demographic information, you will be given a questionnaire and will be asked to rate whether the statements in each question relate to various aspects of happiness.

5. How much time will the research take?

Your participation should take no more than 30 minutes.

6. Can I withdraw from the research?

Your involvement in this study is entirely voluntary. While we would be pleased to have you participate, you have the right to withdraw at any time prior to handing in your questionnaires, and you may do so without having to give any explanation for your decision. Please note, we will not keep a record of who you are, so after you have handed in your questionnaires, we will not be able to distinguish yours from those of other participants, and we will not be able to withdraw your data from the study.

7. Confidentiality

We record very little information about you and we *never* link who you are to any of the questionnaires. This means that the data we have collected about you is anonymous and very limited. It is extremely unlikely that anyone could ever know anything about you personally from the data we collect. In fact, once your data is put together with everyone else's data, it is extremely unlikely that even you would know what data was about you and what data was about someone else.

8. Storage of data and use of data for other purposes

Storage of the hard copies of the questionnaires that are collected will be kept on University premises in a locked filing cabinet for a minimum of 5 years beyond the date of publication of the research results. This data recorded on paper will be transferred to electronic form following data collection to that it can be analysed. When we have finished the research, we would like to give all the data in an electronic form to a research data archive so that others may be able to use the data for their own research or teaching. Because there is no identifying information about you in the data, sharing the data with others is extremely unlikely to compromise your privacy.

9. Are there any possible benefits from participation in this study?

In terms of benefits of participation to the wider community, this study will provide further information about questionnaires that are used to measure happiness, and hence will provide

valuable information to the Researcher or Clinician about the most appropriate measure to choose when conducting research in this area.

10. Are there any possible risks from participation in this study?

We anticipate that this study will involve no specific risks. However, the research team's details will be made available to you so that you can discuss any concerns that you have with them.

11. What if I have questions about this research?

If you would like to discuss any aspect of this study please feel free to contact Principal Researchers Dr Benjamin Schuez at email benjamin.schuez@utas.edu.au, Dr Angela O'Brien-Malone at email angelaom@utas.edu.au, Dr Mark Diamond at email mark.diamond@utas.edu.au, or student researcher Rosalind Woodworth at email rjw1@utas.edu.au. We will be happy to discuss any aspect of the research with you. Results of this project will be available in 2013, so please contact us for a summary of the findings or you can access a summary of the findings on the School of Psychology web site at <http://fcms.its.utas.edu.au/scieng/psychol/>.

This study has been approved by the Tasmanian Social Sciences Research Ethics Committee. If you have concerns or complaints about the conduct of this study should contact the Executive Officer of the HREC (Tasmania) Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. You will need to quote H0011792.

Thank you for taking the time to consider this study.

This information sheet is for you to keep.

If you wish to participate, please sign the consent form

Consent form:

CONSENT FORM**Title:** Positive Psychology: The meaning of 'happiness'

1. I have read and understood the 'Information Sheet' for this project.
2. The nature of the study has been explained to me.
3. I understand that the study involves (a) making rating judgments of questions related to happiness, and (b) providing some basic demographic information. I understand that my involvement in this research study is voluntary and that there will be no consequences to me if I decide to withdraw from the research. I understand that I may withdraw from the research at any time up to the point when I hand in the questionnaires that I have completed, and that I may withdraw without having to give any reason for my decision. I also understand that once I have handed in the questionnaires, it will not be possible to separate (and withdraw) my questionnaires from those of other individuals.
4. I understand that any hard copy data I provide will be securely archived at the School of Psychology in anonymous form for a minimum of 5 years beyond the date of publication of the research results and that no record will be kept of my identity. I also understand that an electronic version of the anonymous research data will be submitted to a data research archive and possibly used for future research projects.
5. The research team anticipates that this study involves no specific risks; however the research team's details will be made available to me so that any pressing concerns can be discussed as soon as possible.
6. Any questions that I have asked have been answered to my satisfaction.
7. I agree that research data gathered from me for the study may be published provided that I cannot be identified as a participant.
8. I understand that any information I supply to the researcher(s) will be used only for the purposes of research.

