



Accentuate the positive: effects of dispositional optimism, personality traits and positive metacognitions & meta-emotions on life satisfaction

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### ABSTRACT

The present study describes a cross-sectional questionnaire-based survey aimed at investigating the extent to which adaptive metacognitive constructs, personality traits and dispositional optimism and pessimism predict life satisfaction. A mixed sample of 131 worker and student participants completed the Satisfaction with Life Scale (LS), the three subscales comprising Positive Metacognitions and Meta-Emotions Questionnaire (PMCEQ), the optimism and pessimism assessing Life Orientation Test (LOT) and the six-factor HEXACO-PI-R personality inventory. A significant multiple linear regression model emerged which accounted for 28% in the variance of life satisfaction. Three significant predictors of life satisfaction emerged: (a) extraversion, (b) PMCEQ Factor 3 (confidence in setting flexible and feasible hierarchies of goals) and (c) dispositional pessimism. Interestingly, only one of the six personality traits, extraversion, and one of the three metacognitive confidence constructs, formulation of attainable and flexible goal hierarchies, positively predicted life satisfaction. Optimism did not contribute to life satisfaction, whereas pessimism negatively predicted life satisfaction. Implications of the findings for theory, research and potential treatment applications are discussed.

KEY WORDS:	LIFE SATISFACTION	META-COGNITION	HEXACO SIX FACTOR PERSONALITY MODEL	OPTIMISM-PESSIMISM	POSITIVE PSYCHOLOGY
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## Introduction

Over the past century, researchers have vigorously concentrated on the investigation of the roots of psychopathology and have undoubtedly made enormous progress. In particular, aetiology of mental disorders has been successfully linked to specific genes and environmental acute stressors, such as parental divorce or job loss, have been identified. As a result the nature-nurture debate has evolved into far more complex and holistic attempts to understand and identify causal agents of mental disorders. It now involves an investigation of genes, possible gene-gene interactions and gene-environment interactions (Malhotra, Murphy and Kennedy, 2004).

Compared to psychopathological traits and dispositions, less empirical evidence has been provided for role and effects of positive traits. Indeed, the history of positive psychology is relatively young. One of the earliest attempts of advocates of the positive psychology paradigm was to encourage psychologists to pay attention to what people do right. Subsequently, once psychologists noticed the pathways of human beings' success in life, they began to focus on corresponding research and intervention strategies (Compton, 2005). At the individual level, positive psychology currently examines positive subjective states or emotions, such as happiness or satisfaction with life (Seligman and Csikzentmihalyi, 2000). Therefore, proponents of this strengths-based perspective highlight the need to focus on enhancing quality of life and promoting mental health, rather than solely treating pathology (Smith, 2006). The conceptualisation of Subjective Well-Being (SWB) is one area in which psychologists have made significant contributions and, more recently, have proposed interventions aimed at enhancing clients' satisfaction with life (Lent, 2004; Robbins & Kliever, 2000).

Despite the general agreement that well-being is a subjective feeling, there is disagreement over its definition and conceptualisation. Ryff (1989) traced the debate back to Greek and Roman times, and further linked it to Eastern philosophies. The diverging views reflect two broad perspectives. The hedonic tradition draws on the assumption that the goal of living is to maximise happiness and reduce pain; this view focuses on subjective well-being (SWB) – the pleasure and satisfaction of achieving one's goals. The rival eudaimonic perspective criticises the exclusive focus on pleasure as being too narrowly self-indulgent and argues that true psychological well-being derives from personal growth and adaptation, holding virtue and doing what is right as values. Happiness, from this viewpoint becomes a pleasant result but represents no longer the core pursuit (Ryan & Deci, 2001).

In the formulation of hedonic well-being, Diener and colleagues proposed that subjective well-being is a multi-dimensional concept that focuses on the subjective evaluation of life (Diener, Suh, Lucas and Smith, 1999). It includes two components, a cognitive and an affective. The cognitive component is assessed by asking people how satisfied they are with their life as a whole. It measures a long-term evaluation of well-being, in contrast to the affective component, which evaluates people's more instantaneous positive and negative feelings. The majority of research in the SWB field attempts to uncover the predictors of life satisfaction (Diener, 2000), which, according to Lent (2004), fall into one of three categories: demographic variables, personality and

dispositional variables and acquirable assets, i.e. adaptive psychological constructs. This study will investigate the potential contributions of dispositional and personality constructs to life satisfaction; the underpinning evidence based theoretical framework will subsequently be outlined.

### **1.1. Metacognitive Beliefs**

To explain the onset and maintenance of psychopathology, some theories focus on the investigation of emotions, while others stress the importance of cognition and behaviour. However, in the last five decades, many empirical studies showed that there is an interdependent association between emotion, cognition, and behaviour. One of the earliest theories that recognised that cognitions are antecedents of emotions was proposed by Schachter and Singer's (1962) studies of appraisal processes. Recently, Wells' (1997; 2000) metacognitive theory has successfully adapted the multiple levels of cognition to the conceptualisation and treatment of a plethora of clinical disorders.

Since metacognitions are hypothesised to be multidimensional constructs, they lack a clear-cut definition. In the general sense, metacognitions have been defined as cognitions about own cognitions (Flavell, 1979). In the context of clinical psychology, metacognition can be defined as "the psychological structures, knowledge, events, and processes that are involved in the control, modification, and interpretation of thinking itself" (Wells and Cartwright-Hatton, 2004, p. 385). Hence, any piece of knowledge and/or processes involved in appraisal, monitoring, and control of cognition can be regarded as metacognition. To compare cognition with metacognition from a conceptual point of view, cognition can be conceptualised as acquired knowledge, whilst metacognition could refer to one's awareness and understanding of that knowledge (Vadhan & Stander, 1993). In conclusion, it can be argued that cognitive activities are normally accompanied by a 'metacognition' that monitors and controls various aspects of these cognitive activities (Koriat, 1998).

#### **1.1.1. Maladaptive Metacognitive Beliefs**

Wells and Mathews (1994, 1996) developed the Self Regulatory Executive Function Model (S-REF) which tries to explain how beliefs about cognition, behaviour and emotions might trigger onset and maintenance of psychological disorders. The S-REF model identifies two modes of processing which have important implications for modifying these beliefs: the object mode and the metacognitive mode. When facing a problematic situation, people operating in object mode experience their thoughts as representing facts of reality without evaluating them. In this mode, thoughts are interpreted as true reflections of threat and necessary to be acted upon. Contrariwise, in metacognitive mode, individuals perceive thoughts just as events or cues, which require subsequent evaluation whether or not they depict reality. Thus, the threat is objective in metacognitive mode and modification of beliefs is more likely. According to the S-REF theory, operating in the object mode predisposes individuals towards coping strategies that might be maladaptive, ultimately compromising their psychological well-being. Following this proposition, the theory therefore postulates that beliefs about one's own cognition (metacognitive knowledge) and specific cognitive-regulatory processes (metacognitive regulation) play a significant role in psychopathology by contributing to a plethora of psychological disorders (Wells and Matthews, 1994).



### **1.1.2. Adaptive Metacognitive Beliefs**

According to Wells' (1994) S-REF model, people faced with challenging situations operate in either the object or metacognitive mode. Wells argues that the use of object mode leads to maladaptive coping. Beer and Moneta (2010) propose that it might be possible to successfully solve challenging situations by operating in both object and metacognitive modes. However, the authors stress that it is important to activate both modes in an appropriate way that includes a sequential strategic order. In addition, they postulate that the use of both object and metacognitive modes can be adaptive if it involves agentic type of cognitive beliefs that support the recognition of alternative pathways with flexible goal structuring and meta-emotions of interest and curiosity in one's own primary emotional responses. An agentic perspective refers to the capacity to exercise control over the nature and quality of one's life (Bandura, 2001). The agentic capabilities of humans are characterised by a number of core features that operate through phenomenal and functional consciousness and involve intentionality and forethought, adaptive self-regulation and self-reflectiveness about one's capabilities.

The adaptive metacognitive beliefs may be a part of a self-regulatory type, identified by Zimmerman (2000). Zimmerman defines self-regulation as the self-generated thoughts, feelings and actions that are planned and further adapted to achieve personal goals. According to Zimmerman (2008), achievement-related variables that foster goal adoption (e.g., implicit theories of ability; goal achievement orientation), as well as variables related to the extent to which goals are effectively pursued and attained (e.g., help-seeking, delay-of-gratification; learning strategies usage; self-control; prevention of procrastination) form a portion of the nomological network of self-regulation. Zimmerman (1989; 1990) found that individuals who extensively used such strategies demonstrated higher academic achievement than those who used self-regulating strategies less often.

## **1.2. Theories of Motivation and Goals**

Research within the positive psychology paradigm examines how people optimally experience, forecast, and savour positive feelings and emotions that form part of normal and healthy living. This naturally follows the investigation of what motivates people to pursue their goals (Compton, 2005). In 1959, White first proposed that individuals might be motivated to pursue their goals by more than just internal drives. He forwarded a view that intrinsic motivation propels people towards a sense of competence. Subsequent research concentrated on the differences between intrinsic and extrinsic motivation. When people engage in activities for their own sake, regardless of external rewards, they are seen as being intrinsically motivated. If, however, there is an external reward to be obtained, such as status or money, then individuals are said to be extrinsically motivated.

Studies that investigate goals and their relationship to well-being have found that certain types of goals are more effective in producing happiness than others (Ryan & Deci, 2001). Lyubomirsky (2001) argues that those individuals who pursue goals driven by intrinsic motivation have higher levels of subjective well-being. Accordingly, Oishi, Diener and Suh (1999) found that students showed higher well-being when activities

they were performing involved individual values. Kasser and Ryan (1993) have forwarded additional evidence, which found that subjective well-being increases when people pursue goals that facilitate affiliation, intimacy, self-acceptance, and community involvement. In contrast, Cantor and Sanderson (1999) found that well-being decreased amongst people who sought self-centered goals related to physical attraction, fame, or wealth.

Achievement goal theory has recently emerged as an important theory because of its valuable insights into the field of motivation (Meece, Anderman & Anderman, 2006; Schunk, Pintrick & Meece, 2008). The theory posits that there is an integrated pattern of beliefs (goal orientations) that lead individuals to approach, engage in, and respond to achievement tasks and situations in specific ways (Schunk et al., 2008). Researchers have distinguished between mastery goals and performance goals. Fundamental to a mastery goal is the belief that effort results in success, and therefore the focus of attention is on the intrinsic value of learning. Conversely, performance goals are believed to be associated with the focus on one's ability and sense of self-worth. Research suggests that the mastery-approach is an adaptive motivator and that students adopting a mastery-approach goal orientation tend to use high levels of deep cognitive strategies, such as elaboration, as well as metacognitive and self-regulatory strategies (Covington, 2000; Elliot, 2005). In contrast, students who implement performance goal orientations were found to use surface cognitive strategies such as rote memorisation and rehearsal (Liem, Lau & Nie, 2008; Pugh and Bergin, 2006). Midgley et al. (2001) also found that performance-approach goal orientation is associated with negative outcomes such as anxiety and disruptive behaviour.

### **1.3. Optimism**

Within the last decade, the concept of optimism and pessimism has attracted a great deal of research attention. In general, researchers propose that optimistic individuals report being happier and more satisfied with life (Diener et al, 1999). The underlying core assumption is that positive thinking can help a person to recover from illness, endure a personal hardship and overcome obstacles. This is plausible, as a person, who evaluates his/her self in a positive way perceives control over important aspects of life, is successful in social interactions and is more likely to look into the future with hope and positive expectations (Compton, 2005). In line with this stance, Scheier and Carver (1985) developed a measure of dispositional optimism and pessimism that has been widely used to examine whether optimism might promote health. Dispositional optimism has been conceptualised as a function of outcome expectancies and draws on a model of behavioural self-regulation (Scheier & Carver, 1987). This model suggests that people try to overcome adversity to reach goals when expectations of eventual success are sufficiently favourable. If doubts are too severe, people are more likely to give up their goal pursuits. Optimists generally expect positive outcomes and pessimists tend to expect more negative outcomes (Scheier, Carver & Bridges, 1994). Behaviour, experience and affect are strongly influenced and patterned by generalised positive and negative expectations. Research that examines the underlying reasons why optimists have positive expectations and pessimist negative expectations found that optimists, rather than facing a stressful event with an expectation that it will be automatically resolved, tend to engage in more problem-



focused coping strategies. Pessimists, on the other hand, cope by using emotion-focused coping strategies, e.g. denial or avoidance (Carver, Scheier & Weintraub, 1989).

In line with this view, numerous studies have shown that optimists are physically and psychologically better adjusted than pessimists (Chang, 1998). For example, optimists have been found to have lower mortality risks as cancer patients (Schulz et al., 1996) and faster recovery after coronary artery bypass surgery (Scheier et al., 1989). Optimists also appear to bring in psychological benefits when compared to pessimists. Optimistic women are less likely to suffer from postpartum depression (Carver & Gaines, 1987) and are less likely to suffer from depressive symptoms following a stressful event (Bromberger & Matthews, 1996). Adjustments to difficult life events are also facilitated by optimism. For example, optimists adjust more smoothly to college (Aspinwall & Taylor, 1992), to an abortion (Cozzarelli, 1993) and to the failure to achieve a desired pregnancy (Litt, Tennen, Affleck & Klock, 1992). Thus, evidence shows that in mental and physical health, optimists benefit from their positive worldview.