I agree to participate in this research. YES NO

I agree to have my electronic data archived in a research archive and possibly be used in future research projects. YES NO

Name of Participant: _____

Signature: _____

Date: _____

Statement by Investigator

☐ I have explained the project & the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation

If the Investigator has not had an opportunity to talk to participants prior to them participating, the following must be ticked.

☐ The participant has received the Information Sheet where my details have been provided so participants have the opportunity to contact me prior to consenting to participate in this project.

Name of investigator: Rosalind Woodworth

Signature of investigator _____

Date _____

14.4.12

General instructions to participants:

INSTRUCTIONS TO PARTICIPANTS

Thank you for participating in this positive psychology research which aims to investigate what a widely used questionnaire on happiness measures. In this exercise you will be required to make rating judgments about questions related to happiness. We would like to ask you to rate for each item which aspect of happiness it captures best.

The questions you will be making ratings of come from the Authentic Happiness Inventory and the Positive and Negative Affect Scale.

All questions relate to the following three different descriptions of happiness.

1. Pleasure

Some people think that being happy is about seeking pleasure and pleasant sensations and about avoiding pain and unpleasant sensations. In this sense pleasure is about we *feel*: ecstasy, warmth, comfort, and the like. For example, "Eating ice-cream makes me feel happy".

2. Engagement

Some people think that being happy is about being so *engaged* with things that time seems to pass quickly, your attention is very focused on the activity you are doing, you lose your sense of self, and afterwards, you feel very alive and invigorated. For example, "I often spend hours losing myself in a favorite book"

3. Meaning

Some people think that being happy is about belonging to and serving something that you believe is bigger than the self. Living a *meaningful* life means "making a difference", "being all that you can be", developing what is best within yourself and then using those skills and talents for the good of others. For example, "I enjoy the fact that I have made a significant contribution to the world".

We want to know *your opinion* about whether each question in the questionnaire asks either about Pleasure, Engagement or Meaning, or combinations of these. Each question consists of five statements that describe different degrees of an aspect of happiness.

Next to each Question please:

- 1) Select one or more of the descriptions of happiness you feel most appropriately matches the Question as a whole.
- 2) Rate your confidence in each allocation between 0 and 10 (0 being not at all confident, 10 being extremely confident).

The instructions for this task will be explained in more detail in pages to follow.

Before starting this exercise, please nominate option/options below:

a) Highest level of qualification in psychology obtained:

☐ Bachelor ☐ Honours ☐ Diploma ☐ Masters ☐ Doctorate (DPsych or PhD)

AND/OR

b) Qualification in psychology currently undertaken:

☐ Bachelor ☐ Honours ☐ Diploma ☐ Masters ☐ Doctorate (DPsych or PhD)

c) Which nationality to do you identify with? _____

Questionnaires/tasks used in Study 2:

AHI task

INSTRUCTIONS FOR RATING THE AUTHENTIC HAPPINESS INVENTORY

We would like you to make rating judgements about the questions used in the Authentic Happiness Inventory (AHI). For every question in this questionnaire, people are asked to read a group of statements carefully and then pick the one statement in each group that best describes the way they have been feeling for the past week.

We do not want you to complete the questionnaire as a self-report measure.

Rather we would like you to consider the statements in each question and then rate how these statements as a whole match one or more of the descriptions of happiness previously discussed. As noted earlier:

Pleasure is about what we feel: ecstasy, warmth, comfort, and the like.

Engagement is about being so focused on an activity that time seems to pass quickly, you lose your sense of self, and afterwards, you feel very alive and invigorated.

Meaning is about belonging to and serving something that you believe is bigger than the self

We would like you to:

- 1) Select one or more of the descriptions of happiness (pleasure, engagement, meaning) you feel most appropriately matches the statements in the question as a whole.
- 2) Rate your confidence in each allocation between 0 and 10 (0 being not at all confident, 10 being extremely confident).

Example Question:

Please make your judgment based on all statements in the question:	Question 1	<ul style="list-style-type: none"> – I never enjoy eating – I rarely enjoy eating – I sometimes enjoy eating – I often enjoy eating – I always enjoy eating
--	-------------------	--

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure How confident are you in your rating?	Not at all confident 0 1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Extremely confident
<input type="checkbox"/> Engagement How confident are you in your rating?	Not at all confident 0 1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Extremely confident
<input type="checkbox"/> Meaning How confident are you in your rating?	Not at all confident 0 1 2 3 4 5 6 7 8 9 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Extremely confident

You may believe the statements in this question fit into both 'pleasure' and 'engagement', so you should select both these description. However, you feel quite uncertain in your rating of engagement, so you may select '2' in confidence levels, whereas you feel much more sure in your rating of pleasure, so you may select '7' in confidence levels.