#### **1.4. Personality Traits**

One of the most important perspectives of life satisfaction is offered by the revised dynamic equilibrium theory, which closely resembles the set-point theory (Headey, 2006). The theory argues that everyone has a certain set-point level of well-being, determined by genes and personality. Lykken and Tellegen (2006) postulate that genes account for around 50% of the variation in well-being. Therefore, genes determine personality largely, which makes personality a very stable construct (Fujita & Diener, 2005). Life events such as winning the lottery may cause a temporary increase in life satisfaction, but the individual's set-point level will return to the original level within months (Suh et al, 1996). Thus, so far, research has found only weak correlations between SWB, life satisfaction and demographic and environmental factors (Diener, Oishi & Lucas, 2003), but the links between life satisfaction, subjective well-being and personality traits have been gaining increased attention. For example, previous research has recognised relationships between the five-factor model (FFM) of personality (Costa & McCrae, 1997; Goldberg, 1992). Costa and McCrae (1992) state that most individual differences in personality are attributable to the five factors of neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. Neuroticism identifies an individual's tendency to experience psychological distress. Extraversion focuses on sociability and the quantity and intensity of one's relationships. Openness to experience refers to intellectual curiosity, flexibility, and imagination. Agreeableness refers to communal interpersonal behaviour, such as trust in others and cooperation. Finally, conscientiousness taps impulse control, organisation and self-discipline.

Research has shown that all the Big Five domains are associated with happiness to different degrees (DeNeve & Cooper 1998; Diener et al. 1999; Steel, Schmidt & Shultz, 2008). Furthermore, many studies provide evidence that extraversion and neuroticism are the traits more consistently correlated with SWB (Argyle 1999; Cheng & Furnham 2001; Diener & Lucas 1999; Gutierrez, Jimenez, Hernandez & Puente, 2005; McCrae & John, 1992; Vitterso & Nilsen 2002). According to Lucas (2008), conscientiousness has also exhibited replicable and moderately strong associations

with SWB. In terms of the relation between traits and cognitive components (life satisfaction), Fujita and Diener's (2005) longitudinal study over a 17 years period reveals that personality traits seem to be more stable than satisfaction with life, indicating that life satisfaction is more vulnerable to the influence of external life events. However, neuroticism and extraversion emerge as the strongest predictors of life satisfaction (Diener & Lucas 1999; Schimmack, Diener & Oishi, 2002). These two traits have been linked to two neurologically based systems that were initially described by Gray (1991) as the behavioural activation system (BAS) that regulates behaviour in the presence of rewards, which is typically associated with extraversion, and the behavioral inhibition system (BIS) which regulates behaviour in the presence of punishment and is usually linked to neuroticism.

Despite the Five Factor Model being the most consistent model of personality, more recently, Lee and Ashton (2004) have proposed that personality is better summarised using a six-factor model instead. Their HEXACO model of personality is six-dimensional and includes the following factors: Honesty–Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. This model represents a re-rotation of the traditional Five-Factors, with the addition of the novel Honesty–Humility factor. For the rest of the factors, despite sharing some similar names and contents of other personality models, the HEXACO's factors are somewhat distinct. The Honesty-Humility factor represents a tendency to be fair, sincere and unassuming. Individuals who score high on Agreeableness tend to be calm, cooperative and easy-going, as opposed to being unkind and critical. The HEXACO's Emotionality factor is further characterised by sentimentality, anxiety, fearfulness and sensitivity, as opposed to having courage, self-assurance and robustness. The remaining factors in the HEXACO model are generally similar to their Five-Factor counterparts. Extraversion is characterised by sociability and cheerfulness versus shyness and passivity. The HEXACO's Conscientiousness factor includes being thorough and hardworking versus being sloppy and impulsive. Finally, Openness to Experience is characterised by inquisitiveness and unconventionality versus conventionality and a lack of creativity (Lee & Ashton, 2004).

To the knowledge of the author, no previous research has attempted to investigate SWB or global life satisfaction using the HEXACO model. However, there are studies that provide some direction in predicting how some of the factors will correlate with life satisfaction. Specifically, the content of the Honesty–Humility factor strongly suggests that individuals who score high on this factor should be more forgiving, loyal, truth loving, altruistic, fair, and be sincere in interpersonal relationships (Lee & Ashton, 2004). Previous studies could provide corresponding evidence for an association between altruistic activities and both well-being and life satisfaction in older adults (Dulin & Hill, 2003; Morrow-Howell, Hinterlonh, Rozario & Tang, 2003). Based on this research and the content that defines Honesty-Humility, previous research of FFM Neuroticism (HEXACO's Emotionality factor) and established research of Extraversion of FFM, it is expected that these traits would strongly relate to life satisfaction.

Derived from the evidence-based theoretical framework, the core aim of this study is to test a holistic model within a multiple linear regression approach. The regression model comprises the HEXACO personality traits, optimism, pessimism, and the three PMCEQ constructs as potential predictors of the criterion variable life

satisfaction. It is hypothesised that adaptive personality traits, the three metacognitive and meta-emotional constructs and optimism will positively predict life satisfaction, whereas maladaptive personality traits (neuroticism) and pessimism will negatively predict life satisfaction.

## 2. Method

### 2.1. Design and Statistical Methods

As this study utilised a cross-sectional survey design, correlation analysis and subsequent multiple linear regression analysis have been employed to examine the relationship between dispositional optimism and pessimism, positive metacognitive strategies and six dimensions of personality traits as predictor variables and life satisfaction as outcome (criterion) variable. In addition, reliability analyses of the utilised scales were conducted. Study participants completed a battery of self-report questionnaires.

### 2.2. Participants

One hundred and thirty one participants were recruited by means of an opportunity sample, encompassing 64 males and 67 females. For purposes of inclusion in this study, the participants were required to speak fluent English and to be at least 18 years of age. Participants ranged in age from 18 to 61 years, with the mean age of 31.6 years ( $SD=11.9$  years). The fairly high diversity in terms of demographic properties of the sample population is represented in Table 1. Yet, professionals and respondents of white ethnic background were overrepresented with approximately 56% and 62%, respectively.

Table 1: Demographic Data of Participants

	Gender		Working-Status			Ethnicity		
	Males	Females	Students	Professionals	Other	White	Black	Asian
<b>Number</b>	64	67	49	73	9	81	14	36
<b>%</b>	48.9	51.1	37.4	55.7	6.9	61.8	10.7	27.5

### 2.3. Materials

In addition to the demographic form (gender, age, working status), respondents completed four batteries of self-report questionnaires measuring the criterion variable and the predictor variables.

#### 2.3.1. *The Satisfaction with Life Scale (LS; Diener, Emmons, Larsen & Griffin, 1985)*

Life satisfaction was measured with the widely used LS instrument with good psychometric properties. The four questionnaire items of the LS are: (i) "In most ways my life is close to my ideal", (ii) "The conditions of my life are excellent", (iii) "I am

satisfied with my life”, and (iv) “So far I have gotten the important things I want in life”. Respondents indicate their agreement on a seven-point Likert scale ranging from (1) “strongly disagree” to (7) “strongly agree”. The Satisfaction with Life Scale is highly reliable. Cronbach’s Alpha coefficient was .83 in the first wave (1987); Cronbach’s reliability coefficients for all scales within this research are depicted in Table 2.

### **2.3.2. Positive Metacognitions and Positive Meta-Emotions Questionnaire (PMCEQ; Beer & Moneta, 2010)**

This measure assesses individual differences in positive metacognitive and meta-emotional traits. It consists of three replicable factors assessed by 18 items in total. The three factors measure the following confidence dimensions of adaptive metacognitions and meta-emotions: (1) Confidence in extinguishing perseverative thoughts and emotions (e.g. “In times of feeling in the dumps, it’s hard for me to regulate my low mood”); (2) Confidence in interpreting own emotions as cues, restraining from immediate reaction, and mind setting for problem solving (e.g. “In difficult situations, I quickly rationalise my fear by assessing costs and benefits of confronting versus escaping”); and (3) Confidence in setting flexible and feasible hierarchies of goals (e.g. “I can easily divide important long-term goals into achievable and short-term sub-goals”). Items are scored on a four-point Likert scale, with items 1,4,7,10,13 and 16 scored in reverse direction, i.e. negatively worded. In all, the 18-item PMCEQ has good psychometric properties (with Cronbach’s Alpha for the three subscales ranging from .76 to .85 reported by Beer & Moneta). The present study also found good reliability of this scale, as shown in Table 2.

### **2.3.3. Life Orientation Test (LOT; Scheier & Carver, 1985)**

The Life Orientation Test assesses dispositional optimism and pessimism. The LOT provides a self-report measure of individual differences in global optimism and pessimism, capturing generalised outcome expectancies. The optimism construct comprises the following four items: “In uncertain times, I usually expect the best”; “I always look on the bright side of things”; “I am always optimistic about my future and “I’m believer in the idea that every cloud has a silver lining”. Items are scored on a 5-point Likert-type Scale ranging from (1 = strongly disagree to 5 = strongly agree). The first reported Cronbach’s alpha coefficient for dispositional optimism was .75.

Dispositional pessimism is measured by four items of the pessimism construct of LOT as follows: “If something can go wrong for me, it will; “I hardly ever expect things to go my way”; “Things never work out the way I want them to” and “I rarely count on good things happening to me.” Items are scored on a 5-point Likert-type scale (1=strongly disagree to 5=strongly agree). All four items of the pessimism scale are negatively worded. The original scale’s alpha coefficient for dispositional optimism was .80. The Cronbach’s reliability coefficients of the present study for this scale are presented in Table 2.

### **2.3.4. HEXACO Personality Inventory (Lee & Ashton, 2004)**

Personality traits were measured using the HEXACO Personality Inventory. The standard version of the HEXACO-PI includes 192 items that measure 24 facet scales, which are subsumed under the six higher-order factors. For the purpose of the present

research, the shorter HEXACO-PI comprising a set of 60 items was selected to provide brief global measures of the six higher-order HEXACO dimensions (with 10 items per dimension). Within Lee and Ashton's (2004) data set, the convergent correlations of the 10-item scales with the corresponding full-length scales all exceeded 0.93.

Each of the six domains comprises four facets, measured by four items. For example, the Honesty-Humility domain is made up of Sincerity, Fairness, Greed-Avoidance, and Modesty (e.g., "If I want something from someone, I will laugh at that person's worst jokes"). The emotionality domain contains following facets: Fearfulness, Anxiety, Dependence, and Sentimentality (e.g., "I would feel afraid if I had to travel in bad weather conditions"). The Extraversion domain consists of Social Self-esteem, Social Boldness, Sociability and Liveliness factors, (e.g., "I feel reasonably satisfied with myself overall"). The Agreeableness domain includes Forgiveness, Gentleness, Flexibility and Patience factors, (e.g., "I rarely hold a grudge, even against people who have badly wronged me"). The Conscientiousness domain contains Organisation, Diligence, Perfectionism and Prudence factors (e.g., "I plan ahead and organize things, to avoid scrambling at the last minute"). Finally, the Openness to Experience domain includes Aesthetic Appreciation, Inquisitiveness, Creativity, and Unconventionality factors, (e.g., "I would be quite bored by a visit to a gallery"). Items are scored on a 5-point Likert-type Scale ranging from (1 =strongly disagree to 5 = strongly agree), with twenty nine items scored in reverse direction. The present study's reliability coefficients for each domain are shown in Table 2.

## **2.4. Procedure**

Participants were asked to sign the consent form, then to fill in the demographic sheet and to answer the battery of four questionnaires outlined in the materials section. Respondents were told that the study was part of a BSc Psychology research project investigating personality traits and metacognitive strategies that potentially contribute to life satisfaction.

## **2.5. Ethical Issues**

The survey fully adhered to the Ethical Principles and Guidelines of the British Psychological Society. Confidentiality, anonymity and the right to withdraw from the study at any time were emphasised. In addition, the Departmental Ethics Committee of the Psychology Department of the University of Westminster approved the study.

## **3. Results**

### **3.1. Descriptive Statistics**

The means standard deviations, scale ranges, actual ranges of scores and reliability coefficients of the criterion variable and predictor variables are shown in Table 2. Overall, compared to Factors 2 and 3 of the PMCEQ, respondents scored higher on Factor 1 ( $M=16.77$ ,  $SD=4.14$ ) and participants scored higher on dispositional optimism than dispositional pessimism ( $M=13.74$ ,  $SD=3.74$ ). The most pronounced HEXACO personality traits amongst respondents were Extraversion ( $M=33.85$ ,  $SD=5.38$ ), Conscientiousness ( $M=33.38$ ,  $SD=6.67$ ) and Honesty-Humility ( $M=32.56$ ,  $SD=6.01$ ).