Question 1

- I feel like a failure.
- I do not feel like a winner.
- I feel like I have succeeded more than most people.
- As I look back on my life, all I see are victories.
- I feel I am extraordinarily successful

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Question 2

- I am usually in a bad mood.
- I am usually in a neutral mood.
- I am usually in a good mood.
- I am usually in a great mood.
- I am usually in an unbelievably great mood.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Quick reference:

Pleasure is about what we feel: ecstasy, warmth, comfort, and the like.

Engagement is about being so focused on an activity that time seems to pass quickly, you lose your sense of self, and afterwards, you feel very alive and invigorated.

Meaning is about belonging to and serving something that you believe is bigger than the self

Question 3

- When I am working, I pay more attention to what is going on around me than to what I am doing.
- When I am working, I pay as much attention to what is going on around me as to what I am doing.
- When I am working, I pay more attention to what I am doing than to what is going on around me.
- When I am working, I rarely notice what is going on around me.
- When I am working, I pay so much attention to what I am doing that the outside world practically ceases to exist

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Engagement	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Meaning	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 4

- My life does not have any purpose or meaning.
- I do not know the purpose or meaning of my life.
- I have a hint about my purpose in life.
- I have a pretty good idea about the purpose or meaning of my life.
- I have a very clear idea about the purpose or meaning of my life.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Engagement	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Meaning	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Quick reference:

Pleasure is about what we feel: ecstasy, warmth, comfort, and the like.

Engagement is about being so focused on an activity that time seems to pass quickly, you lose your sense of self, and afterwards, you feel very alive and invigorated.

Meaning is about belonging to and serving something that you believe is bigger than the self

Question 5

- I rarely get what I want.
- Sometimes, I get what I want, and sometimes not.
- Somewhat more often than not, I get what I want.
- I usually get what I want.
- I always get what I want.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Question 6

- I have sorrow in my life.
- I have neither sorrow nor joy in my life.
- I have more joy than sorrow in my life.
- I have much more joy than sorrow in my life.
- My life is filled with joy.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Quick reference:

Pleasure is about what we feel: ecstasy, warmth, comfort, and the like.

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Meaning is about belonging to and serving something that you believe is bigger than the self

Question 7

- Most of the time I feel bored.
- Most of the time I feel neither bored nor interested in what I am doing.
- Most of the time I feel interested in what I am doing.
- Most of the time I feel quite interested in what I am doing.
- Most of the time I feel fascinated by what I am doing.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Question 8

- I feel cut off from other people.
- I feel neither close to nor cut off from other people.
- I feel close to friends and family members.
- I feel close to most people, even if I do not know them well.
- I feel close to everyone in the world.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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Meaning is about belonging to and serving something that you believe is bigger than the self

Question 9

- By objective standards, I do poorly.
- By objective standards, I do neither well nor poorly.
- By objective standards, I do rather well.
- By objective standards, I do quite well.
- E. By objective standards, I do amazingly well.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Question 10

- I am ashamed of myself.
- I am not ashamed of myself.
- I am proud of myself.
- I am very proud of myself.
- I am extraordinarily proud of myself.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Quick reference:

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Question 11

- Time passes slowly during most of the things that I do.
- Time passes quickly during some of the things that I do and slowly for other things.
- Time passes quickly during most of the things that I do.
- Time passes quickly during all of the things that I do.
- Time passes so quickly during all of the things that I do that I do not even notice it.

<input type="checkbox"/> Pleasure	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Engagement	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Meaning	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Which description(s) of happiness do you feel most appropriately matches this question?

Question 12

- In the grand scheme of things, my existence may hurt the world.
- My existence neither helps nor hurts the world.
- My existence has a small but positive effect on the world.
- My existence makes the world a better place.
- My existence has a lasting, large, and positive impact on the world.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Engagement	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Meaning	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Quick reference:

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Question 13

- I do not do most things very well.
- I do okay at most things I am doing.
- I do well at some things I am doing.
- I do well at most things I am doing.
- I do really well at whatever I am doing.