With the exception of Agreeableness, all scales had satisfactory to good reliability.

Table 2: Means, standard deviation, ranges and Cronbach's Alphas of study variables

Criterion and predictor variables	Mean Value	Standard Deviation	Range of scale	Range of scores	Cronbach's Alpha
Total Life Satisfaction	21.62	6.42	5-35	5-35	.86
PMCEQ Factor 1	16.77	4.14	6-24	6-24	.75
PMCEQ Factor2	14.58	3.63	6-24	7-23	.71
PMCEQ Factor 3	14.94	3.94	6-24	6-24	.78
Optimism	13.74	3.74	4-20	4-20	.77
Pessimism	11.51	4.59	4-20	4-20	.86
Honesty-Humility	32.56	6.01	10-50	15-46	.62
Emotionality	31.87	5.79	10-50	19-50	.65
Extraversion	33.85	5.38	10-50	21-46	.65
Agreeableness	31.74	5.95	10-50	17-59	.47
Consciousness	33.38	6.67	10-50	16-49	.76
Openness to Experience	32.00	6.18	10-50	17-48	.67

### 3.2. Correlation Analysis

In order to gain a first approach for applying multivariate linear regression analyses, Pearson bivariate correlation coefficients between potential predictor variables and the criterion variable life satisfaction were calculated and are shown in Table 3. By means of a medium effect cut-off point of  $r=0.3$ , the six strongest potential predictors variables of life satisfaction emerged to be: Extraversion ( $r=0.431$ ), Pessimism ( $r=-0.416$ ), Total PMCEQ scores ( $r=0.369$ ), PMCEQ Factor 2 ( $r=0.340$ ), Optimism ( $r=0.334$ ), and PMCEQ Factor 3 ( $r=0.333$ ).

Table 3: Correlation Matrix Illustrating Details of the Correlations between Predictor Variables

	Tot_	Tota	PMC	PMC	PMC	O	Pe	Ho	Em	Ext	Agr	Con	Op
	LS	I	EQ	EQ	EQ	pt	s	n-	ot	ra	ee	sc	en
		PMC	Fact.	Fact.	Fact.			Hum					
		EQ	1	2	3								
<b>Total LS</b>	1	.37**	.18*	.34**	.33**	.33**	.41**	.20*	-.24**	.43**	.16*	.17*	.49**
<b>Total PMC EQ</b>		1	.70**	.83**	.76**	.35**	.38**	.13	-.48**	.43**	.13	.44*	.32**
<b>PMC EQ Fac.1</b>			1	.38**	.19*	.31**	.43**	.11	-.48**	.24**	.01	.29*	.17*
<b>PMC EQ Fact 2</b>				1	.57**	.29**	.28**	.05	-.42**	.45**	.08	.22*	.29**
<b>PMC EQ Fact. 3</b>					1	.21**	.15*	.12	-.20*	.30**	.20*	.49*	.28**
<b>Opt</b>						1	.53**		-.25**	.36**	.78	-.01	.20**
<b>Pess</b>							1	-.13	-.22*	-.42*	-.09	-.03	-.07
<b>Hon-Hum</b>								1	.05	.09	.26*	.20*	.17*
<b>Emot</b>									1	-.14	.01	-.24*	.25**
<b>Extra</b>										1	.09	.07	.13
<b>Agree</b>											1	.14	.01



<b>Cons</b>	1	.30
<b>c</b>		**
<b>Open</b>		1

\*\* Significant at 0.01      \*significant at 0.05

### 3.3. Multiple Linear Regression Analyses

Utilising the six variables which were most strongly correlated with life satisfaction, successive regression analyses were conducted. After iterative exclusion of non-significant predictors, an optimal model with extraversion, pessimism, and PMCEQ Factor 3 emerged. Overall, the predictive model was significant by ANOVA ( $F=8.99$ ,  $p<0.0005$ ). The model accounted for 27% of the variance (Adjusted  $R=0.269$ ). Pessimism emerged as the strongest (negative) significant predictor (Beta = -0.264,  $t = -2.725$ ,  $p<0.01$ ). The second strongest (positive) significant predictor was Extraversion (Beta= 0.225,  $t = 2.489$ ,  $p<0.01$ ). The third strongest (positive) significant predictor emerged to be PMCEQ Factor 3 (Beta = 0.249,  $t= 2.059$ ,  $p<0.01$ ).

Table 4: Initial Multiple Regression Analysis

Predictor variables	Standardized Beta	t	P (sig.)
Extraversion	.225	2.489	0.014
Pessimism	-.264	-2.725	0.007
Total PMCEQ	-.146	-.787	(ns) 0.433
PMCEQ Factor 2	.125	.877	(ns) 0.382
PMCEQ Factor3	.249	2.059	0.042
Optimism	.077	.849	(ns) 0.398

The subsequent multiple regression analysis only utilised the three significant predictors of the initial analysis, i.e. extraversion, pessimism and PMCEQ Factor 3. Results are displayed in Table 5. The optimal overall (subsequent) model was significant by ANOVA ( $F=17.68$ ,  $p<0.0005$ ) and accounted for 28% of the variance (Adjusted  $R=0.278$ ). Pessimism was the strongest (negative) predictor (Beta= -0.278,  $t=-3.389$ ,  $p<0.01$ ). Extroversion emerged as the second strongest positive predictor (Beta= 0.250,  $t=2.944$ ,  $p<0.01$ ), while Factor 3 of the PMCEQ emerged as third strongest positive predictor of life satisfaction (Beta=0.214,  $t=2.735$ ,  $p<0.01$ ).

Table 5: Subsequent Multiple Regression Analysis

Predictor Variables	Standardized Beta	t	P (sig.)
Extraversion	.250	2.944	.004
Pessimism	-.278	-3.389	.001
PMCEQ Factor 3	.214	2.735	.007

#### 4. Discussion

This study hypothesised that life satisfaction would be associated with and predicted by optimism, adaptive metacognitive strategies and certain personality traits of the HEXACO-PI-R inventory. This relationship has not yet been examined in the literature. The study found a negative relationship between dispositional pessimism and life satisfaction and a positive relationship between the extraversion trait of HEXACO personality model and life satisfaction. Additionally, results revealed a positive association between Factor 3 of the PMCEQ (confidence in setting flexible and feasible hierarchies of goals) and life satisfaction. The best-fitting overall model accounted for 28% of the variance of life satisfaction. Although 28% reflects only a medium effect, the

relative influences of the predictors in this model are of theoretical and practical relevance.