<input type="checkbox"/> Pleasure	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Engagement	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Meaning	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Which description(s) of happiness do you feel most appropriately matches this question?

Question 14

- I have little or no enthusiasm.
- My enthusiasm level is neither high nor low.
- I have a good amount of enthusiasm.
- I feel enthusiastic doing almost everything.
- I have so much enthusiasm that I feel I can do most anything.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Engagement	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Meaning	Not at all confident										Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Quick reference:

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Question 15

- I do not like my work (paid or unpaid).
- I feel neutral about my work.
- For the most part, I like my work.
- I really like my work
- I truly love my work.

Which description(s) of happiness do you feel most appropriately matches this question?

☐ **Pleasure**

Not at all confident

Extremely confident

How confident are you in your rating?

012345678910

☐☐☐☐☐☐☐☐☐☐☐

☐ **Engagement**

Not at all confident

Extremely confident

How confident are you in your rating?

012345678910

☐☐☐☐☐☐☐☐☐☐☐

☐ **Meaning**

Not at all confident

Extremely confident

How confident are you in your rating?

012345678910

☐☐☐☐☐☐☐☐☐☐☐

Question 16

- I am pessimistic about the future.
- I am neither optimistic nor pessimistic about the future.
- I feel somewhat optimistic about the future.
- I feel quite optimistic about the future.
- I feel extraordinarily optimistic about the future.

Which description(s) of happiness do you feel most appropriately matches this question?

☐ **Pleasure**

Not at all confident

Extremely confident

How confident are you in your rating?

012345678910

☐☐☐☐☐☐☐☐☐☐☐

☐ **Engagement**

Not at all confident

Extremely confident

How confident are you in your rating?

012345678910

☐☐☐☐☐☐☐☐☐☐☐

☐ **Meaning**

Not at all confident

Extremely confident

How confident are you in your rating?

012345678910

☐☐☐☐☐☐☐☐☐☐☐

Quick reference:

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Question 17

- I have accomplished little in life.
- I have accomplished no more in life than most people.
- I have accomplished somewhat more in life than most people.
- I have accomplished more in life than most people.
- I have accomplished a great deal more in my life than most people.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Question 18

- I am unhappy with myself.
- I am neither happy nor unhappy with myself--I am neutral.
- I am happy with myself.
- I am very happy with myself.
- I could not be any happier with myself.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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Question 19

- My skills are never challenged by the situations I encounter.
- My skills are occasionally challenged by the situations I encounter.
- My skills are sometimes challenged by the situations I encounter.
- My skills are often challenged by the situations I encounter.
- My skills are always challenged by the situations I encounter.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Question 20

- I spend all of my time doing things that are unimportant.
- I spend a lot of time doing things that are neither important nor unimportant.
- I spend some of my time every day doing things that are important.
- I spend most of my time every day doing things that are important.
- I spend practically every moment every day doing things that are important.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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Question 21

- If I were keeping score in life, I would be behind.
- If I were keeping score in life, I would be about even.
- If I were keeping score in life, I would be somewhat ahead.
- If I were keeping score in life, I would be ahead.
- If I were keeping score in life, I would be far ahead.

Which description(s) of happiness do you feel most appropriately matches this question?

☐ **Pleasure**

How confident are you in your rating?

Not at all
confident

Extremely
confident

0 1 2 3 4 5 6 7 8 9 10
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ **Engagement**

How confident are you in your rating?

Not at all
confident

Extremely
confident

0 1 2 3 4 5 6 7 8 9 10
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ **Meaning**

How confident are you in your rating?

Not at all
confident

Extremely
confident

0 1 2 3 4 5 6 7 8 9 10
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Question 22

- I experience more pain than pleasure.
- I experience pain and pleasure in equal measure.
- I experience more pleasure than pain.
- I experience much more pleasure than pain.
- My life is filled with pleasure.

Which description(s) of happiness do you feel most appropriately matches this question?

☐ **Pleasure**

How confident are you in your rating?

Not at all
confident

Extremely
confident

0 1 2 3 4 5 6 7 8 9 10
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ **Engagement**

How confident are you in your rating?

Not at all
confident

Extremely
confident

0 1 2 3 4 5 6 7 8 9 10
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ **Meaning**

How confident are you in your rating?

Not at all
confident

Extremely
confident

0 1 2 3 4 5 6 7 8 9 10
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Quick reference:

Pleasure is about what we feel: ecstasy, warmth, comfort, and the like.

Engagement is about being so focused on an activity that time seems to pass quickly, you lose your sense of self, and afterwards, you feel very alive and invigorated.

Meaning is about belonging to and serving something that you believe is bigger than the self

Question 23

- I do not enjoy my daily routine.
- I feel neutral about my daily routine.
- I like my daily routine, but I am happy to get away from it.
- I like my daily routine so much that I rarely take breaks from it.
- I like my daily routine so much that I almost never take breaks from it.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Question 24

- My life is a bad one.
- My life is an OK one.
- My life is a good one.
- My life is a very good one.
- My life is a wonderful one.

Which description(s) of happiness do you feel most appropriately matches this question?

<input type="checkbox"/> Pleasure	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Engagement	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Meaning	Not at all confident											Extremely confident
How confident are you in your rating?	0	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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Pleasure is about what we feel: ecstasy, warmth, comfort, and the like.

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STUDY 3

Content of newspaper advertisement:

HAPPINESS STUDY



We are running a program to discover how effective each of a number of strategies is in improving people's life satisfaction. If you are interested in improving your satisfaction with life, you are not depressed, and you would like to participate in our program, then we would like to hear from you!

Your involvement in the 11 week happiness program would involve you learning to incorporate different happiness exercises into your life and recording their effect on your life-satisfaction.

For further information please contact Rosalind Woodworth at the School of Psychology at email rjw1@utas.edu.au

If you decide to participate in the program but later decide that you are no longer interested in participating, you will be quite free to withdraw.

Information sheet:

**PARTICIPANT INFORMATION SHEET
SOCIAL SCIENCE/ HUMANITIES
RESEARCH**

Title: Positive Psychology: Intervention Programs to Increase Happiness

1. Invitation

You are invited to participate in a research study to investigate the effectiveness of various intervention programs to increase happiness in individuals.

The study is being conducted by:

Principal Researchers: (1) Dr. Angela O'Brien, Honorary Research Associate; (2) Dr. Mark Diamond, Clinical Psychologist.

Student Researchers: Rosalind Woodworth, MPsych (Clinical) Psychology student.

2. What is the purpose of this study?

This study aims to investigate the effectiveness of various intervention programs to increase happiness in individuals

3. 'Why have I been invited to participate in this study?'

You are eligible to participate in this study because in our research we are interested in the effectiveness of particular happiness exercise in adults in the general population, involving all members of the community. Participation is completely voluntary and the only specific requirement it to be over the age of 18. However, if you are currently receiving professional counselling for depression or a mood disorder please consult with your counsellor or medical practitioner before committing to participation in this study.

4. 'What does this study involve?'

This study involves participating in an 11-week happiness program. After providing some background demographic information, completing some questionnaires and undergoing a brief interview, I will give you specific instructions about how to incorporate a particular happiness exercise into your life that week and what this will involve. The interview will involve you answering several open-ended questions about issues of positive emotion, positive engagement and positive meaning in your current life. The happiness exercises will include:

- *Gratitude visit:* This exercise focuses on building gratitude by writing and delivering, in person, a letter of appreciation to someone who has been very kind to you, but whom you have never really properly thanked.
- *Three good things in life:* This exercise focuses on you gaining greater awareness about what you find positive in your own lives. You will write down three good things that happened each day, together with a causal explanation for each of these things.
- *Using signature strengths in a new way (SS):* After taking the Character Strengths Inventory at the beginning of the program, and receiving results outlining what your top 5 signature strengths are, you will be asked to use one of these five over the week, in a new way for each day of the week.

The specific instruction about how to implement each of these exercises may be in groups, or given individually in person or via phone, and should take approximately 30 minutes each week. I will make personal arrangements with you so that this can occur at times convenient

for you. I will ask you to keep a diary, throughout the 11-week program, which I will design specifically for you. There will be space provided to complete and record your thoughts about the specific intervention each week, as well as copies of a happiness questionnaire for you to complete everyday.