#### 4.1. Dispositional Optimism and Pessimism

This study hypothesised that dispositional optimism would positively predict life satisfaction, and employing the view of Scheier and Carver (1985) that optimism and pessimism are polar opposites on a unidimensional continuum, also hypothesised that pessimism would negatively predict life satisfaction. Respondents who scored one standard deviation below the mean on dispositional pessimism have a life satisfaction score that is 2.55 lower ( $b \times 2SD = -.278 \times 9.18$ ) than respondents who scored one standard deviation above the mean on dispositional pessimism. This is in line with other findings that suggest that pessimistic outlook of one's future has detrimental effect on well-being and long-term life satisfaction as outlined in the introduction.

One reason why pessimism is associated with lower levels of life satisfaction might be that pessimists often use maladaptive coping styles, more specifically, the avoidance-oriented coping styles. The evidence that avoidance style coping has adverse consequences for health and well-being has been provided by studies that found that patients who used this style of coping were at significantly higher risk of death than those who used more approach-oriented or active coping styles (Derogatis, Abelloff & Melisaratos, 1979; Stein, Linn & Stein, 1989). In this way, the results may indicate that individuals who score higher on dispositional pessimism experience negative expectancies because they cope with problems by avoidance means (disengaging from problem) and cope with emotional consequences by distracting themselves from one's feelings about the problem. Consequently this may lead to reduced effort and disengagement from goal pursuit. One reason for the differences in coping strategies between optimists and pessimists may be due to the different ways information is attended to and remembered by optimists and pessimists. Segerstrom (2001) proposed that pessimists, compared to optimists who display attentional bias for positive information, demonstrate an attentional bias for negative information. The differential attention to positive and negative information and subsequent selection of coping strategies of pessimists may in part explain the negative association with life satisfaction.

However, the finding that dispositional optimism did not significantly predict life satisfaction is somewhat unexpected. Scheier and Carver (1985), the original authors of LOT scale, argue that optimism and pessimism are polar opposites on a unidimensional continuum. Therefore, if pessimists are less satisfied in life, the expected result were that optimists would show greater amounts of life satisfaction. Yet, this study did not find such a relationship. Although dispositional optimism correlated to a moderate level with life satisfaction, it did not emerge as a significant predictor of life satisfaction within the regression model. This is contrary to previous studies mentioned in the introduction.

One explanation for this finding is that optimism and pessimism are not the opposites of one factor or continuum but two somewhat distinctive factors. For example, Kubzansky, Kubzansky and Maselko (2004) found that dispositional optimism and pessimism are factors of bidimensional structure. The authors found consistent results across all versions of the LOT scale, regardless of how each item was framed. Further evidence for this notion comes from Raikkonen, Mathews, Flory, Owens and Gump (1999), who found that higher optimism, but not lower pessimism, was associated with lower ambulatory diastolic blood pressure. It therefore seems that dispositional

optimism and pessimism are not the opposite of two poles but somewhat distinct measures.

Another study of stress and dysphoria in a non-Western population by Lightsey and Christopher (1997) showed that higher dispositional optimism scores predicted lower levels of dysphoria, that optimistic persons were less dysphoric regardless of their perceived stress levels and that optimism predicted unique variance in dysphoria beyond self-efficacy and positive automatic thoughts. It therefore appears that dispositional optimism, instead of being a positive predictor for life satisfaction, may be a unique (negative) predictor of adverse outcomes.

#### **4.2. HEXACO Personality Traits**

In attempting to investigate which personality traits predict life satisfaction, the HEXACO model of personality was used in this study. The results surprisingly indicated that only one HEXACO personality trait predicts life satisfaction. The Honesty-Humility, Agreeableness, Openness and Conscientiousness traits were positively but weakly and non-significantly correlated with life satisfaction, while Emotionality was negatively and non-significantly associated with life satisfaction. Within the regression model only the Extraversion trait significantly predicted life satisfaction. This finding is in line with a plethora of previous studies which found extraversion to be strongly associated with increased well-being and life satisfaction (Diener & Lucas, 1999). There are a number of potential explanations or views.

The Sociability view postulates that extroverts are happier because they spend more time socially (Watson, Wiese, Vaidya & Tellegen, 1999) and that they have more fulfilling social interactions (Argyle & Reeves, 2002). Gray's (1981) theory argues that extroverts are more likely to experience pleasant affective states when exposed to reward because they are more sensitive to positive stimuli. Therefore, extraverts react more strongly to positive stimuli, which in turn increase levels of life satisfaction. Evidence for this comes from Derryberry and Reed (1994) who used a target detection task to examine biases in attention towards positive and negative stimuli and found that extroverts' sensitivity to rewards to stimuli stems from differential attention to positive and negative stimuli.

It is also plausible that extraverts, rather than being biologically sensitive to reward stimuli, might process information about rewards differently. For instance, extroverts might use cognitive structures where they process pleasant information more accurately and efficiently than less pleasant information. This tendency to positive thoughts and information processing might explain why extroverts report higher levels of life satisfaction; this is in line with the results of this study. For example, the correlation matrix revealed that there was a moderate relationship between extraversion and dispositional optimism (.36), with further correlation between extraversion and Total PMCEQ scores (.43), suggesting that extroverts may use adaptive metacognitive and meta-emotional strategies in their decisions of how to process pleasant information.

The rest of the HEXACO's traits that exhibited weaker relations with life satisfaction could also be explained by its relationship with reward and punishment systems. For example, whereas Agreeableness and Conscientiousness is slightly positively correlated with positive affect and often slightly negatively correlated with negative affect Openness is often slightly positively correlated with both pleasant and

unpleasant affect. According to Seidlitz (1993), the associations between Agreeableness, Conscientiousness, Openness and Life Satisfaction are usually weak because they are formed by rewards in the environment rather than by biological reactivity. The weak, negatively correlated Emotionality trait of HEXACO model with life satisfaction could be explained by studies that found that individuals who score high on anxiety and fear are more likely to be associated with unpleasant affect. These individuals may be more sensitive to punishment and therefore are more likely experience unpleasant affect when exposed to negative stimuli. On the other hand, individuals who score high on Emotionality may have greater levels of anxiety that lead to social failure. This self-defeating behaviour may also explain lower levels of life satisfaction.