It is important that you understand that your involvement in this study is voluntary. While I would be pleased to have you participate, I respect your right to decline. There will be no consequences to you if you decide to withdraw at anytime during the program, and in this case, all the data you have provided will be destroyed and not included in any further analyses. However, if you withdraw after program completion and data analysis, this will not be possible, as I will not be able to distinguish your data from other individuals'. If you decide to discontinue participation at any time before that, you may do so without providing an explanation.

I will treat all information provided by you in a confidential manner, however as this research involves face-to-face contact, I will require your individual contact details during the program. However, once the study is complete, I will no longer need this information your personal details will not be identifiable to the data. All the data collected for this research will be kept in a locked cabinet in the office at the School of Psychology, for a minimum of 5 years from the date of article publication. At the end of this 5 year period the data will be destroyed.

5. Are there any possible benefits from participation in this study?

This study aims to increase happiness levels in individuals' lives, so it is of benefit to you as an individual participant. The information that we learn from each participant will help us to create programs for the wider community. However, it is also important to understand that I cannot guarantee that the interventions will result in greater happiness. The main research concern is to collect data, and I and the other members of the research team will not be acting as counsellors to you.

6. Are there any possible risks from participation in this study?

I anticipate that this study will involve no specific risks; however you may experience possible discomfort in answering some of these questions or undertaking certain exercises. You will have weekly opportunities to meet with or talk to me about your progress as well as any concerns you may have. The research team's details will also be made available to you so that any pressing concerns can be discussed as soon as possible. If the program is causing you significant distress or problems though, you are free to withdraw, and I will provide you with the details of relevant support agencies, such as: the University Psychology Clinic, ph. **6226 2805**, Beyond Blue, ph. 1300 22 4636 and Lifeline, ph. 13 11 14.

7. What if I have questions about this research?

If you would like to discuss any aspect of this study please feel free to contact Principal Researchers Dr Angela O'Brien at email angelaom@utas.edu.au or Dr Mark Diamond at email mark.diamond@yahoo.com.uk, or student researcher Rosalind Woodworth at email rjw1@utas.edu.au. We will be happy to discuss any aspect of the research with you. Results of this project will be available in December 2010 and please contact us for a summary of the findings or you can access a summary of the findings on the School of Psychology web site at <http://fcms.its.utas.edu.au/scieng/psychol/>.

This study has been approved by the Tasmanian Social Sciences Research Ethics Committee. If you have concerns or complaints about the conduct of this study should contact the Executive Officer of the HREC (Tasmania) Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. You will need to quote [*HREC project number*].

Thank you for taking the time to consider this study.
This information sheet is for you to keep.

Consent form:

PARTICIPANT CONSENT FORM
SOCIAL SCIENCE/ HUMANITIES
RESEARCH

Title of Project: Positive Psychology: Intervention Programs to Increase Happiness

1. I have read and understood the 'Information Sheet' for this project.
2. The nature and possible effects of the study have been explained to me.
3. I understand that the study involves taking part in an 11-week happiness program.
 After providing some background demographic information, completing some questionnaires and undergoing a brief interview, the researcher will give me specific instructions about how to incorporate a particular happiness exercise into my life that week and what this will involve. This instruction may be in groups, or given individually in person or via phone, and should take approximately 30 minutes each week. The researcher will make personal arrangements with me so that this can occur at times convenient for me. The researcher will ask me to keep a diary, throughout the 11-week program, which the researcher will design specifically for me. There will be space provided to complete and record my thoughts about the specific intervention each week, as well as copies of a happiness questionnaire for me to complete every day.
 It is important to understand that involvement in this study is voluntary. While the research team would be pleased to have me participate, they respect the right to decline. There will be no consequences to me if I decide to withdraw at any time during the program, and in this case, all the data I have provided will be destroyed and not included in any further analyses. However, if I withdraw after program completion and data analysis, this will not be possible, as it will not be possible to distinguish my data from other individuals'. If I decide to discontinue participation at any time before that, I may do so without providing an explanation.
4. I understand that participation in this study is quite involved. The research team anticipates that this study will involve no specific risks; however, I may experience possible discomfort in answering some of these questions or undertaking certain exercises. I will have weekly opportunities to meet with or talk to the researcher about my progress as well as any concerns I may have. The research team's details will also be made available to me so that any pressing concerns can be discussed as soon as possible. If the program is causing me significant distress or problems though, I am free to withdraw, and I will be provided with the details of relevant support agencies, such as: the University Psychology Clinic, ph. 6226 2805, Beyond Blue, ph. 1300 22 4636 and Lifeline, ph. 13 11 14.
5. I understand that the researchers can not guarantee that the interventions will result in greater happiness. I also understand that the researchers are involved with collecting the data and will not be acting as counsellors to me.
6. I understand that all research data will be securely stored on the University of Tasmania premises for at least five years, and will be destroyed when no longer required.
7. Any questions that I have asked have been answered to my satisfaction.

8. I agree that research data gathered from me for the study may be published provided that I cannot be identified as a participant.
9. I understand that the researchers will maintain my identity confidential and that any information I supply to the researcher(s) will be used only for the purposes of the research.
10. I agree to participate in this investigation and understand that I may withdraw at any time without any effect, and if I so wish, may request that any data I have supplied to date be withdrawn from the research.

Name of Participant:

Signature:

Date:

Statement by Investigator

☐

I have explained the project & the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation

If the Investigator has not had an opportunity to talk to participants prior to them participating, the following must be ticked.

☐

The participant has received the Information Sheet where my details have been provided so participants have the opportunity to contact me prior to consenting to participate in this project.

Name of Investigator

Signature of Investigator

Questionnaires used in Study 3:

*See Study 1 for Authentic Happiness Inventory and VIA Signature Strengths Questionnaire.

PANAS Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the dot under the appropriate word to **indicate to what extent you feel this way right now, that is, at the present moment.**

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	•	•	•	•	•
2. Distressed	•	•	•	•	•
3. Excited	•	•	•	•	•
4. Upset	•	•	•	•	•
5. Strong	•	•	•	•	•
6. Guilty	•	•	•	•	•
7. Scared	•	•	•	•	•
8. Hostile	•	•	•	•	•
9. Enthusiastic	•	•	•	•	•
10. Proud	•	•	•	•	•
11. Irritable	•	•	•	•	•
12. Alert	•	•	•	•	•
13. Ashamed	•	•	•	•	•
14. Inspired	•	•	•	•	•
15. Nervous	•	•	•	•	•
16. Determined	•	•	•	•	•
17. Attentive	•	•	•	•	•
18. Jittery	•	•	•	•	•
19. Active	•	•	•	•	•
20. Afraid	•	•	•	•	•

HAMILTON DEPRESSION RATING SCALE (HAM-D)

The HAM-D is designed to rate the severity of depression in patients. Although it contains 21 areas, calculate the patient's score on the first 17 answers.

1. DEPRESSED MOOD

(Gloomy attitude, pessimism about the future, feeling of sadness, tendency to weep)

0 = Absent

1 = Sadness, etc.

2 = Occasional weeping

3 = Frequent weeping

4 = Extreme symptoms

2. FEELINGS OF GUILT

0 = Absent

1 = Self-reproach, feels he/she has let people down

2 = Ideas of guilt

3 = Present illness is a punishment; delusions of guilt

4 = Hallucinations of guilt

3. SUICIDE

0 = Absent

1 = Feels life is not worth living

2 = Wishes he/she were dead

3 = Suicidal ideas or gestures

4 = Attempts at suicide

4. INSOMNIA - Initial

(Difficulty in falling asleep)

0 = Absent

1 = Occasional

2 = Frequent

5. INSOMNIA - Middle

(Complains of being restless and disturbed during the night. Waking during the night.)

0 = Absent

1 = Occasional

2 = Frequent

6. INSOMNIA - Delayed

(Waking in early hours of the morning and unable to fall asleep again)

0 = Absent

1 = Occasional

2 = Frequent

7. WORK AND INTERESTS

0 = No difficulty

1 = Feelings of incapacity, listlessness, indecision and vacillation

2 = Loss of interest in hobbies, decreased social activities

3 = Productivity decreased

4 = Unable to work. Stopped working because of present illness only. (Absence from work after treatment or recovery may rate a lower score).

8. RETARDATION

(Slowness of thought, speech, and activity; apathy; stupor.)