#### **4.3. Positive Metacognitive Strategies**

When people are faced with challenging situations, they may either use maladaptive or adaptive metacognitions (and meta-emotions) to resolve them. The study investigated whether using adaptive metacognitive strategies to successfully solve such situations would increase the level of life satisfaction. Effects of the three PMCEQ constructs (factors) were investigated. PMCEQ Factor 1 measures confidence in extinguishing preservative thoughts and emotions, which prevents maladaptive sub-processes. PMCEQ Factor 2 assesses confidence in interpreting own emotion as cues, restraining from immediate reaction, and mind setting for problem solving, which promotes adaptive sub-processes. PMCEQ Factor 3 measures the confidence in setting flexible and feasible hierarchies of goals, which promotes further adaptive sub-processes. The study found that the PMCEQ Factor 1 did only weakly correlate with life satisfaction. Although PMCEQ Factor 2 showed a medium correlation with life satisfaction, it lacked the predictive power and was found to be a non-significant predictor of life satisfaction. Only PMCEQ Factor 3 positively and significantly predicted life satisfaction. This indicates that setting flexible and attainable hierarchies of goals positively contribute to increased life satisfaction; more specifically it suggests that individuals who are confident in setting flexible and hierarchical goals when faced with problematic situations are more likely to be satisfied in life.

The findings can be explained by the agentic perspective (Bandura, 2001) which argues that functional consciousness involves purposive accessing and intentional processing of information for selecting, constructing, regulating, and evaluating courses of action. This is achieved through intentional mobilisation and productive use of semantic and pragmatic representations of activities, goals, and future events. It is possible that individuals who successfully solve situations by having confidence in setting flexible and hierarchical goals are more likely to be satisfied in life because they employ this perspective by making not just intentional choices and action plans, but also because they have the ability to shape their courses of action appropriately and further have the ability to motivate and regulate their execution.

Firstly, by intending to solve a problematic situation, individuals in the present study perhaps signified their future course of action. According to the agentic perspective, this does not simply involve an expectation or prediction of future actions but it means to be proactively committed to employ them. Bandura (1997) argue that plans of actions follow intentions. However, he also postulates that future-directed plans

are rarely specified in full detail at the outset because it requires more than intentions. Therefore respondents in this study may have had initial intentions to solve the problem; however, it is possible that prior to the execution of their plans, they linked thoughts to action by being adaptive self-regulating.

Thus, secondly, by means of such self-regulatory processes, participants who reported having confidence in setting flexible and hierarchical goals to solve challenging situations might develop a positive mindset through mapping their problems with an arranged order of short- and long-term goals. Additionally, respondents might have utilised these strategies by exerting self-control, and finally, participants may have used a self-evaluation of their outcomes and compared them against their goals. The adoption of this type of self-regulation may be the underlying reason why some individuals successfully solve challenging situations. This is in line with the view that such strategies are useful in increasing life satisfaction and indices of well-being. Zimmerman (2001) and Howell (2009) showed that, among a large group of undergraduate students, goal orientation, low procrastination and self-control were significantly associated with emotional, psychological and social well-being.

Thirdly, goals do not automatically activate self-influences that govern motivation and action (Bandura, 2001); therefore the impact of long-term performance may depend on the type of goals that people pursue. Those participants that adopt the strategy of setting flexible and hierarchical goals in challenging situations may have been orientated towards mastery goals. Achievement goal theory (Meece et al., 2006) argues that by adopting mastery goals, individuals approach challenging situations according to potential positive outcomes. This form of behaviour and self-regulation may produce a variety of perceptual-cognitive processes that facilitate optimal task engagement. Participants in this study perhaps challenged the problem they were presented with, had persistence in the face of failure, and then employed a positive stance towards enhanced task enjoyment. As mastery goals seem to be involved in fostering the perception of challenge and support of self-determination, they might be seen as mechanisms that promote systems combining aspirations with proximal self-guidance, which in turn promote the structure of hierarchical setting of goals and increased life satisfaction.

Although intrinsic motivation is associated with higher well-being and life satisfaction, this study's results may be due to participants being both intrinsically and extrinsically motivated. For example, to solve a problematic situation, individuals may be intrinsically goal directed by seeing a purpose in what they are doing, may see the problem interesting, challenging and important. However, they might also be extrinsically goal directed, because by solving the problem they achieve tangible rewards, such as perceived competence. Therefore, individuals who set flexible goals when solving problems may have used extrinsic motivation to enhance intrinsic motivation. Indeed, some studies indicate that both, intrinsic and extrinsic motivation can coexist, be experienced simultaneously, and could be adopted at a similar level (Lepper, 2000). Further evidence for this notion comes from the PMCEQ scale construction study (Beer and Moneta, 2010), which found that although the PMCEQ Factor 3 positively correlated with intrinsic motivation, it also positively correlated with extrinsic motivation.

With regards to the metacognitive strategies that did not predict life satisfaction, few explanations are noted. PMCEQ Factor 1 assesses confidence in extinguishing perseverative thoughts and emotions while PMCEQ Factor 2 taps metacognitions and meta-emotions that foster emotional intelligence. There were no significant relationships between these factors and life satisfaction. It is possible that using these adaptive metacognitive strategies in challenging situations may not be sufficient to increase life satisfaction.

#### **4.4. Limitations of the Current Study**

##### **4.4.1. Casuality**

Inherent to all correlational designs is the failure to detect (the direction of) causal relationships. Indeed, the direction of causality of this study's predictors and the levels of life satisfaction is open to question. An argument can be made that causality potentially runs in the reverse direction, such that individuals' levels of life satisfaction may be the global disposition that influences individuals' personality and the metacognitive strategies they choose to employ. For example, Kozma (1996) argued that extraversion and optimism do not influence happiness; but rather they are related to happiness because of the influence happiness has on other aspects of life. This may raise an important 'chicken and egg' problem regarding the nature of the personality-life satisfaction relations. To reach casual conclusion, longitudinal (or even experimental) designs or should be employed in future investigations.

##### **4.4.2. Self-report Bias**

Another limitation of the present study is that life satisfaction was assessed by self-reports of 'symptoms'. This is problematic because actual life satisfaction may be excessively related to self-reported symptoms. For example, the use of self-reports makes it difficult to evaluate pessimists and whether they are actually achieving worse outcomes or simply reporting that their (perceived) outcomes are unsatisfactory. Furthermore, due to the cognitive complexity involved in the judgment of life satisfaction as a whole, it could be argued that individuals construct a judgment of satisfaction, rather than recall previously formed judgments. The self-reported levels of one's life satisfaction, therefore, could be affected by salient situational factors, such as comparison standards. It would be advantageous in future research to assess and compare individuals in direct stressful and happy situations in order to reduce biases and increase ecological validity.