0 = Absent

1 = Slight retardation at interview

2 = Obvious retardation at interview

3 = Interview difficult

4 = Complete stupor

9. AGITATION

(Restlessness associated with anxiety.)

0 = Absent

1 = Occasional

2 = Frequent

10. ANXIETY - PSYCHIC

0 = No difficulty

1 = Tension and irritability

2 = Worrying about minor matters

3 = Apprehensive attitude

4 = Fears

11. ANXIETY - SOMATIC

(Gastrointestinal, indigestion

Cardiovascular, palpitation, Headaches

Respiratory, Genito-urinary, etc.)

0 = Absent

1 = Mild

2 = Moderate

3 = Severe

4 = Incapacitating

12. SOMATIC SYMPTOMS -**GASTROINTESTINAL**

(Loss of appetite , heavy feeling in abdomen;
constipation)

0 = Absent

1 = Mild

2 = Severe

13. SOMATIC SYMPTOMS - GENERAL

(Heaviness in limbs, back or head; diffuse
backache; loss of energy and fatiguability)

0 = Absent

1 = Mild

2 = Severe

14. GENITAL SYMPTOMS

(Loss of libido, menstrual disturbances)

0 = Absent

1 = Mild

2 = Severe

15. HYPOCHONDRIASIS

0 = Not present

1 = Self-absorption (bodily)

2 = Preoccupation with health

3 = Querulous attitude

4 = Hypochondriacal delusions

16. WEIGHT LOSS

0 = No weight loss

1 = Slight

2 = Obvious or severe

17. INSIGHT

(Insight must be interpreted in terms of patient's
understanding and background.)

0 = No loss

1 = Partial or doubtful loss

2 = Loss of insight

TOTAL ITEMS 1 TO 17: _____

0 - 7 = Normal

8 - 13 = Mild Depression

14-18 = Moderate Depression

19 - 22 = Severe Depression

> 23 = Very Severe Depression

18. DIURNAL VARIATION

(Symptoms worse in morning or evening.

Note which it is.)

0 = No variation

1 = Mild variation; AM () PM ()

2 = Severe variation; AM () PM ()

**19. DEPERSONALIZATION AND
DEREALIZATION**

(feelings of unreality, nihilistic ideas)

0 = Absent

1 = Mild

2 = Moderate

3 = Severe

4 = Incapacitating

20. PARANOID SYMPTOMS

(Not with a depressive quality)

0 = None

1 = Suspicious

2 = Ideas of reference

3 = Delusions of reference and persecution

4 = Hallucinations, persecutory

21. OBSESSIONAL SYMPTOMS

(Obsessive thoughts and compulsions against
which the patient struggles)

0 = Absent

1 = Mild

2 = Severe

Interview schedule:

Note: In this study each participant underwent a semi-structured intake interview. This was be approximately an hour long and involve several open-ended questions, pertaining to issues of positive emotion, positive engagement and positive meaning in their current life. To address this each participant was asked about activities they have been involved in or would like to be involved in, for example:

1. What activities have you engaged in the last week; last month; last year?
 - a) When does this usually occur?
 - b) Where and with whom does this usually occur?
 - c) What satisfaction do you get from this?
2. What activities have you thought about engaging in?
 - a) When would this occur?
 - b) Where and with whom would this usually occur?
 - c) What satisfaction do you expect to get from this?
3. What activities have you engaged in and no longer do?
 - a) When did this usually occur?
 - b) Where and with whom did this usually occur?
 - c) What satisfaction did you get from this?
 - d) Why did you stop doing this?

Example diary:

Diary: Monday ... - Sunday ...

This week you are not required to complete any specific activity but rather just keep notes in this diary and complete the daily mood questionnaire (PANAS) at the website:

<http://www.happiness-study.org/panas.html>

or if you indicated that you would prefer hard copies these should be enclosed in your postal package.

Please use this space to keep the diary and record your thoughts over the week. Make note of any thoughts in particular around this happiness program, such as difficulties you found, activities you enjoyed, or the amount of time it took to incorporate these activities into your routine. It is also important to note down briefly any significant events you experienced during the day. Each day there is a reminder to complete your daily mood questionnaire.

At the end of the week, please either send as an attachment to me or if you indicated you would be using hard copies please put the diary in a reply paid envelope and post as soon as possible.

Kind regards,

Rosalind