##### **4.4.3. Reliability of Scales**

The present study utilised the Cronbach's Alpha coefficient as a standard to measure the reliability of all scales used. Although the majority of study scales had Cronbach's Alpha coefficients greater than .70 and are therefore accepted as reliable scales, none of the HEXACO personality domains reached a good reliability coefficient (see Table 2). For example, the Agreeableness domain of the HEXACO scale reached a very low ( $\alpha=0.46$ ) coefficient value. This indicates a measurement error within the scale that could be due to the scale measuring several attributes rather than one.



Exploratory (and Confirmatory) Factor Analysis could be applied to investigate internal consistency (and validity) of the HEXACO instrument.

#### **4.4.4. Sample Size**

Although it is argued that an excellent ratio of participants to predictors should be close to 40:1 (Brace et al, 2000), a lower ratio of 10:1 is still considered to be sufficient. In this study, there were 131 participants and if all predictors, including sub-scales (12) are included, then the 10:1 ratio in this study is achieved and is exceeded by 11 participants. However, an increased sample size would subsequently increase the predictive power of the tested model and, most likely, result in better reliability coefficients for the utilised scales.

### **4.5. Implications of single predictors**

#### **4.5.1. Dispositional Pessimism**

Considering dispositional optimism and pessimism as separate constructs has enormous implications. It would consequently connote researchers to use separate measures of optimism and pessimism. Herzberg et al. (2006) argue that caution should be taken when interpreting the results of studies that treat dispositional optimism and pessimism as unidimensional measure and further postulate that this measure should not be used for clinical assessments. Furthermore, if the results of this study are due to a meaningful difference between the constructs, an imperative matter need to be addressed. What is the genuine nature of pessimism if it is not the opposite of optimism? Further research should highlight theoretical perspectives that might help to further conceptualise development of these constructs in order to gain more insight into the behavioural and other consequences that might be associated with these attributes.

#### **4.5.2. Extraversion**

To further understand what influences greater SWB and life satisfaction, a more detailed examination of personality traits is required. Examination of the relationship between life satisfaction and personality traits using the brief HEXACO-PI-R 60-items version might have been somewhat crude. However, there are several advantages to the short version, such as examining personality traits at facet level but further research could apply the standard version that comprises 192 items, measuring 24 facet scales.

To investigate more causal links, researchers should utilise more experimental methodologies, where individuals could be characterised as happy or unhappy prior to the experimental conditions. This way, researchers can progress from identifying which personality traits are most closely associated with subjective well-being and life satisfaction to examining how characteristically happy people differ from characteristically unhappy people as they progress through life.

#### **4.5.3. Positive Metacognitions**

The finding that formulation of hierarchical goals predicts life satisfaction has important implications for further research. Resolving challenging situations by setting flexible and attainable goals may prove to be an effective motivational technique across many life domains including education, sports and physical activities, health and

medicine, parenting and psychotherapy. Hierarchical goal setting, however, is influenced by many factors such as self-regulating, self-evaluating and self-monitoring of progress. Further research should investigate the effects of these factors to provide a basis for the understanding of how these factors promote positive psychological functioning.

So far, research that investigates subjective well-being and life satisfaction mostly explains hedonic processes and outcomes by measuring the absence of maladaptive dispositions. The present study is an attempt to measure adaptive metacognitive (and meta-emotional) beliefs as traits that are implicated in the choice of adaptive strategies when faced with challenging situations. The assumption of the current study is that measuring change in psychological adaptation by the absence of maladaptive dispositions may not be always sufficient; moreover, adaptive metacognitive strategies may not simply represent the other end of some bipolar dimension of maladaptive strategies. Assessment tools in the constructs of interest of positive psychology are still in development (Duckworth, Steen & Seligman, 2004); perhaps investigating how adaptive metacognitive strategies influence subjective well-being and life satisfaction will not just accelerate progress of positive psychology but will also promote cross-fertilisation of ideas.

#### **4.6. Potential Clinical Implications**

This study investigated life satisfaction from a top-down perspective, and therefore, efforts to increase life satisfaction should focus on changing individuals' perceptions and beliefs. Effective goal setting requires that people set a long-term goal, break it down into short-term, attainable sub-goals, monitor progress and assess capabilities, adjust the strategy and goal as needed and set a new goal when the present one has been attained. This multi-step plan could be a key to promoting healthier human functioning, higher motivation and perceived self-efficacy, and self-regulated learning and performance across the life-span. Inclusion of such adaptive metacognitive strategies in cognitive-behavioural therapies should be considered as means of treating psychological disorders. Besides helping patients to improve their labeling of emotions, clinical psychologists might help patients to change their perceptions of the situations they find themselves in or may help patients to choose more effective ways to behave. This might be particularly helpful for schizophrenics as they fail to take appropriate action after making the comparison between their goal state and the current state, which arises from their metacognitive monitoring (Malenka, Angel, Hampton and Berger, 1982).

The main difference between optimists and pessimists is how they explain setbacks to themselves. By learning to see and evaluate setbacks as temporary aspects and by consciously challenging negative patterns of thinking, pessimists may learn how to become more optimistic. This is congruent with metacognitive theories and therapies (e.g. Wells, 2009), which propose that metacognitions are responsible for healthy and unhealthy control of the mind. It is not about "what" to think, but "how" to think (Wells, 2009). Therefore, using adaptive metacognitive strategies could be integrated into existing therapy concepts. If, however, pessimism does not represent the opposite of optimism as this study suggests, then learning to be more optimistic would be of limited effect. It might well be that even if pessimists use adaptive metacognitive

strategies to look at life events in optimistic ways they might still be less satisfied in life. Further research is required to establish the difference and the underlying processes before clinicians implement metacognitive strategies as therapy within this domain.

#### **4. 7. Conclusions**

Despite the study's limitations, present findings may provide a first step towards the understanding of the relationship between positive metacognitive strategies and life satisfaction. By speculating to identify the underlying mechanisms of the PMCEQ Factor 3, this study argues that employing an agentic type of self-regulation, being intrinsically motivated (extrinsic motivation may also be involved) and adopting mastery goals contributes to successful problem solving, which in turn leads individuals to guide their cognition and behaviour to higher life satisfaction. In line with previous research, the present study also found that, although there was no relationship between life satisfaction and optimism, pessimistic individuals seem to be less satisfied in life and that extroverts are more likely to be satisfied in life than any other personality traits.

Further research should explore the underlying mechanisms and employ empirical ways to investigate their relationships with life satisfaction and well-being. Considering previous studies relating metacognitive strategies to psychological disturbance, the results of this study opens up a new chapter within positive psychology. The results from the present study add to existing positive psychology research by finding that adaptive cognitive strategies may be one of the core "strengths" that people could use to find life more gratifying and fulfilling.

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